Islamic Republic of Afghanistan
Ministry of Public Health
General Directorate of Pharmaceutical Affairs

National Standard Treatment Guidelines for the Primary Level

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SPS Strengthening Pharmaceutical Systems

World Health Organization

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About SPS

The Strengthening Pharmaceutical Systems (SPS) Program strives to build capacity within developing countries to effectively manage all aspects of pharmaceutical systems and services. SPS focuses on improving governance in the pharmaceutical sector, strengthening pharmaceutical management systems and financing mechanisms, containing antimicrobial resistance, and enhancing access to the most efficacious, safe and cost-effective medicines and appropriate use of medicines.

CONTENTS

FOREWORD

The Ministry of Public Health (MoPH) of the Islamic Republic of Afghanistan is very pleased to present the first edition of the *National Standard Treatment Guidelines for Primary Level* (NSTG-PL) 2013/1391. The NSTG-PL reflects the recommended state-of-the-art treatments for the priority health conditions addressed by the Basic Package of Health Services (BPHS). The BPHS continues to serve as the foundation of the Afghan health system and remains the key instrument in making sure that the most important and effective health interventions are made accessible to all Afghans. Afghanistan is a country with limited resources, and the MoPH believes that by continuing to focus on a BPHS, it will be able to concentrate its resources on reducing mortality among its most vulnerable citizens, especially women of reproductive age and children under five years of age.

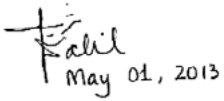
Providing essential medicines is a cornerstone of the BPHS, and the NSTG-PL will be a key instrument in guiding all health workers at the primary level to use the most efficient treatment for the conditions included in the guidelines, thus promoting the rational use of medicines. Where possible, the NSTG-PL refers to or uses standard treatment protocols previously developed by various MoPH programs.

The first edition of the NSTG-PL is the result of the efforts and dedication of many. The MoPH, through the General Directorate of Pharmaceutical Affairs, conducted a medicines use study survey in 2009 and, based on the results, asked experts in the areas of pharmaceutical and clinical practice to form the Standard Treatment Guidelines (STG) Working Group. Based on the past experience of developing the essential drugs list, the

STG Working Group consulted as widely as possible with departments in the MoPH, as well as with national and international experts. We would like to take this opportunity to thank all writers, technical reviewers, contributors, and editors who participated in the tremendous effort of developing the NSTG-PL. Our special appreciation goes to sustained technical and financial support provided by the Strengthening Pharmaceutical Systems project, funded by the United States Agency for International Development, and to technical support provided by World Health Organization.

This is a dynamic document that will regularly be updated to reflect the state of the art in treatment at the primary level. We, therefore, welcome constructive comments on the usefulness and the acceptability of this first version, which will guide us in keeping the guidelines updated with the new developments in health care.

We strongly encourage all health care providers in the public and the private sectors to use the NSTG-PL, thus promoting the access to affordable health care for all in Afghanistan.



Dr. Suraya Dalil
Minister of Public Health
Kabul, Afghanistan

INTRODUCTION

This national standard treatment guidelines (STGs) manual is designed for use at the first-level (i.e., primary) facilities delivering the Basic Package of Health Services (BPHS). The guidelines can also be used by general practitioners in their private practice.

The set of conditions included is not exhaustive, but rather is based on the conditions recommended for management and treatment in the BPHS. Likewise, recommended pharmaceutical treatments are primarily limited to the medicines recommended in the BPHS (2010) and the essential drug list (2007).

The elaboration of the manual was a participatory effort between the STG Working Group and various medical and paramedical professionals who volunteered their time and expertise.

The manual was conceived to address, in the most practical way possible, the problems faced by clinical staff at the first-level facilities. The references used are the existing MoPH guidelines for specific conditions, WHO references when MoPH guidelines were insufficient, and specialized works when deemed necessary. (See annex D.)

Despite all efforts, it is possible that certain errors have been overlooked, or some therapeutic approaches are incomplete, and the authors would be grateful to have any such error or incompleteness reported. To this end, an example of an STG modification form has been included in annex E. See page xii for where to send changes.
Although we hope the manual will be a useful guide to many prescribers, it is important to remember that, when in doubt, it remains the responsibility of the prescribing medical professional to ensure that the active substances and doses prescribed correspond with the therapeutic

need of the patient and conform to the manufacturer's specifications. Please send any identified errors or other comments that may help improve future version of this manual to the following address:

Ministry of Public Health
General Directorate of Pharmaceutical Affairs (GDPA)
STG Working Group
Kabul, Afghanistan

An electronic copy of the STG modification form may be sent to the following e-mail addresses:

E-mail: rafi_rahmani2003@yahoo.com
Phone: 0093 799 303 008
OR
E-mail: mailto:Zsiddiqui@msh.org
Phone: 0093 707 369 408

The manual is also available on the MoPH website: www.moph.gov.af/. Users are encouraged to check the copy on the website for updates on this edition.

Pharmacist Abdul Hafiz "Quraishi"
General Director of Pharmaceutical Affairs
Ministry of Public Health

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The first *National Standard Treatment Guideline for the Primary Level* in Afghanistan is the result of national and international efforts coordinated by the Standard Treatment Guideline (STG) Working Group members from the Ministry of Public Health; Kabul Medical University, Faculty of Pharmacy; the Afghanistan Physicians Association, the Strengthening Pharmaceutical Systems (SPS) project funded by United States Agency for International Development (USAID), the Health Sector Support Project (HSSP) funded by USAID, and World Health Organization.

The development of these STGs would not have been possible without the full support of the Afghan health authorities and the many Afghan health professionals whose comments enriched this document. The STG Working Group thanks the MoPH; Kabul Medical University, Faculty of Pharmacy; WHO, the Afghanistan Physicians Association and all the writers, reviewers and contributors who have actively contributed to the production of this *National Standard Treatment Guidelines for the Primary Level*. Special appreciation goes to the Strengthening Pharmaceutical Systems (SPS) project funded by USAID for its technical and financial support throughout the development process of this important guideline.

STG Working Group

- Dr. M. Rafi Rahmani, MD, Professor in the Pharmacology Department, Kabul Medical University, Head of the Committee
- Abdul Zahir Siddiqui, Pharmaceutical Services and Field Coordination Program Manager, SPS
- Dr. Abdul Samad Omar, MD, Associate Professor and Surgeon, Aliabad Teaching Hospital

- Dr. M. Amin Asghari, MD, Clinical Professor and Head of the Internal Medicine Ward, Wazir Akbar Khan Hospital (WAKH)
- Dr. Paul Ickx, MD, Senior Principal Technical Advisor, Center for Health Services (CHS), MSH
- Dr. M. Fayaz Safi, MD, Associate Professor, Afghanistan Physicians Association
- M. Hasan Frotan, Associate Professor and Lecturer, Faculty of Pharmacy, Kabul University
- Haji M. Naimi, Professor and Lecturer, Faculty of Pharmacy, Kabul University
- Dr. Tawfiq Mashaal, MD, Director for Preventive and Health Care, MoPH
- Dr. Ahmad Shah Pardis, MD, National Professional Officer, WHO
- Dr. Safiullah Nadeeb, MD, National Professional Officer, WHO
- Dr. Mohammad Alem Asem, MD, General Directorate of the Health Care Unit, MoPH
- Dr. Ahmad Shah Noorzada, MD, Training and Performance Manager, HSSP

Writers

- Dr. Katayon Sadat, MD, Obstetrics/Gynecology Specialist, Malalai Hospital
- Dr. Homa Kabiri, MD, Obstetrics/Gynecology Specialist, Malalai Hospital
- Dr. Sultan Najib Dabiry, MD, Assistant Clinical Professor of Dermatology and Trainer Specialist, Ibn-e-Sina Emergency Hospital
- Dr. M. Nazir Sherzai, MD, MS, Assistant Professor of Orthopedic and General Director, Sardar M. Dawood Khan Hospital
- Dr. Yaqub Noorzai, MD, MS, PGD, Professor of Urology and General Surgery Specialist, Attestation de Formation Specialisée Approfondie–Paris (AFSA Paris), Sardar M. Dawood Khan Hospital
- Dr. Ahmad Shah Wazir, MD, Chief of the Burn Center, Isteqlal Hospital
- Dr. Malali Alami, MD, Obstetrics/Gynecology Trainer Specialist, Rabia Balkhi Hospital
- Dr. Bashir Ahmad Sarwari, MD, Psychiatrist and Director of Mental Health and Substances Abuse Department, MoPH
- Dr. Motawali Younusi MD, Integrated Management of Childhood Illness, Child and Adolescent Health Department, MoPH
- Dr. Najibullah Tawhidwal, MD, Ear Nose and Throat Trainer Specialist, Ibn-e -Sina Emergency Hospital
- Dr. Sohaila Ziaee, MD, Reproductive Health Department, MoPH
- Dr. Nooria Atta, MD, Lecturer, Kabul Medical University
- Dr. Hasibullah Mohammadi, MD, Internal Medicine Specialist, WAKH
- Dr. Hamida Hamid, MD, National Malaria and Leishmania Control Program, MoPH
- Dr. Khalilullah Hamdard, MD, Internal Medicine Trainer Specialist, Isteqlal Hospital
- Dr. Atiqullah Halimi, MD, Children Specialist, Indira Gandhi Child Health Hospital
- Dr. Mirwais Saleh, MD, PGD, DO, Eye Specialist and Trainer, Eye Teaching Hospital
- Dr. Roqia Naser, MD, Expanded Programme on Immunization Department, MoPH
- Dr. M. Najib Roshan, MD, Eye Specialist, Noor Eye Hospital
- Dr. Anisa Ezat, MD, Dental Surgeon Specialist, Stomatology Hospital
- Dr. Ajmal Yadgari, MD, National Tuberculosis Control Program, MoPH

Acknowledgments

- Dr. Assadullah Safi, MD, Neurosurgeon and Trainer, Ibn-e-Sina Emergency Hospital
- Dr. Abdul Wali Wali, MD, Associate Professor of the Pediatrics Department, Maiwand Teaching Hospital
- Dr. M. Wali Karimi, MD, Ear Nose and Throat Specialist, Maiwand Teaching Hospital
- Dr. Abdul Hai Wali, MD, Dermatologist of Maiwand Teaching Hospital
- Dr. Samarudin, MD, HIV Department, MoPH
- Dr. Shaista Koshan, MD, Nutrition Department, MoPH
- Dr. Ruhullah Zaheer, MD, Clinical Professor, Internal Medicine Specialist, Isteqlal Hospital
- Dr. Zabiullah Azizi, MD, Internal Medicine Specialist, Sardar M. Dawood Khan Hospital
- Dr. Sultan M. Naji, MD, Surgeon Specialist and Trainer, Ibn-e-Sina Chest Hospital
- Dr. Bismellah Nejrabi, MD, Professor of Orthopedic Surgery and Lecturer, Kabul Medical University
- Dr. Gul Aqa Wader, MD, Internal Medicine Specialist and Trainer, Ibn-e-Sina Emergency Hospital
- Dr. M. Sadiq Naimi, MD, Internal Medicine Specialist, Antani Hospital
- Dr. Habibullah Raghbat, MD, Internal Medicine Specialist, Ibn-e-Sina Chest Hospital
- Dr. Seddiq Faizi, MD, Children Specialist, Indira Gandhi Child Health Hospital
- Dr. Mirwais Norani Safi, MD, Surgeon Specialist, Wazir Akbar Khan Hospital (WAKH)
- Dr. Abdulhaq Qiam, MD, Internal Medicine Specialist, Diploma in Child Health, Ataturk Hospital
- Dr. M. Jawid Shahab, MD, Surgeon and Urology Specialist, Jamhoriat Hospital
- Dr. Rafiullah Ahmadzai, MD, Children Specialist, Indira Gandhi Child Health Hospital

Technical Reviewers of Monographs

- Dr. M. Rafi Rahmani, MD, Professor in the Pharmacology Department, Kabul Medical University
- Dr. Abdul Samad Omar, MD, Associate Professor and Surgeon, Aliabad Teaching Hospital
- Dr. M. Amin Asghari, MD, Clinical Professor and Head of the Internal Medicine Ward, WAKH
- Dr. William Holmes, SPS Consultant
- Dr. Paul Ickx, MD, Senior Principal Technical Advisor, CHS, MSH

Technical Reviewers of Final Draft (Quick Reviewers)

- Mohammad. Nowrooz Haqmal, MD, DPH, MBA, District Health System Support Project Manager, *MoPH*
- Dr. Hamidullah Habibi, MD, National Consultant to Provincial Liaison Directorate, MoPH
- Dr. M. Yasin Rahimyar, Technical Deputy Director, Care of Afghan Families
- Dr. Jawid Omar Senior, Contract Consultant, Grant Contract Management Unit
- Dr. Laurence Laumonier-Ickx, MD, Senior Principal Technical Advisor, CHS, MSH
- Yakoub Aden Abdi, MD, PhD, WHO
- Professor, Dr. Ahmad Farid Danish, MD, Pharmacology Department, Kabul Medical University

Contributors

- Mohammad Zafar Omari, SPS
- Pharmacist Aisha Noorzaee, General Directorate of Pharmaceutical Affairs (GDPA)/Avicenna Pharmacy Institute (API)
- Assistant Professor Jawid Onib, Faculty of Pharmacy Kabul University
- Mark Morris, SPS
- Pharmacist Lutfullah Ehsaas, SPS
- Niranjan Konduri, SPS

- Dr. Nadir Arab, MoPH
- Pharmacist Zakia Aadil, GDPA/API
- Pharmacist Fahima Habib, GDPA/API
- Dr. Bahram Sadat, Dental Specialist, Stomatology Hospital
- Pharmacist Aziza Habib, WHO
- Terry Green, SPS
- Dr. Ibne Amin Khalid, MoPH
- Pharmacist Nahid Ayubi, SPS
- Dr. Noor Safi, MoPH
- Dr. Habibullah Habib, National Tuberculosis Control Program, MoPH
- Dr. Faridullah Omary, National Malaria Program, MoPH
- Dr. Faiz M. Delawer, National Tuberculosis Control Program, MoPH
- Dr. Nasir Orya, SPS
- Pharmacist Khan Aqa Karim Ghazi, GDPA
- Dr. William Holmes, SPS
- Dr. Khalid Amini, SPS
- Pharmacist Shakila Amarkhil, GDPA/API
- Pharmacist Khalilullah Khakzad, GDPA/API
- Pharmacist Nazir Haiderzad, GDPA

Editorial Committee:

- Dr. Laurence Laumonier-Ickx, MD, Senior Principal Technical Advisor, CHS, MSH
- Dr. M. Rafi Rahmani, MD, Professor in the Pharmacology Department, Kabul Medical University
- Dr. Paul Ickx, MD, Senior Principal Technical Advisor, CHS, MSH
- Abdul Zahir Siddiqui, Pharmaceutical Services and Field Coordination Program Manager, SPS

Editors of the English Version:

- Laurie B. Hall, Managing Editor, Center for Pharmaceutical Management, MSH
- Marilyn K. Nelson, writer/editor

HOW TO USE THIS GUIDELINE

The *National Standard Treatment Guidelines for the Primary Level* serves as a reference treatment guide for delivering the Basic Package of Health Services (BPHS) in the primary health care facilities in Afghanistan. It is important that you become familiar with the content and layout of the manual to use standard treatment guidelines (STGs) effectively.

The conditions included in these STGs have been selected among the BPHS and common diseases in Afghanistan seen at the primary health care level facilities from sub–health centers up to the district hospitals. The medicines recommended for use are all included in the essential drugs list for facilities of primary level. The 20 chapters are presented according to the organ systems of the body; a common format has been adopted for each condition: brief description; diagnosis with the common signs and symptoms of the condition; management that includes objectives, nonpharmacologic management, and pharmacologic management; prevention; and instructions to the patient. The instructions to the patient, especially in chronic conditions, aims at helping health care providers to improve patient compliance and health generally. When appropriate, a guideline also makes provision for referral of patients to higher level health facilities when equipment, medicines available, and staff do not permit proper treatment at the actual level. A distinction is made between the terms *refer*, which indicates routine referral, and **REFER URGENTLY,** which designates conditions that require immediate action; for the latter, the patient must be stabilized, and immediate transportation must be arranged.

To find the relevant sections and conditions in the manual easily, you can use the indexes at the end of the manual to find a specific condition and medicine name alphabetically. A glossary with brief definitions of the medical terminology used in the manual can be found as well following the acronym and abbreviation list.

This STG also contains five annexes:

- **Annex A** lists the most common essential medicines used in the STG with their usual dosages for children and adults; the tables allow for easy dose calculation based on per kilogram or age–weight, mode of medicine administration, dose frequency, duration of treatment, pharmaceutical strengths, and instructions for preparing the medicine.
- **Annex B** describes the procedure for newborn resuscitation.
- **Annex C** shows the partograph and delivery notes to use for deliveries.
- **Annex D** provides the references of MoPH policies documents, books, and articles used for developing the STGs.
- **Annex E** includes the procedures for requesting a modification to the STG.

The STG promotes the rational use of medicines and the quality of health care service delivery at the primary care level. Where relevant, the manual is consistent with the existing case management and treatment protocols of the national programs.

It is important to remember that the recommended treatments provided in this guideline are based on the assumption that prescribers are competent to handle patients' health conditions presented at their facilities. It remains the responsibility of the health worker to evaluate the appropriateness of the recommendations in the STG for the individual patient.

Comments that aim to improve this STG will be appreciated. See annex E for more details. The STG modification form must be submitted by mail or e-mail. A electronic copy of the form can be obtained from the MoPH website, www.moph.gov.af/

Printed forms may be sent to the following address:

Ministry of Public Health
General Directorate of Pharmaceutical Affairs (GDPA)
STG Working Group
Kabul, Afghanistan

An electronic copy may be sent to the following e-mail addresses:

E-mail: rafi_rahmani2003@yahoo.com
Phone: 0093 799 303 008
OR
E-mail: Zsiddiqui@msh.org
Phone: 0093 707 369 408

How to Use This Guideline

ACRONYMS AND ABBREVIATIONS

<	less than
≤	less than or equal to
>	more than
≥	more than or equal to
ACE	angiotensin-converting enzyme
AGN	acute glomerulonephritis
AIDS	acquired immunodeficiency syndrome
AMI	acute myocardial infarction
ANC	antenatal care
APH	antepartum hemorrhage
BCG	bacillus Calmette-Guérin (TB vaccine)
BP	blood pressure
BPHS	Basic Package of Health Services
C	Celsius
CHC	comprehensive health center
CHS	Center for Health Services
CNS	central nervous system
COC	combined oral contraception
COPD	chronic obstructive pulmonary disease
DH	district hospital
DMPA	medroxyprogesterone acetate
DPT	diphtheria-pertussis-tetanus
DOTS	internationally recommended strategy for tuberculosis control
E	ethambutol
ECG	electrocardiogram
EDL	essential drugs list
EPHS	Essential Package of Health Services
EPI	Expanded Programme on Immunization [WHO]
FAM	fertility awareness methods
FDC	fixed-dose combination
FP	family planning
g/dl	grams per deciliter
GDPA	General Directorate of Pharmaceutical Affairs
H	isoniazid
Hib	*Haemophilus influenzae* type b vaccine
HIV	human immunodeficiency virus
HPV	human papilloma virus
HSSP	Health Sector Support Project
HTN	hypertension
IM	intramuscular
IMCI	Integrated Management of Childhood Illness
IV	intravenous
IU	international units
IUD	intrauterine device
kg	kilogram
LAM	lactational amenorrhea method
mg	milligram
ml	milliliter
mmHg	millimeters of mercury
MoPH	Ministry of Public Health
MSH	Management Sciences for Health
NaCl	sodium chloride (table salt)
NSAID	nonsteroidal anti-inflammatory drug
NSTG-PL	national standard treatment guidelines for the primary level
OPV	oral polio vaccine
ORS	oral rehydration solution/salts

PF	*Plasmodium falciparum*
PID	pelvic inflammatory disease
PMB	postmenopausal bleeding
POP	progesterone-only pills
PPH	postpartum hemorrhage
PPHO	provincial public health office
PUD	peptic ulcer disease
PV	*Plasmodium vivax*
R	rifampicin
RBC	red blood cell/count
S	streptomycin
SPS	Strengthening Pharmaceutical Systems
STG	standard treatment guideline
STI	sexually transmitted infection
TB	tuberculosis
TT	tetanus toxoid
UK	United Kingdom
USAID	United States Agency for International Development
WAKH	Wazir Akbar Khan Hospital
WHO	World Health Organization
Z	pyrazinamide

GLOSSARY

abruptio placentae	a complication of pregnancy; detachment of a normally located placenta before delivery of the fetus
acute cholecystitis	a sudden inflammation of the gallbladder that causes severe abdominal pain
adnexa	ovaries and fallopian tubes
anaphylaxis	a life-threatening allergic reaction
angina pectoris	chest pain due to one or more heart's arteries being narrowed or blocked; also called *ischemia*
anicteric	without jaundice
anorexia	loss of appetite
antenatal	occurring before birth
anterior chamber	a fluid-filled space on the inside of the eye; the cornea lies in front of the anterior chamber, and the iris and the pupil are behind it
apnea	a potentially life-threatening condition of breathing cessation
appendicitis	inflammation of appendix, a small tube-like organ attached to the beginning of the large intestine
arrhythmia	a problem with the rate and rhythm of heartbeat
arthralgia	joint pain
arthritis	inflammation and eventual destruction of the joint
ascites	accumulation of protein-containing (i.e., ascitic) fluid in the abdomen

birth spacing	delaying first pregnancy until after the age of 18 and ensuring an interval of at least 36 months between pregnancies
booster dose	a dose of an active immunizing agent, like a vaccine or a toxoid, usually smaller than the initial dose, and given to maintain immunity
breech presentation	a positioning of the baby (i.e., fetus) that will lead to a delivery in the birth canal in which the buttocks, feet, or knees come out first
bronchiectasis	destruction and widening of the large airways
Brudzinski's sign	a demonstrable symptom of meningitis: severe neck stiffness that causes a patient's hips and knees to flex when the neck is flexed
cardiogenic shock	sudden inability of the heart to pump enough blood to meet the body's needs; often caused by a severe heart attack
cellulitis	infection of the skin and the soft tissues underneath the skin
cervix	the lower part of the uterus that opens into the vagina
chest indrawing	inward movement of the lower chest wall (i.e., lower ribs) when inspiring
chronic bronchitis	chronic inflammation of the bronchial tubes, the airways that carry air to the lungs
compromised immunity	condition in which the body loses its natural ability to fight infections

convulsion	a rapid and uncontrollable contraction of the voluntary muscles, it can be one manifestation of seizures; see seizure
corneal ulcer	an open sore on the cornea (i.e., the clear front window of the eye) usually resulting from an eye infection, a dry eye, or other eye disorder
Cushing's syndrome	hormonal disorder caused by long-term exposure to too much cortisol with symptoms such as upper body obesity, fragile skin and bones, anxiety and depression, and in women, excessive body hair
cyanosis	condition in which lips, fingers, and toes appear blue due to a low oxygen level in the blood
cystitis	inflammation of the bladder, often but not always due to infection
debridement	the process of removing damaged, dead, or infected tissue
dehydration	a condition resulting when the body does not have enough fluid to work properly
duodenal loop	the upper small intestine
dyslipidemia	having lipid (i.e., cholesterol, triglyceride) levels in the blood that are too high or too low
dysmenorrhea	painful menstrual periods
dyspnea	a breathing problem with shortness of breath

eclampsia	a seizure in a pregnant woman; follows pre-eclampsia, which is a serious complication of pregnancy that includes high blood pressure rapid and excessive weight gain; see pre-eclampsia
ectopic pregnancy	a pregnancy that occurs outside the uterus
edema	swelling caused by excess fluid in body's tissues
embolism	a clot that travels from the site where it formed to another location in the body
emphysema	damage to the air sacs (i.e., alveoli) in the lungs
encephalitis	inflammation of the brain due to viral or bacterial infection
endemic	a disease that occurs frequently and at a predictable rate in a specific location or population
endocarditis	inflammation of the heart's inner lining; most common type, bacterial endocarditis, occurs when germs enter the heart
endometrium	The mucous membrane lining of the uterus
enuresis	involuntary release of urine; sometimes used to indicate nocturnal enuresis (bedwetting), where urine is released during sleep.
envenomation	a complication of massive poisoning by venom

epigastric region	upper central region of the abdomen (i.e., epigastrium)
epithelialization	the process by which the skin repairs itself after injury
erythema	redness of the skin caused by hyperemia of the capillaries in the lower layers of the skin
Fallopian tubes	very fine tubes leading from the ovaries into the uterus; also called *salpinges*
follicles	a small spherical group of cells containing a cavity
glaucoma	a condition generally caused by a slow rise in the fluid pressure inside the eyes which damages the optic nerve
glomerulonephritis	kidney disease in which the part of the kidney that helps filter waste and fluids from the blood is damaged
gout	precipitation of crystals within the joint causing acute onset of swelling, pain, and often redness or heat in the involved joint
hematoma	localized collection of blood outside the blood vessels, usually in liquid form within the tissue
hematuria	presence of red blood cells in the urine
hemolytic	related to the rupture of the red blood cells and the release of their contents into the blood plasma
hepatitis	inflammation of the liver

hepatomegaly	nonspecific medical sign of enlarged liver
Hirschprung disease	disease of the large intestine (i.e., colon and rectum) when all or part of the large intestine has no nerves and therefore cannot function causing severe constipation or intestinal obstruction
hydrophobia	painful laryngeal spasms upon drinking
hyperglycemia	a condition in which an excessive amount of glucose circulates in the blood
hypogastrium	an area of the human body located below the navel; also called *hypogastric region, pubic region,* and *lower abdomen*
hypoglycemia	an abnormally diminished content of glucose in the blood
hypothermia	a condition in which the body's core temperature drops below the required temperature for normal metabolism and body functions; defined as 35.0°C (95.0°F) or lower
hypovolemia	a decrease in the volume of blood plasma; loss of blood volume due to hemorrhaging or dehydration
hypoxia	pathological condition in which the body or a region of the body is deprived of an adequate oxygen supply
icteric	related to jaundice

ileus	an intestinal obstruction that prevents the contents of the intestine from passing through
infant	a child under 1 year of age
insulin	a peptide hormone, which is produced by the beta cells of the pancreas and which regulates carbohydrate and fat metabolism; also diabetes medicine
iritis	an inflammation of the iris (i.e., the colored ring of tissue surrounding the pupil of the eye)
ischemia	decreased blood flow by a partial or complete blockage of arteries, reducing the oxygen supply
jejunum	middle section of the small intestine between the duodenum and the ileum
keratitis	inflammation of the eye's cornea (i.e., the front part of the eye)
Kernig's sign	a physical symptom of meningitis: inability to straighten the leg when the hip is flexed to 90 degrees
left ventricular hypertrophy	an enlargement of the muscle tissue that makes up the wall of the heart's main pumping chamber (i.e., the left ventricle)
lethargy	fatigue with a feeling of weariness, tiredness, or lack of energy
lymph nodes	oval-shaped organs of the immune system, widely distributed throughout the body

lymphangitis	inflammation or infection of the lymphatic vessels; a common complication of certain bacterial infections
mania	state of abnormally elevated or irritable mood, arousal, and/or energy levels
mastitis	an inflammation or infection of the breast tissue
mastoiditis	an infection of the mastoid bone of the skull (located just behind the ear)
Meckel's diverticulum	a pouch on the wall of the lower part of the intestinet present at birth (i.e., congenital); occurs in about 2% of the population
meconium	early feces (i.e., stool) passed by a newborn soon after birth, before the baby has started to digest breast milk or formula
meningitis	an inflammation of the thin tissue that surrounds the brain and spinal cord, called the *meninges*
metrorrhagia	uterine bleeding at irregular intervals, particularly between the expected menstrual periods
micronutrient	any substance, such as a vitamin or trace element, essential for healthy growth and development but required only in very small amounts
morbidity rate	either the incidence rate or the prevalence of a disease or medical condition
mortality rate	a measure of the number of deaths in a given population

multipara	a woman who has given birth two or more times
myocardial infarction	commonly known as a heart attack; results from the interruption of blood supply to a part of the heart, causing heart cells to die; also called *acute myocardial infarction* (AMI)
myocarditis	inflammation of the heart muscle
myocardium	the heart muscle
nasogastric tube	a medically inserted rubber or plastic flexible tube that carries food and medicine to the stomach through the nose
neonate	an infant in the first 28 days after birth
nocturia	the need to urinate at least twice during the night
oliguria	decreased urine output (i.e., production of less than 500 ml of urine per 24 hours)
ophthalmologic	related to eye
orthopedic	related to musculoskeletal system
osteomyelitis	a serious infection of the bone caused by bacteria
otitis	an inflammation or infection of the ear
otitis externa	an inflammation of the outer ear and ear canal (also called *external ear infection*)
otitis media	an infection of the middle ear
pain reliever	an analgesic; a medicine that reduces or relieves aches and pain
pancreatitis	an inflammation of the pancreas

parenteral	the introduction of nutrition, a medication, or other substance into the body via a route other than the alimentary tract, especially via infusion, injection, or implantation
paresthesia	a burning or prickling sensation that is usually felt in the hands, arms, legs, or feet, but can also occur in other parts of the body
pepsin	an enzyme released in the stomach that degrades food proteins into peptides
pericardial tamponade	an emergency condition due to a pressure on the heart that occurs when blood or fluid builds up in the space between the heart muscle (myocardium) and the outer covering sac of the heart (pericardium)
perinatal period	the period covering 28 days before and 28 days after the birth delivery
peritonitis	an acute, life-threatening condition, caused by bacterial or chemical contamination of the peritoneal cavity
phonophobia	a fear of loud sounds
photophobia	an abnormal intolerance to the visual perception of light
placenta praevia	an obstetric complication in which the placenta is attached partially or wholly in lower uterine segment and covers all or part of the opening of the cervix

pneumothorax	an abnormal collection of air or gas in the pleural space that separate the lung from the chest wall; may interfere with normal breathing
polyuria	an excessive volume of urination (i.e., more than 2.5 liters per day)
postnatal period	the period beginning immediately after the birth of an infant and extending for 6 weeks; refers to the infant
postpartum period	the period beginning immediately after the delivery and extending for 6 weeks; refers to the mother; also called *puerperium*
pouch of Douglas	an extension of the peritoneal cavity between the rectum and the posterior wall of the uterus in the female human body
pre-eclampsia	a sudden increase in blood pressure after the 20th week of pregnancy; can be life threatening for the mother and the unborn baby
prevalence	the proportion of a population found to have a condition
primipara	a woman who has given birth once
prodromal syndrome	an early symptom (or set of symptoms) that might indicate the start of a disease before specific symptoms occur
prophylaxis	a medical or public health procedure whose purpose is to prevent, rather than treat or cure, a disease
proteinuria	the presence of an excess of serum proteins in the urine

pruritus	a sensation that causes the desire or reflex to scratch
psychosis	a generic psychiatric term for a mental state often described as involving a "loss of contact with reality"
pulmonary edema	a life-threatening emergency characterized by extreme breathlessness due to abnormal accumulation of fluid in the lungs
pyelonephritis	an ascending urinary tract infection that has reached the pyelum (or pelvis) of the kidney
pyloric canal	the opening between the stomach and the small intestine
retinopathy	an eye disorder caused by persistent or acute damage to the retina of the eye
Reye's syndrome	a sudden and sometimes fatal disease of the brain with degeneration of the liver cause unknown; studies have shown that taking aspirin increases the risk of occurrence; can lead to a coma and brain death; condition mostly seen in children
rhinitis	irritation and inflammation of the mucous membrane inside the nose
rhonchi	coarse rattling sound somewhat like snoring, usually caused by secretion in bronchial airways
salpingitis	an infection and inflammation in the fallopian tubes

schizophrenia	a mental disorder characterized by a breakdown of thought processes and by a deficit of typical emotional responses
seizure	a sudden disruption of the brain's normal electrical activity accompanied by altered consciousness and/or other neurological and behavioral manifestations. One manifestation can be convulsions; see convulsion.
sepsis	an invasion of microbes or their toxins into the blood, organs, or other normally sterile parts of the body
shock	a life-threatening condition caused by circulatory failure with inadequate supply of blood flow to bring required oxygen and nutrients to the tissues and to remove toxic metabolites
sinusitis	an inflammation and infection of the sinuses
stillbirth	a birth that occurs after a fetus has died in the uterus
stomatitis	an inflammation of the mucous lining of any of the structures in the mouth; may involve the cheeks, gums, tongue, lips, throat, and roof or floor of the mouth
stridor	abnormal high-pitched noisy breathing that occurs due to obstructed air flow through a narrowed airway; usually heard when the patient is taking in a breath

stroke	the rapid loss of brain function due to disturbance in the blood supply to the brain
sublingual	the pharmacological route of administration by which medicines diffuse into the blood through tissues under the tongue
systemic	affecting the whole body or at least multiple organ systems
tachycardia	a heart rate that exceeds the normal range
tachypnea	rapid breathing
tonsillitis	an inflammation of the tonsils caused by viral or bacterial infection
topical medicine	a medication that is applied to body surfaces such as the skin or mucous membranes
tympanic membrane	ear drum (i.e., the thin drum-like tissue that separates the ear canal from the middle ear)
urethral meatus	the point at which urine and, in males, semen exits the urethra
urethritis	a swelling and irritation (i.e., inflammation) of the urethra (i.e., the tube that carries out urine from the body)
uveitis	a swelling and irritation of the uvea (i.e., the middle layer of the eye that provides most of the blood supply to the retina)

vacuum extraction	a procedure sometimes done, during the course of vaginal childbirth, to the baby's head to help guide the baby out of the birth canal
vaginitis	the inflammation and infection of the vagina
valvular heart disease	a disease process involving one or more of the valves of the heart
volvulus	the twisting of the intestine; causes an intestinal obstruction and may cut off blood flow and damage part of the intestine
vulva	the external genital organs of the woman
wheezing	a high-pitched whistling sound made while breathing, usually breathing out (i.e., expiration); results from narrowed airways
xerophthalmia	a medical condition in which the eye fails to produce tears; may be caused by a deficiency in vitamin A
Zollinger–Ellison syndrome	a complex condition in which one or more tumors form in the pancreas or the upper part of the small intestine (duodenum); the tumors secrete large amounts of the hormone gastrin, which causes the stomach to produce too much acid; the excess acid, in turn, leads to peptic ulcers

CHAPTER 1. DENTAL AND ORAL CONDITIONS

The five dental and oral conditions discussed in this chapter are dental caries, gingivitis, periodontitis, abscess, and oral candidiasis.

Description

The oral cavity is made up of specialized tissue comprised of oral mucosa, gingival mucosa, bones, teeth, and the surrounding structure of the teeth. Inflammation and infection of these tissues can lead to local and widespread destruction, cellulitis, and abscess, and loss of tooth and bone.

- *Dental caries:* Local destruction of the tooth enamel and dentine possibly leading to local infection and tooth loss
- *Gingivitis*: A chronic inflammatory process of the gum that may lead to separation of gum from tooth margin. *Acute necrotizing gingivitis* is noncontagious infection that can cause severe pain and rapid destruction of gingiva and surrounding tissue.
- *Periodontitis*: An infectious disease resulting in inflammation within the supporting tissue of the teeth that may cause progressive bone loss, tooth loosening, and tooth loss
- *Abscess*: A collection of pus that can be localized or spreading—with or without surrounding *cellulitis*. Most commonly, tooth decay and gum disease cause localized abscess. Occasionally, the infection spreads rapidly to surrounding tissue and the cervicofacial fascia and may be life-threatening.
- *Oral candidiasis*: A fungal infection most often caused by *Candida albicans*; can involve the tongue and mucosa of the oral cavity. It is most often seen in patients whose immunity is impaired because of

1. Dental and Oral Conditions

underlying medical problem (e.g., diabetes, human immunodeficiency virus [HIV], chronic disease), malnutrition, or medication (e.g., systemic steroids or long-term antibiotics).

Diagnosis

- Dental caries
  - Dental caries often begin as a sensitive white spot that progresses to a (black) hole in the tooth that is painful to direct touch or hot/cold foods.
  - The destruction of the tooth can be complicated by surrounding abscess and infection in which case the patient may experience constant pain, localized swelling of gum, and pus.
- Gingivitis
  - Chronic, uncomplicated
    - Slow onset
    - May have mild pain of local or widespread area of gum
    - May have bleeding of gum—especially after brushing
    - Gums appear bright red (instead of normal light pink) and may separate from teeth
  - Acute or subacute
    - Acute onset
    - Painful gums
    - May have spontaneous bleeding of gums
    - May have grayish membrane covering the gums
    - May be localized or involve all gum area
    - May be associated with halitosis (bad breath)
- Periodontitis
  - May be localized or generalized
  - Deep red or purplish color of gum
  - Separation of tooth from gum with tooth loosening
  - May lead to loss of tooth and localized bone destruction
- Abscess
  - Deep space infection that may be localized—swelling, pus, or both surrounding involved tooth; local pain and gum swelling
  - May become generalized and spread
    - Diffuse pain
    - Overlying skin and soft tissue swelling; possible overlying cellulitis

      If the patient has spreading infection in the deep tissue can become a surgical emergency, refer.
- Oral candidiasis
  - Milky white patches attached to tongue and oral mucosa that may be scraped away with moderate pressure, exposing erythematous base
  - May cause mild pain or burning sensation of mouth
  - May lead to difficulties with eating or breastfeeding

Management

The most important aspect of management of these five conditions is to recognize a spreading infection that may become a surgical emergency. The goals are to address pain, eradicate infection, and treat any underlying or causal condition.

- Order an oral rinse 4 times per day for 5 days for all five types of dental and oral conditions.
  - 2 pinches salt in 1 cup lukewarm (previously boiled) water
  - 0.2% chlorhexidine solution 15 ml

    Limit to 5 days because it may cause darkening of teeth.
- Advise use of an analgesic for pain.
  - Paracetamol tablets. Refer to table A15 in annex A for standard dosages.
- Prescribe antibiotics for infections including tooth abscess, cellulitis, and acute gingivitis.
  - Phenoxymethylpenicillin (penicillin V) for 7 days.

1. Dental and Oral Conditions

Refer to table A16 in annex A for standard dosages.
  - Children: 10 mg/kg/dose every 6 hours
  - Adults: 500 mg every 6 hours
- For penicillin-allergic patients, prescribe erythromycin **PLUS** metronidazole. Refer to tables A12 and A14 in annex A for standard dosages.
  - Children: Erythromycin 10–15 mg/kg/dose every 6 hours **PLUS** metronidazole 7.5 mg/kg every 8 hours for 7 days
  - Adults: Erythromycin stearate or base tablet 500 mg every 6 hours **PLUS** metronidazole tablet 400 mg every 8 hours for 7 days

- Prescribe an antifungal rinse for oral candidiasis (thrush).
  - Children: Nystatin drops (100,000 IU/ml)—0.5 ml topically after each feeding for 10 days
  - Adults: Nystatin mouth lozenge—suck one lozenge every 6 hours for 10 days. Alternatively, apply nystatin drops (100,000 IU/ml)—3 ml topically to oral mucosa every 6 hours for 10 days.
  - When nystatin is not available, apply gentian violet 0.5% aqueous solution topically every 8 hours for 7 days.

Referral

- Evidence of local or spreading abscess for evaluation of drainage, tooth removal, or both
- Evidence of dental caries—for filling of hole or tooth removal
- No improvement,uncertain diagnosis, or both
Spreading abscess and cellulitis of the face and neck can be a surgical emergency because of possible airway compromise and sepsis, and the condition requires urgent referral.

Prevention

- Use good oral hygiene: Maswak (i.e., tooth stick) and tooth brushing, using a soft tooth brush and fluoride toothpaste, if possible, after meals.
- Perform dental flossing, if possible.
- Eat a diet rich in fruits and vegetables.
- Get routine dental care, if possible.
- Seek early evaluation of tooth or gum pain.
- Avoid the use of tobacco and mouth snuff.
- Limit intake of sugar, candy, and sweets.

Patient instructions

- Avoid using your teeth to break hard food or materials (e.g., walnuts, almonds).
- Avoid drinks that are too hot or too cold.
- Drink warm and sugar-free fluid after eating sweets or candies.

DENTAL AND ORAL

CHAPTER 2. DIGESTIVE SYSTEM CONDITIONS

2.1. Diarrhea and Dehydration

Caution: Antidiarrheal medicine should *not* be used to treat acute diarrhea.

2.1.1. Acute Diarrhea, without Blood, in Children Younger Than 5 Years

See also IMCI flipchart, "Child with Diarrhea."
Note: if not available at the health facility, IMCI flipchart can be found at the Child and Adolescent Health department of MoPH.

Description

Acute diarrhea is marked by a sudden change in consistency (liquid) and frequency of stools. It is most commonly caused by viruses, but also may be caused by bacteria or parasites and can quickly become fatal in newborns, undernourished children, and children showing other danger signs (see below and IMCI flipchart).

Diagnosis

- Ask about—
  - Frequency of stools
  - Duration of diarrhea; if more than 2 weeks, see section 2.1.3 "Persistent Diarrhea."
  - Blood in stools; if blood in stool, see section 2.1.5 "Dysentery."
  - Cholera cases in neighborhood; if yes, suspect cholera and see section 2.1.7 "Cholera."
- Inspect for danger signs and signs of severe illness—
  Note: All of these cases should receive IM antibiotic and be referred to hospital.
  - Infant younger than 2 weeks old
  - Unable to drink or breastfeed
  - Persistent vomiting
  - Convulsions
  - Altered state of consciousness
  - Acute abdomen
  - Severe malnutrition
- Assess degree of dehydration and classify (see table 2.1.1A) as—
  - Severe dehydration (C)
  - Some dehydration (B)
  - No dehydration (A)

TABLE 2.1.1A. Classifying the Degree of Dehydration

Signs to Look for	C = Severe Dehydration (At Least Two Signs)	B = Some Dehydration (At Least Two Signs)	A = No Dehydration
Level of consciousness	Sleepy, difficult to wake, or unconscious	Restless, irritable, or both	Well and alert
Sunken eyes	Eyes sunken	Eyes sunken	Eyes not sunken
Ability to drink (suck)	Drinks (sucks) poorly or not at all	Drinks (sucks) eagerly, thirsty	Drinks (sucks) normally
Skin pinch	Skin pinch takes 2 seconds or more before returning to normal	Skin pinch returns slower to normal, but in <2 seconds	Skin pinch returns to normal immediately

2.1. Diarrhea and Dehydration

DIGESTIVE SYSTEM

Management

- In children, the main objective is to prevent or treat dehydration and exclude causative associated infections (e.g., malaria, pneumonia, otitis, urinary tract infection) and malnutrition.

Nonpharmacologic

- In children who are breastfed, continue breastfeeding as much and as often as the child will take it until diarrhea stops.
- In children who are no longer breastfeeding, continue normal feeding and give extra fluids until diarrhea stops.

Pharmacologic

Follow one of the plans below, according to the classification of dehydration determined from table 2.1.1A.

Plan C. Treat child who has severe dehydration quickly.

- **Plan C-1.** If you have IV equipment and solutions at hand—
  - Rapidly give IV Ringer's lactate solution (Hartmann's solution, or if not available, normal saline 0.9%) as per table 2.1.1B.
  - Keep the child at the clinic, and check every hour.
  - As soon as the child can drink, give ORS at the rate of 5 ml/kg/hour.
  - Reassess and reclassify:
    - Infant (younger than 12 months old) after 6 hours
    - Child (12 months old or older) after 3 hours
    - Choose appropriate management plan (i.e., B or A) according to classification.
    - If still classified as C, refer to hospital while keeping IV drip going.
- **Plan C-2.** If you do not have IV equipment and solutions at hand, but IV treatment is available less than 30 minutes away—

TABLE 2.1.1B.

Severely Dehydrated Child: Administration of IV Fluid

Age of the Child	Give 30 ml/kg in	Then, give 70 ml/kg in
<12 months (infant)	1 hour[a]	5 hours
12 months to 5 years	30 minutes[a]	2½ hours

[a] If radial pulse is weak or undetectable, repeat this once.

  - Refer urgently for IV treatment.
  - If child can drink, provide ORS solution to the caretaker and show how to give frequent sips to the child during the trip.
- **Plan C-3.** If no IV treatment is available less than 30 minutes away, and you know how to use a nasogastric tube—
  - Place nasogastric tube, and give ORS at the rate of 20 ml/kg/hour for 6 hours.
  - Reassess every hour.
    - If repeated vomiting or abdominal distention, give ORS more slowly.
    - If no improvement after 3 hours, refer for IV treatment.
  - Reassess and reclassify dehydration after 6 hours and adapt management plan.
- **Plan C-4.** If no IV treatment is available less than 30 minutes away, and you do not know how to use a nasogastric tube, but child can drink something—
  - Give frequent sips of ORS at the rate of 20 ml/kg/hour for 6 hours.
  - Reassess every hour.
    - If repeated vomiting or abdominal distention, give ORS more slowly.
    - If no improvement after 3 hours, refer for IV treatment.

- Reassess and reclassify dehydration after 6 hours and adapt management plan.

- **Plan C-5.** If no IV treatment available less than 30 minutes away, you cannot place a nasogastric tube, and child does not drink—**REFER URGENTLY** to the nearest hospital.

Plan B. Treat child who has some dehydration with ORS.

- **Plan B-1.** Treat the child with ORS in the health facility for 4 hours.
  - Rehydrate the child with ORS according to weight or age as shown in table 2.1.1C.
  - If the child wants more ORS than shown in table 2.1.1C, give more.
  - Show the caregiver how to give the ORS.
    - Give frequent small sips with spoon or cup.
    - If child vomits, wait 10 minutes, then continue a bit slower than before.
    - Continue breastfeeding when the child wants.
  - Reassess and reclassify the child after 4 hours.
    - Select the appropriate management plan (i.e., C, B, or A).
    - Start feeding the child in clinic before sending home.
- **Plan B-2.** If the caregiver cannot stay for 4 hours at the clinic—
  - Show the caregiver how to prepare and give ORS at home. (See plan B-1.)
  - Explain how much ORS to give for the first 4 hours.
  - Give enough ORS packets for the first 4 hours. Give two extra packs for continuing plan A after the first 4 hours.
  - Give zinc (20 mg) tablets:
    - Younger than 6 months: ½ tablet of 20 mg a day dissolved in some breast milk or clean water, for 10 days

TABLE 2.1.1C.
Child with Some Dehydration: Oral Rehydration

Dosage	Age (If Weight Is Unknown)[a]			
	<4 months	4 to <12 months	1 to <2 years	2 to <5 years
	Weight			
	<6 kg	6 kg to <10 kg	10 kg to <12 kg	12–19 kg
Total ml in 4 hours	200–400 ml	400–700 ml	700–900 ml	900–1,400 ml

[a] Use the child's age only when you do not know the weight. The appropriate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.

    - 6 months old or older: 1 tablet a day dissolved in some clean water, for 10 days
  - Tell the caregiver to continue feeding the child normally.
  - Tell the caregiver to return if child—
    - Is not better
    - Shows danger signs (see "Diagnosis" above)
    - Has blood in stool

Plan A. Treat child who has diarrhea without dehydration at home. Counsel the caregiver on the four principles of home care for diarrhea.

- Principle 1: Give extra fluids until diarrhea stops.
  - Give two packets of ORS, and teach the caregiver how to prepare ORS.
  - Instruct the mother to breastfeed as often as the child will take.
  - If child is exclusively breastfed (i.e., younger than 6 months), tell mother to give ORS after each breastfeeding, as much as the child will take.
  - If child is not exclusively breastfed, tell her give ORS and other liquids (e.g., soup, rice water, clean water).

- Advise the caregiver to give frequent, small sips using spoon or small cup.
- If child vomits, instruct the caregiver to wait 10 minutes and continue giving small sips.
- Tell the mother or caregiver to offer ORS after each loose stool (10 ml/kg):
  - 50–100 ml if child is younger than 2 years old
  - 100–200 ml if child is older than 2 years old
- She should continue extra fluids until the diarrhea stops.

- Principle 2: Continue feeding.
  - Instruct the mother to breastfeed as often and as much as the child will take.
  - If the child is more than 6 months, instruct the mother to give other foods as normal and encourage liquid foods as much as the child will take.
- Principle 3: Give zinc to the child for 10 days, even when diarrhea stops.
  - Give 5 tablets of 20 mg if the child is younger than 6 months old.
    - Each day, dissolve ½ tablet in some breast milk or clean water.
  - Give 10 tablets of 20 mg if the child is older than than 6 months.
    - Each day dissolve 1 tablet in some clean water
  - Instruct the mother or caregiver that zinc does not replace ORS; it is in addition to ORS.
- Principle 4: Return immediately to the health facility if the child—
  - Does not get better or gets worse
  - Has blood in the stool
  - Gets a fever
  - Starts feeding or drinking poorly
  - Has sunken eyes or slow skin pinch

Referral

- Severe dehydration with other complications
- Children younger than 12 months with blood in the stool
- Malnourished children
- Children with general danger signs (e.g., altered level of consciousness, convulsions, inability to feed or drink, vomiting everything)
- Suspected acute abdominal problem that may require surgery

Prevention

- Individual hygiene (i.e., hand washing with soap before handling food and after toilet use)
- Safe latrines
- Exclusively breastfeeding for first 6 months of life

2.1.2. Acute Diarrhea, without Blood, in Children Older Than 5 Years and in Adults

Description

Acute diarrhea is marked by increased frequency and liquid stools for fewer than 2 weeks. It is usually self-limiting and managed by fluid replacement.

Management

- Advise patient to continue taking foods normally and to increase fluids and liquid foods.
- Show patient or caregiver how to prepare ORS, and advise patient to drink one glass regularly, at least one after each loose stool.

Referral

- Co-morbidity and severe dehydration or electrolytes disorder
- Suspected acute abdominal problem that may require surgery

2.1.3. Persistent Diarrhea, without Blood, in Children Younger Than 5 Years

Description

Persistent diarrhea is any diarrhea that begins acutely and lasts for 14 days or longer is considered persistent. Signs of dehydration or general danger signs require hospitalization of the child. (See section 2.1.2 "Acute Diarrhea, without Blood, in Children Younger Than 5 Years.")

Diagnosis

Assess for dehydration, malnutrition, and danger signs.

Management

- If child is younger than 2 months, start rehydration according to classification (i.e., C, B, or A in table 2.1.1A), and refer to hospital.
- If dehydration or danger signs are present, start rehydration according to classification (i.e., C, B, A in table 2.1.1A), and refer to hospital.
- If child has no dehydration—
  - Adapt feeding as follows:
    - If the child is exclusively breastfeeding, advise mother to breastfeed more frequently and for longer.
    - If the child is taking other milk, but no solid foods—
      - Replace other milk with breastfeeding.
      —OR—
      - Replace other milk with fermented milk such as yogurt.
      —OR—
      - Replace half the other milk with semi-solid foods (e.g., eggs, pulses, cereals, and oil).
    - If the child is taking other foods—
      - Prepare foods appropriate to the age (e.g., shola, ash moqawi, mashawa, firni).
      - Give 2 extra meals a day.
      - Continue above diet for 4 weeks.
  - Give supplements as follows:
    - Oral zinc for 10 days
      - Younger than 6 months old: ½ tablet of 20 mg a day dissolved in some breast milk or clean water
      - 6 months old or older: 1 tablet of 20 mg a day dissolved in some clean water
    - Oral folic acid—1 mg tablet, once a day for 14 days
    - Vitamin A—according to schedule in table 2.1.3 in a single dose
  - Tell the mother to bring the child back in 5 days or sooner if the child's condition worsens.

TABLE 2.1.3. Vitamin A Supplementation Schedule

Age	Vitamin A Capsules		
	200,000 IU	100,000 IU	50,000 IU
6 to <12 months	½ capsule	1 capsule	2 capsules
1–5 years	1 capsule	2 capsules	4 capsules

Referral

- All children younger than 2 months who have diarrhea for more than 14 days
- All children who have diarrhea for more than 14 days with dehydration or general danger signs
- All children who still have diarrhea when coming back 5 days after initializing management of persistent diarrhea

2.1. Diarrhea and Dehydration

DIGESTIVE SYSTEM

2.1.4. Persistent Diarrhea in Children Older Than 5 Years and in Adults

Description

Diarrhea for more than 14 days in children older than 5 years or in adults may indicate serious underlying causes.

Management

If direct stool examination (three specimens) is possible, determine the pathogen and treat accordingly.

Referral

All cases with no or negative stool examination (after taking three specimens)

2.1.5. Dysentery

Description

Dysentery is diarrhea presenting with loose frequent stools containing blood and mucus. Most episodes are due to *Shigella* and nearly all require antibiotic treatment. When there is no immediate access to a laboratory, start treatment for bacillary dysentery (see section 2.1.5.1 "Dysentery, Bacillary"). If patient does not improve after 48 hours, start treating for amebic dysentery (see section 2.1.5.2 "Dysentery, Amebic"), or refer for formal laboratory assessment.

Referral

Refer when patient has no response to empirical treatment.

2.1.5.1. Dysentery, Bacillary

Description

Most bacillary dysentery is caused by *Shigella*.

Diagnosis

- Check for sudden onset of diarrhea with the following:
  - Bloody stools
  - Mucus in stools
  - Fever
  - Often abdominal cramps
  - Possible general symptoms: toxic appearance, convulsions, lethargy
- Check for general danger signs and dehydration, especially in children younger than 5 years old (see IMCI flipchart)
- Assess and classify degree of dehydration (see table 2.1.1A) and nutritional status.

Management

Treat and prevent dehydration (see section 2.1.1 "Acute Diarrhea, without Blood, in Children Younger Than 5 Years" and section 2.1.2 "Acute Diarrhea, without Blood, in Children Older Than 5 Years and in Adults").

- In children younger than 5 years, prescribe oral zinc for 10 days:
  - Younger than 6 months old: ½ tablet of 20 mg a day dissolved in some breast milk or clean water
  - 6 months or older: 1 tablet of 20 mg a day dissolved in some clean water
- In all children and adults, prescribe an antibiotic for 5 days:
  - First-line:
    - Ciprofloxacin tablet: 10 mg/kg/dose every 12 hours (see IMCI flipchart, "Give an Appropriate Oral Antibiotic" section)
      Caution: Ciprofloxacin is contraindicated in pregnant women and should be avoided in children when possible.
      —OR—
    - Co-trimoxazole. Refer to table A8 in annex A for standard dosages.
      —OR—
  - Second-line:
    - Metronidazole. Refer to table A14 in annex A for standard dosages.

Follow-Up

Check patient after 48 hours. If he or she shows no improvement (i.e., does not have fewer stools, less blood in the stool, or both; still has fever; does not have improved appetite), switch to the other first-line antibiotic or to metronidazole.

Referral

- All children younger than 2 months old with bloody diarrhea
  Caution: **REFER URGENTLY.**
- All children younger than 5 years with bloody diarrhea and any general danger sign, severe malnutrition, or severe dehydration
- All cases with serious general symptoms, or not responsive to treatment after 48 hours

Prevention

Advise the use of good individual and general hygiene practices:

- Hand washing with soap before handling food and after toilet use
- Hand washing with soap after handling sick babies and children
- Washing soiled garments and bed clothes with soap
- Using safe latrines
- Exclusive breastfeeding for first 6 months of life

2.1.5.2. Dysentery, Amebic

Description

Amebic dysentery is caused by *Entamoeba histolytica.*

Diagnosis

- Check for diarrhea with—
  - Blood and mucus
  - Unpleasant odor
  - No fever (usually)
- Check for alternating constipation, flatulence, or both.
- Assess and classify dehydration (see table 2.1.1A).
- If possible, a fresh stool examination (three specimens) will confirm live forms or cysts.

Management

- Provide nutritional and fluid support.
- Prescribe metronidazole. Refer to table A14 in annex A for standard dosages.

Referral

- Failure to respond to treatment
- For laboratory confirmation
- Worsening condition

Patient Instructions

Advise the use of good individual and general hygiene practices:

- Hand washing with soap before handling food and after toilet use
- Hand washing with soap after handling sick babies and children
- Washing soiled garments and bed clothes with soap
- Using safe latrines
- Exclusive breastfeeding for first 6 months of life

2.1.6. Giardiasis

Description

Giardiasis is a protozoal infection of the upper small intestinal causes by the flagellate *Giardia lamblia*. Cysts or trophozoites in stools are transmitted by fecal-oral contamination.

Diagnosis

- Giardiasis is often asymptomatic or has intermittent signs such as the following:
  - Can present as acute watery diarrhea, sometimes prolonged for days to weeks

- Can present with nausea, flatulence, epigastric pain, and abdominal cramps
- Can present with malodorous and bulky stools

- If a laboratory test can be performed, diagnosis is traditionally made by the identification of trophozoites or cysts in stool (three specimens).
- Assess and classify possible dehydration (see table 2.1.1A).

Management

- If diarrhea is present, treat and prevent dehydration (see section 2.1.1 "Acute Diarrhea, without Blood, in Children Younger Than 5 Years" and section 2.1.2 "Acute Diarrhea, without Blood, in Children Older Than 5 Years and in Adults") and malnutrition.
- Give oral metronidazole. Refer to table A14 in annex A for standard dosages.
- In pregnant women, prescribe furazolidone (100 mg orally every 6 hours for 7 days), if available.

Referral

- All complicated cases
- Cases without response to treatment

Prevention

- Hand washing with soap before handling food and after using toilet
- Boil water before use

2.1.7. Cholera

Cholera is suspected when patients present with sudden watery diarrhea and dehydration in an area where other people have been confirmed cases. The main danger is rapid and severe dehydration. Always notify the PPHO of a suspected case.

Diagnosis

- Acute watery diarrhea—
  - Without blood or mucus
  - No specific fecal odor
  - Often gray and turbid (so-called "rice water stool")
- Possible vomiting
- Possible dehydration, which can have a rapid onset, can be severe, and is potentially fatal (see section 2.1.1 "Acute Diarrhea, without Blood, in Children Younger Than 5 Years" and section 2.1.2 "Acute Diarrhea, without Blood, in Children Older Than 5 Years and in Adults")
- Possible shock (see section 16.9 "Shock")

Management

- Treat *urgently* to prevent dehydration and possible shock.
- At the primary level of care, antibiotic treatment is not needed.
- In children younger than 5 years, prescribe oral zinc for 10 days:
  - Younger than 6 months old: ½ tablet of 20 mg a day dissolved in some breast milk or clean water
  - 6 months old or older: 1 tablet of 20 mg a day dissolved in some clean water
- Always inform the PPHO of a suspected case.

Prevention

Advise the use of good individual and general hygiene practices:

- Hand washing with soap before handling food and after toilet use
- Boil water before drinking
- Use of safe latrines

2.2. Peptic Ulcer Disease

Description

A peptic ulcer is a break in the gastric or duodenal mucosa that arises when the normal mucosal defensive factors are impaired or are overwhelmed by aggressive luminal factors such as acid and pepsin. It may also occur in the esophagus, pyloric channel, duodenal loop, jejunum, or Meckel's diverticulum. A duodenal ulcer most commonly occurs in patients between the ages of 35 and 55 years; gastric ulcer is more common in patients between the ages of 55 and 70 years.

The causes of peptic ulcer disease (PUD) include the following:

- Major causes
  - Bacteria *Helicobacter pylori*
  - NSAIDs
  - Acid hypersecretory conditions such as Zollinger-Ellison syndrome
- Uncommon causes
  - Hereditary (increased parietal cell number)
  - Blood group O (antigen may bind *H. pylori*)
- Unproven causes
  - Stress
  - Coffee
  - Alcohol

Smoking is an important risk factor; it also decreases the rate of healing and increases the risk of recurrence.

Diagnosis

- Symptoms
  - Epigastric pain and vague feeling of discomfort in the upper belly or abdomen (dyspepsia) during or right after eating. These symptoms, however, are not sensitive or specific enough to serve as reliable diagnostic criteria for PUD.
  - Burning, dull, gnawing, or aching pain or a hungry feeling
    - In a gastric ulcer, pain occurs soon after eating (within 15–30 minutes); in a duodenal ulcer, pain occurs 90 minutes to 3 hours after eating and is often nocturnal.
    - Gastric ulcer pain is burning and made worse by or unrelated to food intake; duodenal ulcer pain is relieved by the absorption of food.
    - Radiating pain indicates ulcer penetration or perforation.
- Sign—The physical examination is often normal in uncomplicated PUD. Mild, localized epigastric tenderness to deep palpation may be present. In one third of patients, signs of anemia may be present.
- Differential diagnosis—Epigastric pain can also occur in ischemic heart disease, acute pancreatitis, or acute cholecystitis.

Management

Nonpharmacologic

- Advise patient to avoid—
  - Smoking
  - Prolonged treatment with NSAIDs or steroids
  - Alcohol

Pharmacologic

- To reduce acid production, prescribe ranitidine tablets.
  - Children and infants—2 to 4 mg/kg every 12 hours
  - Adults:
    - 150 mg tablet every 12 hours for 6–8 weeks
      —OR—
    - 300 mg tablet at night for 6–8 weeks

2.2. Peptic Ulcer Disease

DIGESTIVE SYSTEM

- To neutralize existing gastric acid, recommend antacid
  - Children 1–12 years: ½ to 15 ml oral suspension 1–3 hours after meals and at bedtime
  - Adults: 2 tablets every 8 hours, half an hour before meal for 10 days.

Referral

- Complication such as gastrointestinal bleeding or perforation
- No response to available medicines
- Suspected *H. pylori* or other pathology (cancer); endoscopy required

Prevention

- Avoid alcohol use, smoking, and NSAIDs.
- Do not consume expired foods.

Patient Instructions

- Use good personal and environment hygiene (i.e., hand washing after bathroom, eating healthy food, and drinking safe water).
- Avoid self-medication.
- Return in 1 week for reevaluation.

CHAPTER 3. RESPIRATORY SYSTEM CONDITIONS

3.1. Asthma

Asthma is a chronic inflammatory condition with reversible airway obstruction.

3.1.1. Asthma in Children

Description

Asthma in children is characterized by recurrent episodes of wheezing, often with cough or signs of pneumonia, which respond to bronchodilators.

Diagnosis

The patient has a history of recurrent episodes of—

- Wheezing; the sound of wheezing is most obvious when breathing out (exhaling), but may be heard when taking a breath (inhaling)
- Shortness of breath often with cough

The patient may also report—

- Periods without symptoms between attacks
- Provoking factors, such as allergens, exercise, cold temperature, or respiratory infections

Findings on examination may include—

- Prolonged expiration with audible wheeze is most common sign in children.
- Check for general danger signs, stridor and chest in-drawing, and if so, treat as severe pneumonia (see section 3.3 “Pneumonia in Children and Adults”).
- Check for fast breathing. Treat as pneumonia (see section 3.3).

If the diagnosis is uncertain, give a dose of a rapid-acting bronchodilator. A child with asthma will improve rapidly,

showing signs such as a decrease in the respiratory rate and in chest wall in-drawing and less respiratory distress. A child with severe asthma may require several doses before a response is seen.

Management

First, using table 3.1.1., exclude pneumonia.

In a child classified with no pneumonia, manage asthma as follows:

- Prescribe an oral bronchodilator: salbutamol tablets for 5 days. Refer to table A17 in annex A for standard dosages.
- Steroids are not usually required for the first episode of wheezing. If a child has a severe acute attack of wheezing and a history of recurrent wheezing, give—
  - Oral prednisolone 0.5 mg/kg/dose every 12 hours for 3 days. Prednisolone is available in DHs.
  - If the child remains very sick, continue the steroid treatment until improvement is seen.
- Prescribe aminophylline.
  - If a child does not improve after 3 doses of nebulized solution of salbutamol given at short intervals plus oral prednisolone—
    - *Slowly*—over at least 20 minutes and preferably over 1 hour—give an IV injection of aminophylline. Refer to table A2 in annex A for standard dosages.
      Caution: Weigh the child carefully and give the IV dose according to exact weight.
    - Followed by a maintenance IV injection dose. Refer again to table A2.
      Caution: IV aminophylline can be dangerous in an overdose or when given too rapidly. Do *not* give aminophylline if the child has already received any form of aminophylline or theophylline in the previous 24 hours.

TABLE 3.1.1. Differentiating between Asthma and Pneumonia

Symptoms Present	Action to Take	Medication to Prescribe[a]	Next Step
▪ General danger signs **—OR—** ▪ Stridor **—OR—** ▪ Chest in-drawing	Treat as severe pneumonia.	▪ One dose of pre-referral antibiotic: • Ampicillin[b] **—PLUS—** • Gentamicin ▪ One dose of rapid-acting bronchodilator (nebulized salbutamol) if wheeze is present.	Refer *urgently* to hospital.
▪ Wheezing *and* ▪ Fast breathing **BUT** ▪ No general danger signs and no stridor	Treat as pneumonia.	▪ 5 days of co-trimoxazole **—PLUS—** ▪ 5 days of oral salbutamol (if child presents with wheeze and is more than 6 months old)	Follow up in 2 days.
Only wheezing	Treat as no pneumonia.	5 days of oral salbutamol (if child is more than 6 months old)	None

[a] Refer to the tables in annex A for standard dosages: table A4 for ampicillin, table A8 for co-trimoxazole, table A13 for gentamicin, and table A17 for salbutamol.

[b] In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

Caution: Stop giving aminophylline immediately if the child starts to vomit, has a pulse rate more than 180/minute, develops a headache, or has a convulsion.

- Prescribe antibiotics *only* if pneumonia or severe pneumonia is suspected (see section 3.3 "Pneumonia in Children and Adults").

Referral and Follow-Up

- Refer all patients who are not improved following acute-care treatment.
- After providing emergency treatment as outlined above, refer all patients who have life-threatening symptoms.
- Asthma is a chronic and recurrent condition; a long-term treatment plan must be made based on the frequency and severity of symptoms. Refer patient to a specialist for initiation of long-term treatment.

3.1.2. Asthma in Adults

Description

Asthma in adults is characterized by paroxysmal attacks of breathlessness, chest tightness, and wheezing, all of which result from paroxysmal narrowing of the bronchial airways due to muscle spasm, mucosal swelling, and viscid bronchial secretions occurring as result of inflammatory reaction within the bronchial walls. Genetic and environmental factors are involved.

Diagnosis

- Symptoms
  - Feeling of tightness in the chest
  - Episode of dyspnea
  - Unproductive cough which aggravates the dyspnea
  - Expiratory wheeze
- Signs
  - Mild attack
    - Slight tachycardia, tachypnea
    - Mild diffuse wheezing (rhonchi)
  - Moderate attack
    - Use of accessory muscle of respiration
    - Loud expiratory wheezing
    - Retraction of intercostal muscle
  - Severe attack
    - Fatigue
    - Pulses paradox
    - Inaudible breath sound (silent chest) with diminished rhonchi
    - Inability to maintain lying position
    - Cyanosis

Management

Asthma medication is of two types: quick-relief and long-term control.

- Quick relief medications are used for acute care.
  - Give or prescribe salbutamol inhaler in acute attack. Treatment in the clinic is 2 puffs and can be repeated every 15 minutes for 1 hour in a severe attack.
    - Inhaler may be substituted with nebulizer when available. Refer to table A17 in annex A for standard dosages.
    - Once the patient has improved sufficiently to be discharged home, give salbutamol tablets—1 tablet of 4 mg every 8 hours for 3 days.
  - Systemic corticosteroids
    - Oral prednisolone—0.5 mg/kg/day every 12 hours for 3–10 days. Prednisolone is available in DHs.
    - In a severe attack that is not responsive to bronchodilators and requires referral, give hydrocortisone IV 200 mg before transfer.

RESPIRATORY SYSTEM

- In the case of a severe attack when salbutamol inhalant is not available or effective—
  - Give slow injection IV of aminophylline—loading dose 5 mg/kg *slow* IV injection in more than 20 minutes and preferably with 100 ml IV solution; maintenance dose: 0.7–0.9 mg/kg/h continuous IV infusion.
    Caution: Patients with congestive heart failure should receive 0.25 mg/kg/h continuous infusion *only.*
    Caution: Use above dosage *only* if the patient has not taken aminophylline or theophylline within 24 hours.
  - Aminophylline is used for patients in status asthmaticus who do not respond to maximal, inhaled bronchodilators and corticosteroids. These patients will require referral to EPHS facility.

- Long-term medications require a referral to a specialist for chronic and prophylactic treatment.
  - Inhaled steroid therapy (beclomethasone) is the most potent and effective anti-inflammatory to decrease the frequency and severity of the attacks. Its use requires the advice of a specialist for dosage, depending of type of asthma.
  - Systemic corticosteroids (oral and parenteral) are most effective in asthma during exacerbation with severe persistent asthma.

Referral

- After providing emergency treatment as outlined above, refer all patients who are not improved or who have life-threatening symptoms.
- Refer patients who require chronic or prophylactic therapy—for increased diagnostic and treatment options and to formulate a long-term treatment plan.

Prevention

- Avoid causative allergens such as house dust, mites, pets, grass pollens, and chemicals.
- Seek early treatment of chest infections.
- Avoid beta-blockers (e.g., propranolol, atenolol), angiotensin-converting enzyme (ACE) inhibitors (e.g., captopril), and NSAIDs.

Patient Instructions

- Patient and caregiver education includes the following:
  - Education on early recognition and management of acute attacks
  - Diagnosis and natural course of condition
  - Teaching and monitoring patient use of inhalers and medicines
  - Reassurance regarding safety and efficacy of treatment

3.2. Common Cold and Flu

Description

Colds and flu are common, self-limiting viral infections that require only supportive care. They are contagious and spread by airborne droplets. Most episodes end within 14 days in adults and children. A child who has a cough or difficult breathing but who has no general danger signs, no chest in-drawing, no stridor when calm, and no fast breathing is classified as having a common cold or the flu. A child who has a chronic cough (i.e., a cough lasting more than 14 days), however, may have TB, asthma, whooping cough, or another problem. Malnourished children, the elderly, and the debilitated are at greater risk of complications.

Diagnosis

- Cough
- Nasal congestion and discharge

RESPIRATORY SYSTEM

- Throat pain
- Headache, muscle pain, fever—more common with flu
- May be complicated by otitis media, wheezing, sinusitis

Note: Malaria, measles, and pneumonia may begin with flu-like symptoms

Management

Nonpharmacologic

- Advise bed rest as needed.
- Encourage fluids to avoid dehydration and to keep mucous thin.
- Soothe the throat and relieve the cough with a traditional remedy, such as warm, sweet tea.
- Clear secretions from the child's nose before feedings using a cloth soaked in water, which has been twisted to form a pointed wick.

Pharmacologic

- In an infant, use NaCl 0.9% drop into each nostril to relieve congestion as needed.
- Use paracetamol for high fever (38.5°C or higher) until fever subsides. Refer to table A15 in annex A for standard dosages. Adults may take up to 1 g every 6 hours for high fever.
- ***Note:*** Avoid giving any of the following:
  - Antibiotics—not indicated since colds and the flu are viral infections.
  - Remedies containing atropine, codeine or codeine derivatives, or alcohol may be harmful.
  - Medicated nose drops

Referral

- Severe complications (e.g., pneumonia, otitis media, sinusitis)
- Altered consciousness
- Inability to drink or feed

Prevention

- Use cough etiquette to avoid spreading of airborne droplets by infected person.
- Practice good nutrition.

Patient Instructions

- Encourage fluids and feeding.
- Emphasize the need to keep nasal passages clear, particularly for infants who are obligatory nasal breathers.
- Advise the patient to—
  - Watch for *fast* or *difficult* breathing, and return immediately if either develops.
  - Return if the child becomes sicker or is not able to drink or breastfeed.
  - Follow up in 5 days if not improving.

3.3. Pneumonia in Children and Adults

Pneumonia is an infection of the lung tissues. Pneumonia is usually caused by viruses or bacteria or, less frequently, by fungus or parasites. Most serious episodes are caused by bacteria. Determining the specific cause, however, is usually not possible by clinical features or chest X-ray appearance. Based on clinical features, pneumonia is classified as pneumonia and severe pneumonia, with specific treatment for each. Antibiotic therapy is needed in all pneumonia cases.

Caution: Severe pneumonia requires additional treatment, such as oxygen, and must **URGENTLY** be referred to a hospital.

3.3. Pneumonia in Children and Adults

3.3.1. Pneumonia in Children Younger Than 5 Years

Description

Pneumonia is the leading cause of mortality and a common cause of morbidity in children younger than 5 years.
See also IMCI flipchart, "Child with Cough or Difficult Breathing."

Diagnosis

- Suspect pneumonia in all children who present with cough or difficult breathing and in children who seem to be breathing faster than normal.
- High fever (38.5°C or higher) is often present, but not always.
- If the child is not calm, wait for the child to calm down before examining. If the child is sleeping, first check respiratory rate and chest in-drawing before trying to wake the child.
- Check the respiratory rate during 1 full minute using a timer or watch with a second hand (a shorter observation time may be misleading because the respiratory rate fluctuates slightly). Fast breathing is present if the child has—
  - More than 60 breaths/minute in a child younger than 2 months of age
  - More than 50 breaths/minute in a child 2–11 months of age
  - More than 40 breaths/minute in a child 1–5 years of age
- Check for signs of severe pneumonia or very severe disease (e.g., congenital heart diseases). General danger signs of very severe disease and severe pneumonia include the following:
  - Fast breathing (60 breaths/minute or more) in a child younger than 2 months of age
  - Chest in-drawing: the lower part of the chest goes *in* when the child breathes *in*
  - Hoarse noise when the child breathes *in*
  - Refusal to drink or breastfeed
  - Abnormally sleepiness or difficulty in waking
  - Unconsciousness
  - Convulsions or recent convulsions
  - Vomiting or recent persistent vomiting
- Check for signs of asthma, including the following:
  - Wheezing noise when child breathes *out*
  - Cough for more than14 days
- Check for signs of possible TB or other diseases, including the following:
  - Cough for more than 14 days
- In addition, other signs of pneumonia (on auscultation) may be present: crackles, reduced breath sounds, or an area of bronchial breathing. Auscultation is often difficult in a child.
- If none of the signs listed above are present, and you have eliminated the possibility of asthma, TB, or other diseases, you may conclude the child has a common cold (see section 3.2 "Common Cold and Flu").

Management

Child with a very severe disease or severe pneumonia

- Give first dose of treatment, and **REFER URGENTLY** to hospital.
  - Give the first dose of antibiotics. Give the first dose IM of ampicillin **PLUS** gentamicin antibiotic in muscle on the front of the thigh according to age or weight.
    - IM ampicillin. Refer to table A4 in annex A for standard dosages.
      —PLUS—
    - IM gentamicin. Refer to table A13 in annex A for standard dosages.

RESPIRATORY SYSTEM

- Treat wheeze, if present, with salbutamol nebulizer. Refer to table A17 in annex A for standard dosages.
- Treat convulsions, if present.
  Caution: Do *not* give this treatment if the child has only a history of convulsions; treat present convulsions only.
  - Give diazepam rectally. Use a TB or insulin syringe; draw the appropriate diazepam dose; *take out the needle* and insert the syringe 4–5 cm into rectum before emptying. Squeeze buttocks together for 2–3 minutes Refer to table A9 in annex A for standard dosages.

- If *not* able to refer immediately to *hospital*—
  - Treat infection with IM antibiotics, and treat fever as appropriate.
    - Give IM ampicillin **PLUS** gentamicin as above for 5 days. Refer to tables A4 and A13 in annex A for standard dosages.
    - If child responds well, complete treatment for 5 additional days at home or in the health facility with—
      - Oral amoxicillin. Refer to table A3 in annex A for standard dosages. In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

      —PLUS—
    - IM gentamicin. Refer to table A13 in annex A for standard dosages.
  - Provide supportive care.
    - If fever (higher than 39°C) appears to be causing distress, give paracetamol. Refer to table A15 in annex A for standard dosages.
    - Encourage breastfeeding and oral fluids, and food intake.

Child with pneumonia

- Treat the infection. Give or prescribe a 5-day course of the appropriate (i.e., first- or second-line) antibiotic.
  - First-line antibiotic: co-trimoxazole. Refer to table A8 in annex A for standard dosages. See also IMCI flipchart.
  - Second-line antibiotic: amoxicillin. If the child is allergic to co-trimoxazole or if the child has not improved after 3 days of co-trimoxazole treatment, give or prescribe amoxicillin. Refer to table A3 in annex A for standard dosages.
- Teach the mother or caregiver how to give the complete 5-day treatment at home. Show the mother or caregiver how to crush the tablet if necessary. Have the mother or caregiver give the first dose in front of you.
- Treat high fever (if present) with paracetamol according to weight or age until fever subsides. Refer to table A15 in annex A for standard dosages.
- Treat wheezing (if present) with salbutamol according to weight and age. Refer to table A17 in annex A for standard dosages.

Child with cough or common cold

- See section 3.2 “Common Cold and Flu.”

Patient Instructions

- Encourage the mother or caregiver to continue feeding the child.
- Advise mother to increase breastfeeding or increase fluids.
- Remind mother or caregiver to continue vaccinations according to schedule.
- Determine whether caregiver has understood how and when to give the medicine.
- Advise mother or caregiver to bring the child back after 2 days for a check-up.

RESPIRATORY SYSTEM

- Advise mother or caregiver to bring the child back *immediately* if the child—
  - Gets sicker
  - Stops eating or breastfeeding
  - Develops a high fever (38.5°C or higher)
  - Starts breathing faster or has difficulty breathing
- When the child returns for the 2-day check-up—
  - If the breathing has improved (i.e., slowed), the fever is lower, and the child is eating better, complete the last 3 days of antibiotic treatment (pneumonia).
  - If the breathing rate, fever, or eating has not improved, change to the second-line antibiotic, and advise the mother or caregiver to return again in 2 days. Ask if the child has had measles within the 3 months before the pneumonia; if yes, refer to the hospital.
  - If the child has signs of severe pneumonia or very severe disease, follow the IMCI flipchart treatment instructions, "Child with a Very Severe Disease or Severe Pneumonia." and **REFER URGENTLY** to hospital

3.3.2. Pneumonia in Children Older Than 5 Years and in Adults

Description

Infection of the lung tissues is pneumonia, and the causative agent is the same as for the children younger than 5 years. Pneumonia is more dangerous in elderly persons and when chronic disease is associated (e.g., diabetes, human immunodeficiency virus [HIV], malnutrition, or chronic pulmonary disease).

Diagnosis

- Check for signs of pneumonia in all children older than 5 years and in adults presenting the following complaints:
  - Cough
  - Unilateral chest pain
  - Shortness of breath or superficial breathing
  - Fever. Fever with sudden onset (often high, 38.5°C or higher) is often present, but not always, especially in elderly patients.
  - Fast breathing. Deep inhalation may be painful.
  - Crackles on auscultation; often present. Auscultation may have decreased breath sounds or wheezing.
- Check for signs of severe pneumonia.
  - Respiratory distress (nasal flaring)
  - Respiratory rate more than 30 breaths/minute
  - Confusion or drowsiness
  - Cyanosis (blue lips or nail beds)
  - Low blood pressure (systolic less than 90 mm HG; diastolic less than 60 mm HG)
- Check for asthma.
  - Wheezing noise when patient breathes *out*
- Check for TB.
  - Patient has had a productive cough for 14 days or more

Management

Severe cases of pneumonia

- Treat the infection by giving the first dose of antibiotic.
  - Start oral amoxicillin. Refer to table A3 in annex A for standard dosages.
    —OR—
  - If patient cannot swallow, give ampicillin IM. Refer to table A4 in annex A for standard dosages.
    —OR—
  - In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
    —OR—

3.3. Pneumonia in Children and Adults

RESPIRATORY SYSTEM

- Give doxycycline. Refer to table A10 in annex A for standard dosages.
  Caution: Do not use doxycycline for children younger than 8 years old or for pregnant or lactating women.
- Refer to hospital.

Nonsevere cases of pneumonia

- Treat the infection by giving or prescribing a 5-day course of the appropriate antibiotic.
  - First-line choice: co-trimoxazole. Refer to table A8 in annex A for standard dosages.
  - Second-line choice: amoxicillin. Refer to table A3 in annex A for standard dosages. In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
    Note: Use amoxicillin if the patient is allergic to co-trimoxazole, if the patient is suspected to be pregnant, or if the patient has not improved after three days of co-trimoxazole treatment.
- Treat high fever with paracetamol until fever subsides. Refer to table A15 in annex A for standard dosages.
- Advise the patient to come back after 2 days for check-up.
  - If improved, continue treatment and urge patient to complete the course of antibiotics.
  - If not improved, switch to second-line choice for antibiotic, and check patient again after 48 hours.
  - If not improved at the second check-up, treat as severe pneumonia, and refer to hospital.

Patient Instructions

- Encourage the patient to drink more than usual, to eat as usual, and to take the medicines appropriately.
- Advise the patient to come back after 2 days for check-up.

- Advise the patient to come back *immediately* if he or she—
  - Gets drowsy or confused
  - Starts breathing with difficulty
  - Starts breathing fast (more than 30 breaths/minute)
  - Develops a high fever (38.5°C or higher)

3.4. Chronic Obstructive Pulmonary Disease

Description

Chronic obstructive pulmonary disease (COPD) is a disease state characterized by air flow obstruction due to chronic bronchitis or emphysema. Cigarette smoking is the most important cause of COPD; air pollution, occupational dusts and chemicals, airway infections, familial disorders, and allergy are also responsible for chronic bronchitis.

Although emphysema and chronic bronchitis must be diagnosed and treated as specific diseases, most patients who have COPD have features of both conditions simultaneously.

- Chronic bronchitis is a clinical diagnosis most commonly seen after 30–40 years of age, defined by excessive secretion of bronchial mucus, and manifested by daily productive cough for 3 months or more in at least 2 consecutive years.
- Emphysema is a pathologic diagnosis most commonly seen after 50 years of age that denotes abnormal permanent enlargement of air spaces distal to the terminal bronchiole with distraction of their walls and without obvious fibrosis resulting in reduction of gas exchange.

Diagnosis

- History of smoking and exposure to pollution
- Cough (productive in chronic bronchitis)

RESPIRATORY SYSTEM

- Progressive dyspnea (more severe in emphysema)
- Wheezing, often not responsive to bronchodilators
- Cyanosis in late stage of the disease
- Fever (when secondary acute respiratory tract infections)
- Hemoglobin raised in chronic bronchitis

Management

Nonpharmacologic

- The most important aspect of management is to encourage smoking cessation.
- All cases of productive cough of more than 2 weeks duration should be tested for TB (see section 15.10 "Tuberculosis").

Pharmacologic

- Give oxygen, when available, to patients who have acute hypoxemia.
- Give or prescribe bronchodilators for wheezing. Treat with only one agent at a time.
  - Salbutamol. Refer to table A17 in annex A for standard dosages.
    - Inhaler
      —OR—
    - Tablet
      —OR—
  - Aminophylline. Refer to table A2 in annex A for standard dosages.
- Give or prescribe oral prednisolone 0.5 mg/kg/day for 14–21 days if patient—
  - Has asthmatic bronchitis
  - Experiences exacerbations or disabling symptoms
  - Fails to respond to therapy with aminophylline

  Note: Prednisolone is available in DHs.
- Give or prescribe antibiotics to treat acute bronchitis and prevent acute exacerbation of chronic bronchitis.

3.4. Chronic Obstructive Pulmonary Disease

  - Co-trimoxazole. Refer to table A8 in annex A for standard dosages.

    —OR—
  - Amoxicillin. Refer to table A3 in annex A for standard dosages.

    —OR—

    In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

    —OR—
  - Doxycycline. Refer to table A10 in annex A for standard dosages.

    Caution: Do not use doxycycline for children younger than 8 years old or for pregnant or lactating women.

Referral

- Refer all exacerbated cases that are not responding to treatment.
- In the case of chronic wheezing following a 4-week trial of bronchodilators, refer patients to a DH for possible steroid therapy.

Prevention

- Advise patient to stop smoking
- Urge people who are exposed to chemicals, dusts, pollen, and smoke to take precautions.

RESPIRATORY SYSTEM

CHAPTER 4. EAR, NOSE, AND THROAT CONDITIONS

4.1. Otitis Externa

Description

Otitis externa is an inflammation or infection of the external auditory meatus. The four major causes of otitis externa are—

- Furuncular otitis externa (ear boil)—caused by bacteria, most often *staphylococcus*
- Diffuse otitis externa—inflammation that may be caused by a foreign body, contaminated water from bathing or swimming, or scratching the external auditory meatus with dirty fingernails
- Fungal otitis externa (otomycosis)—caused by fungal infection of the external auditory meatus
- Eczematous otitis externa—caused by eczema or dermatitis of the external auditory meatus

Diagnosis

- In furuncular otitis externa (ear boil), severe pain spreads to the jaw or head. The tragus sign is positive (i.e., pressure on the tragus is painful).
- Diffuse otitis externa presents with pain or discomfort and hearing loss.
- Eczematous or fungus otitis externa presents with irritation, itching, dull pain, and sometimes discharge.
- The otoscopic examination may show the following:
  - Furuncular otitis externa may have associated pustules of the external auditory meatus.
  - Fungal otitis externa may have a "wet blotting paper" appearance within the external auditory meatus and may have discharge.
  - Eczematous otitis externa may have red, scaling patches visible with edema of the external auditory meatus.

    Note: The tympanic membrane appears normal in otitis externa.

Management

Nonpharmacologic

- Remove any foreign body or debris.
- Keep the ear canal clean and dry by dry mopping the ear. Dry mopping is a time-consuming process for staff and patient, but must be done for effective treatment. It should be carefully taught to the patient or caregiver, and the patient or caregiver should then demonstrate that he or she can perform the task properly. Follow this procedure to dry mop the ear:
  - Roll a piece of clean absorbent cloth into a wick.
  - Carefully insert the wick into the ear with twisting action.
  - Remove the wick, and replace it with a clean dry wick.
  - Repeat this procedure until the wick is dry when removed.
  - Dry the ear by wicking 4 times daily at home until the wick stays dry.
  - If bleeding occurs, temporarily stop dry mopping the ear.
  - Do not leave anything in the ear between dry mopping treatments.
  - Do not instill anything in the ear.
  - Instruct the patient or caregiver to avoid getting the inside of the ear wet while swimming and bathing.
  - Reassess weekly to be sure the patient or caregiver is dry mopping the ear correctly.

4.1. Otitis Externa

EAR, NOSE, AND THROAT

Pharmacologic

Note: Otitis externa can usually be treated *without* oral antibiotics.

- Apply gentian violet (1%) daily to the skin of the external auditory meatus with a cotton tip applicator for 10 days.
- Suggest paracetamol for pain until pain subsides. Refer to table A15 in annex A for standard dosages.
- If you suspect furuncular otitis externa (i.e., you find a pustule on examination of the external auditory meatus), prescribe—
  - Cloxacillin (500 mg capsules) when available
    - Children: 15 mg/kg/dose every 6 hours for 7 days
    - Adults: 1 capsule every 6 hours for 7 days

    —OR—
    - Erythromycin for 5 days for patients allergic to penicillin. Refer to table A12 in annex A for standard dosages.

    —OR—
    - Chloramphenicol. Refer to table A5 in annex A for standard dosages.
- If you suspect eczematous (allergic dermatitis) otitis externa, using a cotton tip applicator —
  - Apply betamethasone (1%) cream

    —PLUS—
  - Neomycin (0.5%) cream to the external auditory meatus every 12 hours for 7 days.

Referral

- Inability to properly examine the external auditory meatus and tympanic membrane
- Failure to respond to treatment

Prevention

- Avoid scratching or placing foreign body in the ear.
- Do not bath or swim in contaminated water.
- Keep the ear clean and dry.

Patient Instructions

- Keep the ear clean and dry.
- Tell patient you need to review medications, the dry mopping technique, and application of topical agents.

4.2. Acute Otitis Media

Description

Acute otitis media is a rapid-onset, short-duration infection of the middle ear caused by bacteria (e.g., *streptococcus*, *pneumococcus*, *H. influenza*, *Staphylococcus pyogenes*) or virus. It is frequently associated with a common cold or pharyngitis because the middle ear is connected to the throat via the eustachian tube. If left untreated, there is some risk of chronic otitis media, deafness, or most significantly, mastoiditis (i.e., infection of the mastoid, the bony protrusion behind the ear), which can lead to meningitis and brain abscess—both of which require *urgent* referral to hospital.

Diagnosis

- History
  - Earache
  - Recent pharyngitis or common cold
  - Fever
  - Vomiting or diarrhea
  - Crying and agitation
- Otoscopic examination may demonstrate (depending on stage)—
  - Redness and bulging of tympanic membrane
  - Loss of light reflex of tympanic membrane
  - Perforation, pus drainage, or both

4.2.1. Acute Otitis Media in Children Younger Than 5 Years

See also IMCI flipchart, "Child Has an Ear Problem."

Management

Nonpharmacologic

- Advise parent or caregiver that the child needs to—
  - Drink lots of fluids and avoid dehydration
  - Avoid putting anything in the ear
  - Avoid getting the ear wet
- Advise parent or caregiver to continue to feed the child.

Pharmacologic

- Ask if the child has ear pain.
- Look for discharge from ear. If yes, ask how long the child has had discharge.
- Feel for tender spot behind ear (sign of mastoiditis).
  - If the child has tender swelling behind ear, give the first dose of treatment for mastoiditis, and **REFER URGENTLY** to hospital.
    - Give first dose of IM ampicillin PLUS gentamicin according to weight or age. Refer to table A4 (ampicillin) and table A13 (gentamicin) in annex A for standard dosages.
    - Give first dose of paracetamol for pain. Refer to table A15 in annex A for standard dosages.
    - If referral is not possible, repeat the dose of IM ampicillin every 6 hours PLUS the dose of IM gentamicin every 12 hours until child has improved. Then change to an appropriate oral antibiotic (amoxicillin or, if penicillin allergic, erythromycin) to complete a total of 10 days of treatment. Refer to tables A3 (amoxicillin) and A12 (erythromycin) in annex A for standard dosages.
- If pus has been draining from the ear for fewer than14 days OR if the child has ear pain and otoscopy reveals that the eardrum is red, inflamed, bulging, and opaque or perforated with discharge, treat for acute otitis media:
  - Give co-trimoxazole for 5 days. Refer to table A8 in annex A for standard dosages.
    —OR—
  - Amoxicillin for 5 days. Refer to table A3 in annex A for standard dosages. In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
  - Give paracetamol until pain and fever subside. Refer to table A15 in annex A for standard dosages.
  - If pus is draining from the ear, show the mother or caregiver how to dry the ear by wicking or dry mopping as described in section 4.1 "Otitis Externa." Advise the mother or caregiver to wick 3 times per day until there is no more pus. Tell the mother or caregiver not to place anything in the ear between wicking treatments. Do not allow the child to go swimming or get water in the ear.
  - Ask the mother or caregiver to return with the child for follow-up in 5 days. If ear pain or discharge persists, treat for 5 more days with the same antibiotic and continue wicking the ear. Then follow up again in 5 days.

4.2. Acute Otitis Media

EAR, NOSE, AND THROAT

4.2.2. Acute Otitis Media in Children Older Than 5 Years and in Adults

Management

Pharmacologic

- Paracetamol for pain or fever as needed. Refer to table A15 in annex A for standard dosages.
- Antibiotics
  - Amoxicillin
    - Adults: one 250–500 mg tablet every 8 hours for 7 days, depending on the severity of the symptoms
      —OR—
    - In the case of penicillin allergy or sensitivity, use erythromycin for 7 days. Refer to table A12 in annex A for standard dosages.

Referral

- Bulging eardrum failing to improve within 48 hours of treatment
- Failure to improve after 7 days of treatment
- Signs of mastoiditis, intracranial complication, or facial nerve palsy
- Perforation or drainage of pus
- Recurrent otitis media

Prevention

- Ensure proper treatment of pharyngitis or upper respiratory infection.
- Minimize risk factors such as allergies, second-hand smoke, and exposure to others with cold or flu.

Patient Instructions

- Return for reevaluation in 7 days.

4.3. Chronic Otitis Media

Description

Chronic otitis media is a persistent infection of the middle ear with perforation of the tympanic membrane and pus draining from ear for more than 14 days. Secondary infection with multiple organisms (e.g., *streptococcus, pneumococcus*, mixed gram-negative) may occur making treatment with antibiotics difficult. It may be associated with mastoiditis, intracranial infection, cholesteatoma, and deafness.

Diagnosis

- Condition is painless unless complicated by otitis externa or other conditions.
- Drainage is usually clear unless associated with secondary infection.
- Otoscopy shows a perforation of tympanic membrane, which is central, and may be dry or wet.
- Hearing loss is possible.
- In the case of complication, tinnitus, vertigo, and facial nerve palsy are possible.

Management

Nonpharmacologic

Dry mopping is the most important intervention to dry the ear and allow it to heal. See section 4.1 “Otitis Externa” for a step-by-step description of the dry mopping procedure.

Pharmacologic

- Normally, antibiotics are *not* indicated for chronic otitis media.
- If acute re-infection occurs with fever and pain despite local treatment, treat with antibiotics as for acute otitis media (see section 4.2 “Acute Otitis Media”).

Referral

- All children who are vomiting, drowsy, or otherwise showing symptoms of illness
- Suspected mastoiditis—painful swelling behind the ear
- Patients who have persistent discharge for more than 4 weeks after beginning therapy
- Suspected TB in patients who have persistent drainage despite therapy
- Patients who have a large, central perforation or an evident mass in the middle ear

Prevention

- Ensure proper treatment of acute otitis media.
- Keep the ear dry.
- Avoid putting any type of foreign body in the ear.

Patient Instructions

- Have patient or caregiver demonstrate his or her ability to dry mop the ear.
- Return weekly for evaluation.
- Watch for any sign of complication such as spreading infection, intracranial involvement, or mastoiditis; return at first sign.

4.4. Acute Sinusitis

Description

Acute sinusitis is the inflammation and bacterial infection of one or more sinuses, usually after viral nasal infection, dental infection, or allergic rhinitis. It is uncommon in children younger than 5 years because their sinuses are not yet developed. If not properly treated, acute sinusitis may result in chronic sinusitis in adults and older children.

Diagnosis

- Nasal obstruction with loss of smell
- Persistent or intermittent purulent nasal discharge
- Headache or sometimes toothache
- Pain and tenderness over one or more sinuses (forehead or around the eyes)
- Possible fever

Note: Check any common cold that does not resolve or gets worse after 5–6 days for sinusitis.

Management

Nonpharmacologic

- Instruct the patient to maintain adequate hydration and drink plenty of fluids.
- Advise that steam inhalation may be effective at liquefying the mucus and removing nasal obstruction.
- Check for dental source; refer for extraction if you suspect a tooth source.

Pharmacologic

- Prescribe an antibiotic.
  - Amoxicillin oral every 8 hours for 10 days. Refer to table A3 in annex A for standard dosages.
    —OR—
  - For patients who are allergic to penicillin, erythromycin oral every 6 hours for 5 days, before meals. Refer to table A12 in annex A for standard dosages.
- Recommend the use of nose drops.
  - NaCl 0.9% (normal saline), as frequently as possible to clear discharge
- Prescribe an antihistamine.
  - Chlorpheniramine oral every 8 hours per day, but no longer than 5 days. Refer to table A7 in annex A for standard dosages.
- Recommend a pain and fever reliever.
  - Paracetamol oral every 6 hours per day until pain, fever, or both subside. Refer to table A15 in annex A for standard dosages.

Referral

- Poor treatment response after 5 days
- Complications such as dental abscess, periorbital cellulitis, or facial edema
- Fever lasting more than 2 days
- Recurrent sinusitis

4.5. Sore Throat

Description

Sore throat is a common symptom due to viral infections, bacterial infections, and other sometimes serious conditions (i.e., mononucleosis, diphtheria, and sexually transmitted diseases such as gonorrhea, syphilis, acute human immunodeficiency virus [HIV]).

Diagnosis and Management

The decision tree in figure 4.5 outlines the procedure for diagnosing and managing patients who have sore throat.

4.5.1. Viral Pharyngitis

Description

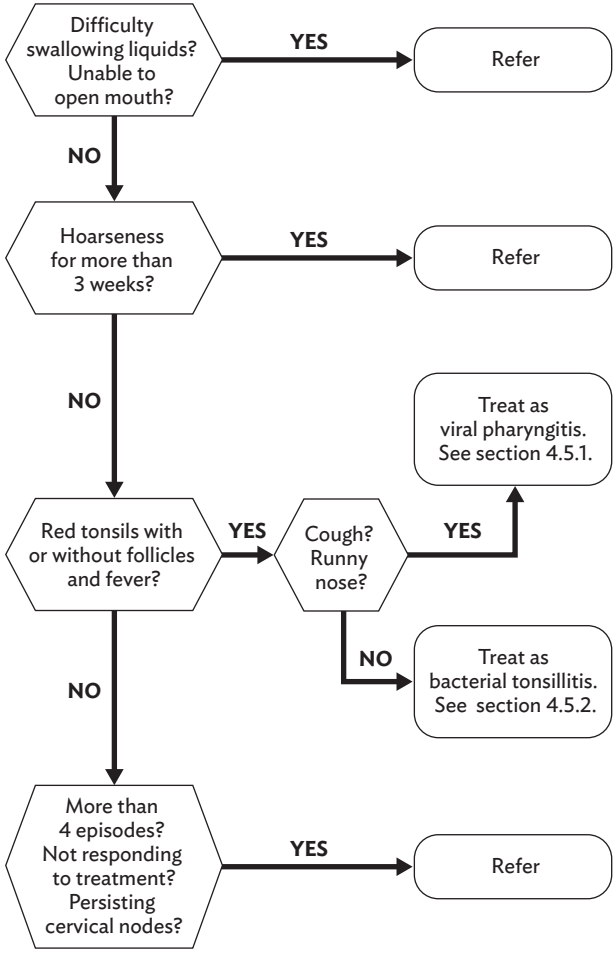
Viral pharyngitis, a painful red throat without purulence, is most commonly due to respiratory viruses and thus requires only symptomatic treatment.

Diagnosis

- Usually follows an episode of runny nose and cough
- Sore, red throat
- Difficulty swallowing solid food
- Fever
- No purulent exudates

Note: In children younger than 5 years, check for and exclude danger signs (see IMCI flipchart).

FIGURE 4.5 **Sore throat decision tree**



Management

Nonpharmacologic

- Recommend the use of a salt water gargle. Instruct patient to mix 1 teaspoon of salt in an 8-ounce (250 ml) glass of lukewarm water and to gargle with this solution for 1 minute 4–6 times a day.
- Encourage increased fluid intake.

Pharmacologic

- Do *not* give antibiotics.
- Recommend paracetamol until fever, pain, or both subside. Refer to table A15 in annex A for standard dosages.

4.5.2. Bacterial Tonsillitis

Description

Bacterial tonsillitis is commonly due to *beta-hemolytic streptococci* group A, especially in the 3- to 14-year age group, requiring antibiotics to prevent serious complications.

Diagnosis

- Sore throat
- Usually no runny nose or cough
- Mostly enlarged cervical lymph nodes, painful when touched
- White patches, exudates, or follicles on the throat
- Fever, often with sudden onset

Caution: If not treated properly, streptococcal throat infection can lead to serious complications such as the following:

- Acute glomerulonephritis (section 11.2)
- Acute rheumatic fever (section 6.3)
- Abscesses around the throat

Management

Because of the rather frequent complications if not appropriately treated (see section 6.3 "Rheumatic Fever"), this is one condition for which injectable retard penicillin is the medicine of choice to ensure full treatment and eradication of the infection.

- First-line treatment—Give a *single dose* of IM benzathine benzylpenicillin, which can be used as powder for injection 1.2 million IU in a vial of 5 ml:
  - Children less than 30 kg: 2.5 ml *deep* IM injection
  - Adults and children more than 30 kg: 5 ml deep IM injection

  —OR—
- Second-line treatment—Prescribe oral penicillin V (phenoxymethylpenicillin), powder for oral liquid 250 mg/5 ml, or 250 mg tablet *for 10 days*:
  - Children younger than 5 years: 250 mg/dose every 12 hours (1 tablet or 5 ml oral liquid)
  - Adults and children older than 5 years: 500 mg every 12 hours (2 tablets 250 mg or 10 ml oral liquid)

  —OR—
- For patients who are allergic to penicillin, prescribe erythromycin ethylsuccinate oral, powder for oral liquid (125 mg/5 ml), or tablet 400 mg, before meals for 5–7 days. (See also table A12 in annex A for standard dosages.)
- If patient has a high fever, give paracetamol until fever subsides. Refer to table A15 in annex A for standard dosages.

Referral

- See figure 4.5.
- In severe cases, especially in cases of peritonsillar abscesses, refer.

4.5. Sore Throat

EAR, NOSE, AND THROAT

4.6. Rhinitis

Description

Rhinitis is defined as an inflammatory condition that affects the nasal mucosa in which histamine and other mediator release leads to sneezing, nasal stuffiness, increased mucous production ("runny nose"), and associated symptoms. Causes of rhinitis include the following:

- Allergic rhinitis—Allergens such as pollens (mostly seasonal), dust, molds, food, and animal fur and dander trigger symptoms. Allergic rhinitis is the most common presentation of rhinitis. It is often seasonal and often runs in families.
- Nonallergic rhinitis—Medicines, hormones, weather and temperature change, smoke, fumes and chemicals (e.g., insecticides, bleaching powder, paints), and other inhaled irritants trigger symptoms. It is often a persistent form of rhinitis.
- Infectious rhinitis—Bacteria or viruses trigger symptoms (section 3.2 "Common Cold and Flu").

Diagnosis

- Most common signs and symptoms
  - Increased nasal discharge (i.e., runny nose)
  - Nasal congestion (i.e., stuffy nose)
  - Sneezing, itchy nose
- Associated signs and symptoms
  - Red, inflamed, teary, and swollen eyes and lids (conjunctiva)
  - Clogged ears; middle ear effusion
  - Swollen nasal mucosa
  - Diminished sense of smell
  - Fatigue
  - Cough, sore throat, headache—especially with infectious rhinitis
- Associated conditions (rare)
  - Asthma
  - Sinusitis
  - Eczema

Management

- Instruct the patient to maintain adequate hydration and drink plenty of fluids
- Suggest a salt water (normal saline 0.9% solution) rinse of nose to decrease mucous and congestion 3 times daily.
- Prescribe a systemic medicine.
  - Chlorpheniramine maleate. Refer to table A7 in annex A for standard dosages.
    - Children: as needed
    - Adults: 4 mg every 8 hours as needed

Referral

- Failure to improve after 1 week of treatment
- Recurrent symptoms—for consideration of long-term use of pharmaceutical prophylaxis

Prevention and Patient Instructions

- Advise patient to avoid recognized triggering factors.
- Ensure that patient does not overuse or abuse topical nasal decongestants (a common occurrence) to avoid rebound rhinitis.
- Chlorpheniramine and other antihistamines may cause drowsiness; advise patients to avoid driving or operating machinery when taking.
- Ask patient to return in 1 week if no improvement or condition worsens.
- Suggest patient reduce mold, dust, and mite (a tiny creature present in the dust of pillows, mattresses, carpets) concentration in the home by frequent cleaning and replacing old or soiled carpets and bedding.

4.6. Rhinitis

EAR, NOSE, AND THROAT

CHAPTER 5. EYE CONDITIONS

5.1. Conjunctivitis (Red Eye)

Description

Red eye is most commonly caused by conjunctivitis (i.e., inflammation of the membrane covering the inside of eyelids and white part of eyeball). The causes may be bacterial, viral, or allergic or from an irritation, injury, or foreign body. Untreated, conjunctivitis may lead to keratitis (i.e., a serious infection of membrane covering iris and pupil) and blindness. Infectious causes are easily spread from person to person.

Diagnosis

- In addition to redness, the patient may have mild pain, itching, and blurred vision. Usually the onset is gradual and slow.
- Examine eye for the following:
  - Visual acuity
  - Purulent discharge—usually seen with bacterial conjunctivitis
  - Watery discharge—usually seen with viral or allergic conjunctivitis
  - Cornea—clear or cloudy
  - Eyelid—swelling or foreign body. Check for evidence of follicles (i.e., small white or yellow raised dots) or scarring on the inside of the eyelid because they may be a sign of trachoma (see section 5.2); if present, refer.
  - Foreign body—Check for presence on the eye and under the eyelid.
- Differential diagnoses include corneal ulcer, keratitis, acute iritis, and glaucoma. These conditions, which usually present with sudden onset, severe pain, reduced vision, and cloudy or gray patch on cornea, may cause sudden blindness. They require *immediate* referral.

Management

Nonpharmacologic

- Clean eyes with clean (i.e., boiled) slightly warm water or sterile normal saline solution (0.9%) 4–6 times a day.
- Take away pus with a clean cloth or tissue, but never use the same cloth or tissue—
  - Twice
  - For both eyes
  - On another person

Pharmacologic

- For purulent drainage, prescribe tetracycline 1% eye ointment to be applied twice a day (after eating breakfast and before going to sleep) for 7 days. Show the patient how to apply a small amount of ointment correctly (see "Patient Instructions" below).
- For severe itching, consider chlorpheniramine. Refer to table A7 in annex A for standard dosages.

Referral

- All cases with change of vision
- All cases with clouding or ulcer of cornea
- Suspicion of keratitis, iritis, glaucoma, corneal ulcer, penetrating injury, or trachoma
- Failure to improve after 5 days of treatment with ointment
- *All* cases of suspected conjunctivitis in the neonate

Prevention

- Improve personal hygiene.
- Wash face and hands regularly.

- Do not share towels.
- Do not touch or rub the eyes.

Patient Instructions

- Teach the patient (or the patient's caregiver) how to correctly apply eye ointment when it is prescribed. Take the time to explain in detail how to apply the ointment, and have the patient (or the patient's caregiver) demonstrate competence to you. Instruct the patient to follow this procedure:
  - Wash your hands.
  - Sit in front of a mirror so you can see what you are doing.
  - Take the lid off the ointment.
  - Tip your head back.
  - Gently pull down your lower eyelid and look up.
  - Hold the tube above the eye and gently squeeze a 1 cm line of ointment along the inside of the lower eyelid, taking care not to touch the eye or eyelashes with the tip of the tube.
  - Blink your eyes to spread the ointment over the surface of the eyeball.
  - Your vision may be blurred when you open your eyes, but *do not* rub your eyes. Keep blinking the eyes until the blurring clears.
  - Wipe away any excess ointment with a clean tissue.
  - Repeat this procedure for the other eye if both eyes need to be treated.
  - Replace the lid of the tube.
  - Take care not to touch the tip of the tube with your fingers.
- Tell patient to come back if—
  - Viral or allergic conjunctivitis (watery discharge) starts producing purulent secretions
  - Sharp pain or photophobia develops
  - No improvement after 4–5 days

5.2. Trachoma

Description

Trachoma is a transmittable and chronic inflammation of the conjunctiva caused by infection called *Chlamydia trachomatis*. Initial infection is usually contracted during childhood through direct or indirect contact with dirty hands, dirty towels, or flies; it is self-limiting. Repeated infections lead to scarring, deformity, and blindness in adults.

Diagnosis

- Afghanistan is endemic for trachoma, so every case of conjunctivitis should be suspected to be trachoma.
- Turn both upper eyelids inside out and look for the signs of trachoma as listed in table 5.2.
- Differential diagnoses include conjunctivitis, keratitis, corneal ulcer, iritis, and glaucoma.

TABLE 5.2. Trachoma Diagnosis

Stage	Signs of Trachoma
1	Five or more follicles (i.e., whitish, gray, or yellow raised dots) can be seen on the inner surface of the eyelid.
2	Inflammation in addition to follicles is apparent. The eyelid is rough and thickened, and the normal blood vessels seen on the conjunctiva are masked by follicles and thickening.
3	Scars replace the follicles, presenting as white lines, bands, or patches on the inner surface and edge of the eyelid.
4	Deformity of the eyelid occurs from scarring. The deformity, which turns the eyelid inward, may cause corneal injury and ulceration.
5	Clouding of the cornea from chronic injury develops and may progress to blindness.

Management

Nonpharmacologic

- Clean eyes and face several times each day.
- Limit the density of flies through proper waste management.

Pharmacologic

- Treat follicles and inflammation (stages 1 and 2).
  - Prescribe 1% tetracycline eye ointment 2 times per day for 6 weeks. Treat not only the patient but also all family members. Teach the patient(s) (or the patient's caregiver) how to correctly apply eye ointment. See "Patient Instructions" in section 5.1, "Conjunctivitis."
  - If no improvement with tetracycline 1% eye ointment after 6 weeks, refer the patient to DH for treatment with azithromycin to take in a *single* dose:
    - Children: 20 mg/kg
    - Adults: 1 gram (can be given to pregnant women and lactating women)

Referral

- Evidence of progressive disease or corneal scarring requires referral.
- For stages 3, 4, and 5, refer the patient to hospital for possible surgery.

Prevention

- Improve personal hygiene.
- Wash face and hands regularly, at least daily, with soap and clean water.
- Do not share towels.
- Secure sources of clean water.
- Control flies by spraying and using proper waste management (i.e., keeping animals away from the house and using deep-covered toilets).

Patient Instructions

- Teach the patient and family members how to correctly apply 1% tetracycline eye ointment. See "Patient Instructions" in section 5.1, "Conjunctivitis."
- Patients and their families should regularly wash their faces and hands at least daily with soap and clean water. The patient should not share towels with other family members.

5.3. Glaucoma

Description

Glaucoma is an eye disease in which the optic nerve is damaged. It is usually associated with increased intraocular pressure, which results in loss of vision. There are three type of glaucoma: acute, chronic, and congenital.

Diagnosis

- Acute (closed angle) glaucoma
  - Progressive, unilateral visual loss
  - Periocular pain (often severe)
  - Congestion (i.e., dull red all over the eye)
  - Watery discharge
  - Nausea and vomiting in severe cases
  - Cornea cloudiness and edema
  - Patient may see colored haloes around lights (bright rings)
  - Pupil may be fixed, semi-dilated, and oval-shaped
  - Shallow anterior chamber

  Caution: Acute glaucoma is a *sight-threatening* emergency. Its onset may be sudden.
- Chronic (open angle) glaucoma
  - Typically both eyes affected (bilateral)
  - Gradual vision loss
  - Older patients (more than 40 years)
  - Sluggish reaction of the pupil

- Congenital glaucoma
  - Typically both eyes affected
  - Gradual visual loss
  - Corneal clouding
  - Watery discharge
  - Photophobia
  - Involuntary spasmodic winking of the eyelid (blepharospasm)
  - Buphthalmos (i.e., large eye with bluish appearance)

Management

- Refer *all* patients who have suspected glaucoma. ***Caution:*** All cases of painful eye with loss of vision should be considered an ophthalmologic emergency and be referred to hospital.
- Keep patient in supine position during transport (when possible).

Patient Instructions

- Ensure that patients and family keep referral appointments.
- Instruct patients and community regarding eye safety during use of machinery and at-risk activities.

CHAPTER 6. CARDIOVASCULAR SYSTEM CONDITIONS

6.1. Systemic Hypertension

6.1.1. Chronic Hypertension

Description

Chronic elevation of blood pressure (BP) more than 140/90 mmHg is called hypertension (HTN). In 90–95% of patients, etiology is unknown (essential HTN or primary HTN). In 5–10% the cause is known (secondary HTN). The objective of the treatment of chronic HTN is to prevent long-term complications (e.g., cardiac disease or stroke) from HTN.

Diagnosis

- Determine the degree or classification in 3 different BP measurements, 2 days apart in a patient at rest in a sitting or reclined position. (See table 6.1.1A.) If BP is abnormal, take in both arms.
- Determine the patient's other risk factors for HTN and cardiovascular disease that influence the long-term prognosis:

TABLE 6.1.1A. Classification of Hypertension

BP Classification	Systolic BP (mmHg)	Diastolic BP (mmHg)
Normal	<120	<80
Pre-HTN	120–139	80–89
Stage 1 HTN (mild)	140–159	90–99
Stage 2 HTN (moderate)	160–179	100–109
Severe HTN	≥180	≥110

- Diabetes mellitus
- Obesity
- Smoking
- Blood lipid disorders (Dyslipidemia)
- Family history of primary HTN or premature cardiovascular disease in men younger than 50 years and in women younger than 55 years
- Physical inactivity

- Determine the patient's pre-existing diseases that affect prognosis:
  - Left ventricular hypertrophy
  - Ischemic heart disease (angina or prior myocardial infarction)
  - Heart failure
  - Transient ischemic attacks
  - Stroke
  - Chronic renal impairment
  - Retinopathy
  - Peripheral arterial disease
- Examine the patient for the symptoms and signs of HTN.
  - Symptoms
    - Mild to moderate primary HTN is largely asymptomatic for many years. The most frequent symptom is headache, which is nonspecific.
    - Severe HTN may be associated with somnolence, confusion, visual disturbances, nausea, and vomiting and with palpitations, unstable angina, pulmonary edema, and renal failure.
    - Untreated chronic HTN often leads to left ventricular hypertrophy, which can present with exertional dyspnea, paroxysmal nocturnal dyspnea, and other symptoms of secondary causes.
  - Signs
    - Duration, severity, and degree of effect on target organs are primary signs.
    - High BP maybe the only sign. BP is taken in both arms and at rest (preferably 3 measurements at rest, at least 2 days apart). Never decide a patient has HTN based on one isolated elevated BP measurement.
    - In secondary HTN, symptoms of the primary disease may be noted (e.g., Cushing's syndrome, polycystic kidney).
    - In stroke patients who have neurological signs and symptoms (e.g., weakness or paralysis of one side of the body) complications such as hypertensive heart disease may be present.
    - Retina artery damage (grade I, II, III, IV) may also indicate HTN.

Management

The goal is to achieve and maintain the target BP. (See table 6.1.1B for a summary of nonpharmacologic and pharmacologic management of HTN.)

- In most cases, the target BP should be—
  - Diastolic below 90 mmHg
  - Systolic below 140 mmHg
- In special cases (e.g., diabetic patients or patients who have cardiac or renal impairment), the target BP should be—
  - Diastolic below 80 mmHg
  - Systolic below 130 mmHg

Nonpharmacologic

Lifestyle changes for all patients who have HTN include the following:

- Restrict salt intake.
- Lose weight, if overweight.
- Stop smoking.
- Stop alcohol consumption.
- Get regular physical exercise.

6.1. Systemic Hypertension

TABLE 6.1.1B. Management of Hypertension

Classification	Treatment	Desired Effect
Step 1		
▪ Diastolic BP 90–99 mmHg, systolic BP 140–159 mmHg, or both ▪ No major risk factors present ▪ No existing concomitant disease present	Nonpharmacologic treatment (see above)	BP falls below 140/90 mmHg within 3 months of starting treatment (i.e., controlled BP)
Step 2		
▪ Diastolic BP 90–99 mmHg, systolic BP 140–159 mmHg, or both ▪ No major risk factors present ▪ No existing concomitant disease present ▪ Failure of step 1 after 3 months **—OR—** ▪ Diastolic BP 90–99 mmHg, systolic BP 140–159 mmHg, or both ▪ Major risk factors or existing concomitant disease present **—OR—** ▪ Diastolic BP 100–109 mmHg, systolic BP 160–179 mmHg, or both	Nonpharmacologic treatment **—PLUS—** Oral hydrochlorothiazide tablets, 12.5 mg in the morning, daily ***Caution:*** See contraindications above.	BP falls below 140/90 mmHg within 1 month of starting treatment (i.e., controlled BP)

TABLE 6.1.1B. Management of Hypertension (CONTINUED)

Classification	Treatment	Desired Effect
Step 3		
▪ Failure step 2 after 1 full month of treatment **—OR—** ▪ Diastolic BP ≥110 mmHg, systolic BP ≥180 mmHg, or both	Nonpharmacologic treatment **—PLUS—** Oral hydrochlorothiazide tablets, 12.5 mg in the morning, daily **—PLUS—** Oral atenolol, 25 mg (up to 100 mg) once daily ***Caution:*** See contraindications above.	BP falls below 140/90 mmHg within 1 month of starting treatment (i.e., controlled BP)
If BP has not been normalized after 1 month on treatment step 3, refer patient for further evaluation and therapeutic options.		

CARDIOVASCULAR

- Restrict saturated fat intake (i.e., butter, animal fat).
- Increase unsaturated fat intake (i.e., olive oil, fruits, vegetables).

Pharmacologic

Use when lifestyle changes and nonpharmacologic interventions are not successful.

- First-line therapy—hydrochlorothiazide: 12.5–25 mg daily, in the morning
  Caution: Contraindicated in patients who are pregnant or who have renal disease, gout, or severe liver disease.
- Second-line therapy (if a 1-month trial of first-line therapy fails)—atenolol: 25–50 mg once daily (to a maximum dose of 100 mg once daily)
  Caution: Atenolol is *absolutely* contraindicated in patients who have asthma and chronic obstructive pulmonary disease and *relatively* contraindicated in

patients who have heart failure, bradycardia (less than 50/minute), diabetes mellitus, and peripheral vascular disease.

Further therapeutic options may include the following:

- A diuretic administered alone controls BP in 50% of patients who have mild to moderate HTN and can be used effectively in combination with other agents. Oral hydrochlorothiazide (12.5–50 mg daily preferably in the mornings) may be prescribed if not contraindicated.
  Note: If renal function was disturbed, furosemide could be administered (initial dose: oral 40 mg in morning; maintenance: 20–40 mg daily). Furosemide is available in CHCs and DHs.
- A beta-adrenergic blocking agent may be used. Atenolol is a beta-blocking agent; the initial treatment dose of 25 mg once daily can be increased to up to a maximum of 100 mg once daily if not contraindicated. Atenolol is available in CHCs and DHs.
- Angiotensin-converting enzyme (ACE) inhibitors may be prescribed. The starting dose for captopril is 25 mg every 12 hours. Captopril is available in regional hospitals.
- Calcium channel blockers, such as amlodipine, may be prescribed at a dose of 5 mg once daily.

Referral

- Refer the following cases *before* initiating pharmacological treatment:
  - Children and young adults (younger than 30 years)
  - Pregnant women (see section 9.3 “Hypertension Disorders of Pregnancy”)
- Refer all of the following for more specialized investigation and care:
  - Patients not responding adequately to step 3 after 1 month of treatment
  - Patients showing signs of organ damage such as angina pectoris, dyspnea, edema, or proteinuria
  - Patients showing severe side effects of the medicines

Patient Instructions

- Restrict salt intake. Do not add salt at the table.
- Lose weight.
- Restrict fatty diet.
- Stop smoking.
- Stop consuming alcohol.
- Take medication daily.
- Come back weekly for BP check until BP is well controlled; then every 2 months. Take the medication the morning of the visit.
- Get regular, moderate physical exercise.
- Avoid stress and other risk factors (see above).

6.1.2. Hypertension Emergency

Hypertension (HTN) with diastolic blood pressure (BP) more than or equal to 130, systolic BP more than or equal to 180, or both that is associated with any of the following constitutes an emergency:

- Unstable angina pectoris (see section 6.4 “Angina Pectoris”)
- Grade 3 or 4 hypertensive retinopathy
- Neurological signs: severe headache, confusion, visual disturbances, seizures, decreased consciousness, or coma
- Pulmonary edema (see section 16.1 “Acute Pulmonary Edema”)
- Renal failure

6.1. Systemic Hypertension

CARDIOVASCULAR

Management

Treat patient and **URGENTLY REFER.**

- Treat emergency conditions: pulmonary edema, cardiac ischemia, and coma.
- Give nifedipine: one tablet 10 mg. Repeat after 1 hour for BP more than 180/130.
  —OR—
- Give captopril (if available) tablet 25–50 mg.

Referral

All HTN emergencies need immediate **URGENT REFERRAL.**

6.2. Cardiac Failure

Description

Cardiac, or heart, failure is a condition in which the heart is unable to pump sufficient blood for metabolizing tissues, or it is the inability of the heart to maintain adequate cardiac output to meet the demands of the body. It can result from conditions that depress ventricular function (e.g., coronary artery disease, hypertension, dilated cardiomyopathy, valvular heart disease, or congenital heart disease) and from conditions that restrict ventricular filling (e.g., mitral stenosis, restrictive cardiomyopathy, or pericardial disease).

Acute precipitating factors include the following:

- Increased sodium intake
- Arrhythmia
- Infection
- Anemia
- Thyrotoxicosis
- Pregnancy

Diagnosis

Signs and symptoms are related to whether the right, left, or both sides of the heart are affected:

- Left-side failure—principally from fluid backing up in the lungs
  - Dyspnea or tachypnea (may first appear when patient assumes supine position)
  - Cough—heart failure may be confused with respiratory infection, especially in infants and children
  - Fatigue
  - Nocturia
  - Crackles
  - Tachycardia, gallop rhythm, or heart murmur—depending on underlying cause
- Right-side failure
  - Peripheral edema
  - Hepatomegaly, ascites
  - Fatigue, nocturia
  - Jugular-venous distension
  - Tachycardia, gallop rhythm, or heart murmur—depending on underlying cause
- Right- and left-side failure
  - Combination of above signs and symptoms
  - Infants may demonstrate poor feeding and sleeping

Chest X-ray (when available) may demonstrate cardiomegaly with or without pulmonary congestion.

Management

Nonpharmacologic

- Advise bed rest to reduce the demand on the heart, and to reduce lung congestion as well, the sitting position in bed is recommended.
- Encourage a low-salt diet (i.e., limit intake to no more than 2 g salt per day) and good general nutrition.
- Advise weight reduction if patient is obese.
- Instruct the patient to stop smoking.
- Encourage regular, moderate exercise within the limits imposed by the patient's symptoms.

Pharmacologic

- Correct reversible causes such as myocardial ischemia (see section 6.4 "Angina Pectoris"), hypertension (see section 6.1 "Systemic Hypertension"), arrhythmia, or cardiomyopathy.
- Prescribe diuretic therapy, which is the most effective means of providing symptomatic relief to patient who has moderate to severe cardiac failure.
  - Prescribe hydrochlorothiazide 25–100 mg once (mild). ***Caution:*** Contraindicated in pregnancy, renal disease, gout, and severe liver disease.
    —OR—
  - Prescribe oral furosemide.
    - Initial dose: 20–80 mg per dose
    - Maintenance dose: 20–40 mg/dose every 6 to 8 hours to desired effect
      —OR—
  - Prescribe IV or IM furosemide injection.
    - 10 to 20 mg once over 1 to 2 minutes.
    - A repeat dose similar to the initial dose may be given within 2 hours if response is inadequate.
    - Following the repeat dose, if response remains inadequate after another 2 hours, the last IV dose may be raised by 20–40 mg until effective diuresis is achieved.
- Prescribe a combination of angiotensin-converting enzyme (ACE) inhibitor **PLUS** diuretics. All patients who have heart failure should be on ACE-inhibitor unless contraindicated.
  Caution: Pregnancy is a contraindication.
  - Prescribe captopril 6.25–12.5 mg every 8 hours.

Referral

- All severe cases of heart failure (e.g., pulmonary edema; see section 16.1 "Acute Pulmonary Edema") must be referred. Start treatment before referral:
  - Initiate emergency care with oxygen and IV furosemide (1 mg/kg) when available.
  - Avoid giving IV fluids.
- All newly diagnosed heart failure cases must be referred for further tests and therapeutic options.
- New complications of heart failure (e.g., arrhythmia, progression of disease, new signs and symptoms) must be referred.

6.3. Rheumatic Fever

Description

Rheumatic fever is an acute systemic immune process occurring 1–3 weeks after a streptococcal throat infection, commonly in children 3–15 years old. Streptococcal skin infections are not associated with rheumatic fever. The best way to prevent rheumatic fever is to treat promptly and properly any episode of acute streptococcal infection (see section 4.5.2 "Bacterial Tonsillitis").

Long-term prophylaxis treatment against further attacks of rheumatic fever can decrease the long-term damage.

Diagnosis

Rheumatic fever signs and symptoms may include the following:

- Fever
- Painful and red, hot, swollen joints
  - Most often the ankles, knees, elbows, or wrists; less often the shoulders, hips, hands, and feet
  - May involve multiple joints or migrate from joint to joint
- Cardiac disease
  - May include endocarditis, heart failure, valvular disease (heart murmur upon auscultation)
  - May include arrhythmia or a sensation of rapid, fluttering, or pounding heartbeats (palpitations)

CARDIOVASCULAR

- Small, painless nodules beneath the skin (subcutaneous nodules); infrequent
- Fatigue
- Flat or slightly raised, painless rash with a ragged edge (erythema marginatum); infrequent
- Chorea: jerky, uncontrollable body movements (Sydenham's chorea or Saint Vitus Dance); most often in the hands, feet, and face; rare. Unusual behavior, such as crying or inappropriate laughing; infrequent

Management

Objectives:

- Prevent rheumatic fever disease by early and proper treatment of streptococcal throat infection.
- Limit damage or further damage by preventing recurrent attacks of rheumatic fever disease through a prophylaxis treatment.
- Treat inflammation, heart disease, and other symptoms.

Nonpharmacologic

Patient should be kept at strict bed rest until—

- The temperature returns to normal
- Resting pulse rate is normal (under 100/minute in children)

Pharmacologic

- Initiate pharmacologic treatment for all patients who have confirmed rheumatic fever and—
  - Carditis and persisting heart disease. These patients need 10 years of treatment after the last episode of acute rheumatic fever, or until the age of 45, whichever is longer.
  - Rheumatic valvular disease. These patients need 10 years of treatment after the last episode of acute rheumatic fever, or until the age of 25, whichever is longer.
  - No rheumatic valvular disease. These patients need 5 years of treatment or until the age of 21, whichever is longer.
- Prescribe the following medications for duration according to the protocol above.
  - First choice of treatment: benzathine benzylpenicillin, powder for IM injection, 1.2 million IU in a vial of 5 ml. Give 1 IM injection *every 4 weeks*. For high-risk patients or patients who are still having recurrences of rheumatic fever, give the IM injection every 2 or 3 weeks.
    - Children less than 30 kg: 2.5 ml deep IM (i.e., 600,000 IU)
    - Adults and children more than 30 kg: 5 ml deep IM
      Caution: Avoid using IM injection for patients who are taking warfarin.

    —OR—
  - When injections are contraindicated, give oral penicillin V (phenoxymethylpenicillin). Use powder for oral liquid 250 mg/5 ml, or tablet 250 mg.
    - Children younger than 5 years: 125 mg every 12 hours (1/2 tablet or 2.5 ml) *every day*
    - Adults and children older than 5 years: 250 mg every 12 hours (1 tablet or 5 ml) *every day*

    —OR—
  - If patient is allergic to penicillin, give oral erythromycin. Use powder for oral liquid, 100 mg/5 ml, or 250 mg erythromycin stearate, base, or estolate tablet (which is equivalent to 400 mg erythromycin ethylsuccinate tablet).
    - Children younger than 5 years: 125 mg every 12 hours (1/2 tablet or 2.5 ml) before meals, *every day*
    - Adults and children older than 5 years: 250 mg every 12 hours (1 tablet or 5 ml) before meals, *every day*

6.3. Rheumatic Fever

CARDIOVASCULAR

- Treat inflammation
  - Give oral acetylsalicylic acid (aspirin). Advise patient to take during meals to prevent gastric irritation.
    - Children older than 5 years: 10–20 mg/kg/dose every 6 hours for 2–4 weeks (until fever and joint swelling subside). Caution: Do *not* give aspirin to children younger than 5 years because of the risk of Reye's syndrome.
    - Adults: 500 mg every 6 hours for 2–4 weeks (until fever and joint swelling subside)

Referral

- All suspected cases for confirmation
- All complicated cases suspected of heart disease for further investigation and treatment options
- Patients who have a poor response to treatment
- Patients who have no tolerance or for whom aspirin is contraindicated
- Patients who have other complications (e.g., chorea)

Prevention

- Ensure prompt and appropriate antibiotic treatment of streptococcal throat infection (see section 4.5.2 "Bacterial Tonsillitis").
- Continue prophylaxis treatment until age limits (see above).
- Inform patient of possible symptoms of complications (e.g., heart disease, heart failure, and other symptoms as described above).

6.4. Angina Pectoris

Description

Angina pectoris can present as a stable or unstable form:

- *Stable angina pectoris:* Angina pectoris is a clinical syndrome characterized by paroxysmal chest pain due to transient myocardial ischemia. Chest pain is precipitated by stress or exertion and relieved rapidly by rest or sublingual nitrate. The most common cause is atherosclerosis; however, angina may occur in aortic stenosis and hypertrophic cardiomyopathy.
- *Unstable angina pectoris:* Unstable angina is usually characterized by new onset severe angina or sudden worsening of previously stable angina and may not be relieved by sublingual nitroglycerin.

Diagnosis

- Symptoms
  - Patient has chest pain, a sensation of tightness, squeezing, burning, pressing, hooking, aching, or gas indigestion. The pain is located behind or slightly to the left of the mid sternum.
  - Pain may radiate to the jaw or left shoulder and upper arm, and move down the inner arm to the elbow, forearm, wrist, or four and fifth finger. The pain maybe associated with dizziness or fainting.
  - Exclude other causes of chest pain.
- Signs
  - During attack, patient looks anxious, dyspneic, and pale; cold sweats may also be present.
  - ECG between attacks maybe normal; during attack, ECG shows ST segment depression and T wave inversion.

Management

Nonpharmacologic

- Do not smoke.
- Aim for ideal body weight.
- Avoid vigorous exercise after heavy meal or in very cold weather, and stress.

Pharmacologic

- Prescribe sublingual nitroglycerin (0.5 mg sublingual tablet) to be repeated after 5 minutes if needed (not more than 3 times). Nitroglycerin causes coronary vasodilatation and acts in about 1–2 minutes. It is available at regional hospitals and district hospital.
- Give an aspirin dose of 81–325 mg orally once a day beginning as soon as unstable angina is diagnosed and continuing indefinitely.
- Prescribe isosorbide dinitrate, which is available in DHs.
  - In acute attack, give initial dose of 2.5 mg sublingual tablet once, and repeat as needed as soon as the tablet has dissolved. The dose may be doubled and titrated upward as tolerated. The onset of action is within 3 minutes.
  - In chronic angina and as maintenance dose, give 10-40 mg sustained release tablet every 12 hours. Sustained release preparations, if available, are preferred for patient tolerance.
  - Prescribe atenolol 50–100 mg daily for chronic angina.
    Caution: Atenolol is *absolutely* contraindicated in patients who have asthma and chronic obstructive pulmonary disease and *relatively* contraindicated in patients who have heart failure, bradycardia (fewer than 50 beats/minute), diabetes mellitus, and peripheral vascular disease.

    Note: Unstable angina could be treated like myocardial infarction. See following section on Acute Myocardial Infarction

Referral

Refer all patients who have recurrent or persistent chest pain for additional investigation, including an exercise tolerance test and coronary angiography, and for treatment.

Patient Instructions

- Do not smoke.
- Restrict fatty diet (e.g., saturated fats, nuts).
- Avoid heavy exertion, heavy meals, and cold weather.
- Get regular exercise and activity.

6.5. Acute Myocardial Infarction

Description

Acute myocardial infarction (AMI) is acute ischemic necrosis of an area of myocardium caused by complete or partial occlusion of a coronary artery.

Diagnosis

Note: Not all symptoms and signs need to be present, and 25% of AMIs do not give any clear clinical signs.

- The primary clinical sign is severe chest pain similar to angina:
  - Retrosternal or epigastric
  - Crushing or burning
  - Radiating to the neck, the inner part of the left arm, or both
  - Persisting more than 30 minutes
  - Occurring at rest
- Other signs that may be present include the following:
  - Paleness
  - Sweating
  - Irregular heartbeat

CARDIOVASCULAR

- Anxiety
- Difficulty breathing, indicating cardiac failure (see section 6.2 "Cardiac Failure")

Note: Rest and sublingual nitroglycerine will not completely relieve chest pain.

Management

Prepare for referral.

Nonpharmacologic

- Activity:
  - Complete bed rest for the first 12 hours
  - Sitting upright or in a chair within 24 hours if no hypotension
- Diet:
  - Nothing by mouth or only clear liquids by mouth for the first 4–12 hours because of the risk of vomiting and aspiration
  - A bedside commode facility should be available; give laxative for constipation.

Pharmacologic

- Give cardiopulmonary resuscitation, if necessary.
- To reduce blood clotting, give aspirin *immediately*: 325 mg orally. If a solid dose formulation is used, the first dose should be chewed, crushed, or sucked.
- For pain relief, give sublingual nitroglycerine tablet (available in regional and DHs): 0.5 mg every 5 minutes up to 3 doses.

  —OR—
- Give isosorbide dinitrate sublingual tablet (available in DHs): 5 mg every 5–10 minutes as needed for pain to a maximum of 5 tablets.
- If patient has no response to pain relievers, give morphine 4–8 mg *slow* (1 mg/minute) IV injection (0.4–0.8 ml of a vial of 10 mg/ml).
- Open an IV line, and **REFER URGENTLY** to hospital.

Referral

Refer all AMI cases **URGENTLY**.

Patient Instructions

- Stop smoking.
- Stop consuming alcohol.
- Control blood pressure and blood sugar.
- Do not lift heavy weights.
- Reduce body weight.
- Resume sexual intercourse after 6 weeks.
- Return to work after 6–8 weeks.
- Get regular follow-up care from physician.

6.5. Acute Myocardial Infarction

CARDIOVASCULAR

CHAPTER 7. CENTRAL NERVOUS SYSTEM DISORDERS

7.1. Epilepsy

Description

The term *epilepsy* denotes any disorder characterized by *recurrent* seizures. A seizure is a transient disturbance of cerebral function due to an abnormal paroxysmal neuronal discharge in the brain. Epilepsy, which is often associated with social, psychological, legal, and cultural misperceptions, has several forms and causes.

- Idiopathic epilepsy—No specific cause can be identified.
- Symptomatic epilepsy—Provoking factors, such as the following, can be identified:
  - Intracranial infection such as bacterial meningitis, injury, mass lesion, or stroke
  - Metabolic disorders such as uremia, hypoglycemia and hyperglycemia, hypocalcemia, liver failure, or other disorders
  - Drug or alcohol use or withdrawal

Diagnosis

Never diagnose epilepsy based on only 1 seizure; 10% of all people have 1 seizure during their lifetimes. Key in the diagnosis of epilepsy is that the patient has 2 or more seizures without any clear cause (i.e., with none of the provoking factors listed above); 70% of patients who have had 2 seizures will have a third one.

Careful history-taking is important.

- Take a medical history to include the following:
  - A detailed description of at least the 2 last seizures
  - Family history of seizures
  - Perinatal history
  - Development during childhood
  - Management of previous seizures
- Take a social history to assess the patient's supportive environment.

A careful physical examination will determine the following:

- Whether a treatable condition is present. Excluding any treatable condition that might be a provoking factor of the present seizure (see the list of provoking factors above) is important.
- The classification of the seizure. Seizures may be classified as—
  - Generalized (grand mal) or tonic-clonic: myoclonic jerking
  - Absence (petit mal): brief loss of consciousness and flaccid muscles
  - Partial or focal: localized involvement to one part of the body
- Associated events. A seizure may be associated with—
  - Pre-seizure aura—a warning signal that a seizure is imminent (usually known by the patient); the aura may be visual or auditory, or it may be a taste, smell, or somatic sensation
  - Cyanosis, salivation, tongue biting, or loss of bowel and bladder control
  - Either rapid or slow recovery; patients may rapidly recover or may have prolonged period of somnolence, confusion, or headache
  - Abnormal behavior or mood alteration (infrequent association)

7.1. Epilepsy

NERVOUS SYSTEM

7.1. Epilepsy

Management

Nonpharmacologic

- During the seizure—
  - Move the person away from danger (e.g., fire, water, machinery).
  - Ensure that the airway is clear.
- After the seizure stops—
  - Turn the patient into the recovery position (i.e., semi-prone).
- Person may be drowsy and confused for 30–60 minutes and should not be left alone until fully recovered.

Pharmacologic

- Give oxygen (if available) to prevent cerebral hypoxia.
- Give diazepam.
  - Children younger than 10 years
    - Give diazepam rectally.
      - Use a TB or insulin syringe; draw the appropriate diazepam dose; *take out the needle* and insert the syringe 4–5 cm into rectum before emptying. Squeeze buttocks together for 2–3 minutes.
      - Refer to table A9 in annex A for standard dosages.

      —OR—
    - Give IV diazepam (over 10 minutes). Refer to table A9.
  - Adults and children older than 10 years
    - Give IV anticonvulsant diazepam. Refer to table A9 in annex A for standard dosages.
      Caution: Monitor for respiratory depression or arrest.

      —OR—
    - Injection can be IM (same initial dose) and repeated once in 3-4 hours if necessary.

Referral

- All new patients who are suspected of epilepsy for diagnosis and initiation of therapy by a doctor or specialist
- All new epileptic patients after first dose of diazepam as soon as possible
- Patients who have had an increase in the number or frequency of seizures or changes in the seizure type
- All women who are known epileptics and who are pregnant for possible adjustment in medication during the pregnancy
- Patients who have developed neurologic signs or symptoms
- Patients experiencing adverse drug reactions or suspected toxicity
- Patients who have been seizure-free on therapy for 2 years or longer—for review of therapy

Note: When referring patients, always provide detailed information about the seizure:

- Number and frequency of seizures (per month or per year)
- Date of first seizure ever and dates of most recent seizures
- Classification of seizure
- Description of seizure
  - Specifically—
    - Were most of the recent seizures preceded by auras?
    - Was there complete loss of consciousness?
    - What happened during the seizure (step by step)?
  - Generally—
    - How long do the patient's seizures usually last?
    - What does patient feel or do after the seizure?
    - How long does it take the patient to recover from the seizure?

NERVOUS SYSTEM

- Family history of seizures
- Medication or substance abuse history, including alcohol and illicit drugs
- Name and dosage of anti-epileptic medicines the patient takes and whether the patient adheres well to treatment

Prevention

- Advise good adherence to anti-epileptic medicines.
- Counsel the patient and his or her family about the disease to minimize social stigma and promote normal life.
- Prevent and adequately treat conditions that may provoke seizures.

Patient Instructions

- Keep a seizure diary to include the information listed in "Referral" above, and bring it to the clinic and referral visits.
- Return for recurrent seizures or new signs or symptoms.
- Avoid driving, using heavy machinery, and alcohol or drug use if taking anticonvulsants.

7.2. Encephalitis and Meningitis

Description

Acute infection or inflammation of the central nervous system (CNS) and meninges may be caused by bacteria, viruses, fungus, parasitic organisms, or may be from a post-infection inflammation. Any patient who has the possibility of infection or inflammation of the CNS and meninges should be considered to be a *medical emergency* that requires prompt and focused case evaluation and management and **REFERRAL** to hospital.

Infections or inflammation may involve isolated or a combination of CNS structures.

- *Meningitis*: Infection of the coverings of the brain or spinal cord
  - Most often from bacteria (*Pneumococcus*, *Meningococcus*, *H. Influenza*, mixed gram-negative [neonates]), or virus
- *Encephalitis*: Infection or inflammation of the brain itself; may be associated with complications such as intracerebral bleeding or ischemia
  - Often from virus (wide variety) or a post-virus inflammation
  - May be from bacteria, fungus, parasites (especially in immunosuppressed patient)

Note: TB infection may involve any of the CNS structures and typically presents less acutely.

Diagnosis

Note: For children younger than 5 years, follow IMCI flipchart.

Infections or inflammation of the CNS may present slowly or very quickly—leading to life-threatening illness. Meningitis typically presents the most acutely and dramatically, but there is a wide spectrum of symptoms and speed of onset of symptoms whenever CNS structures are involved.

The spectrum of symptoms may include the following:

- Headache
- Fever or malaise
- Seizure
- Focal or generalized weakness
- Neck pain or stiffness—
  - Brudzinski's sign: neck flexion in a supine patient results in involuntary flexion of the knees and hips
  - Kernig's sign: attempts to extend the knees are met with strong passive resistance, neck pain, or both

7.2. Encephalitis and Meningitis

NERVOUS SYSTEM

- Altered mental status. Patients presenting with confusion or coma should be considered suspect for infection of the CNS until proven otherwise. Other causes of altered mental status include the following:
  - Cerebral malaria—check smear and rapid test on patients
  - Metabolic abnormalities
    - Hypoglycemia—check glucose on all patients.
    - Hyperglycemia or diabetic ketoacidosis—check glucose.
    - Hypertensive crisis—check blood pressure.
    - Head injury or stroke—obtain history.
    - Drug induced—obtain history including alcohol, opiate, or other drug use (including overdose).
    - Renal or liver failure. Refer for laboratory tests if suspect.
- Purpura or petechia—associated with some cases of meningococcal meningitis
- In infants (i.e., children younger than 1 year) and generally in children younger than 5 years, the symptoms are nonspecific and include the following:
  - Irritability
  - Refusal to eat, poor sucking, vomiting, diarrhea
  - Drowsiness, weak cry
  - Decreased muscle tone (i.e., hypotonia)
  - Bulging fontanel when at rest
  - Coma or seizures

    Caution: Check for general danger signs, and if present, treat as a "very severe disease" following the IMCI flipchart.

Management

Because treatment of infections of the CNS often requires medicines and other interventions not available at BPHS facilities, patients should be stabilized, treated with a first dose of appropriate, available antibiotic, and *referred* to hospital.

- Stabilize the patient.
  - Give oxygen as needed, if available.
  - Start IV line and begin hydration.
  - Protect the patient from injury during seizures.
  - Ensure airway is clear if the patient has a seizure.
- Provide seizure control. Give diazepam.
  - Children younger than 10 years
    - Give diazepam rectally.
      - Use a TB or insulin syringe; draw the appropriate diazepam dose; *take out the needle* and insert the syringe 4–5 cm into rectum before emptying. Squeeze buttocks together for 2–3 minutes.
      - Refer to table A9 in annex A for standard dosages.

      —OR—
    - Give IV diazepam (over 10 minutes). Refer to table A9.
  - Adults and children older than 10 years
    - Give IV anticonvulsant diazepam. Refer to table A9 in annex A for standard dosages.

      Caution: Monitor for respiratory depression or arrest.

      —OR—
    - Injection can be IM (same initial dose) and repeated once in 3-4 hours if necessary.
- Give emergency antibiotics: ampicillin **PLUS** gentamicin
  - Children younger than 5 years
    - Ampicillin IM. Refer to table A4 in annex A for standard dosages.

      —PLUS—

7.2. Encephalitis and Meningitis

NERVOUS SYSTEM

- Gentamicin IM. Refer to table A13 in annex A for standard dosages.

- Adults and children older than 5 years
  - Ampicillin IM or slow IV injection 500 mg up to 1 g vial every 6 hours
    —PLUS—
  - Gentamicin IM or slow IV 2 mg/kg as loading dose (i.e., 3 ml to 4 ml of vial containing 80 mg, followed by maintenance dose 1–1.7 mg/kg per dose every 12 hours)

- Control fever if it is 38.5°C or higher.
  - Give patient a tepid sponge bath.
  - Give paracetamol. Refer to table A15 in annex A for standard dosages.
- Prevent low blood sugar in children younger than 5 years. Feed child with breast milk or sugar water.
- Treat for cerebral malaria if smear positive or presence of danger signs of very severe febrile disease for children younger than 5 years in malaria-endemic zone (see section 15.7 "Malaria").

Prevention

Ensure all individuals have been properly immunized and enrolled in EPI.

Patient Instructions

- Transfer patient accompanied by medical staff, if available.
- Review airway management and seizure management with caregivers assisting with transport.
- Monitor family members and close contacts for symptoms of meningitis.

CHAPTER 8. MENTAL HEALTH CONDITIONS

Description

Psychological and mental disorders are often much more common than is generally recognized—presenting as a consequence of a stressful or traumatic life event, as the result of an imbalance of essential neurotransmitters, or both. Often patients who have mental health issues present with somatic complaints. Equally, patients who have underlying organic problems may manifest themselves with psychological symptoms—so it is essential to *exclude organic problems* as a root cause of psychological symptoms.

Psychological disorders may be divided into disorders present with symptoms of—

- Mood change (i.e., depression or mania)
- Anxiety states (i.e., panic or fearful feelings that disrupt normal life and behavior)
- Psychosis (i.e., delusions, hallucinations, and loss of touch with reality occasionally associated with aggressive behavior)

Diagnosis

Psychological disorders may be divided into two groups: common disorders of mild to moderate severity that allow for continuation of normal life activities and relationships and disorders of severe symptomatology that prevent normal behavior and social interaction.

- Patient presentation
  - *Common mental disorders* are mild or moderately severe disorders in which the patient is able to carry on his or her daily life and activities and include depression, anxiety disorders, unexplained somatic complaints, and conversion disorder.

8. Mental Health Conditions

- Depression is a mental disorder that exhibits a central change in mood and affect characterized by sadness, gloominess, loss of pleasure, feeling of worthlessness or guilt, poor energy, indecisiveness, poor concentration, poor appetite, psychomotor retardation, thoughts of death or suicidal thinking, or any combination of the above.
- Anxiety disorders comprise a group of mental disorders characterized by excessive worry, nervousness, apprehension, fear, panic attack, intrusive thoughts or images, or traumatization. There are several types of anxiety disorder:
  - Generalized anxiety disorder
  - Panic disorder
  - Post-traumatic stress disorder
  - Phobia
  - Obsessive compulsive disorder

- *Severe mental disorder* or *psychosis* are general terms used to describe a mental disorder in which a person has lost contact with reality. Severe disturbances in thinking, emotion, and behavior are evident. Psychosis severely disrupts a person's life relationships and work, and initiating self-care or maintaining relationships is difficult. Psychosis is characterized by delusions; hallucinations; bizarre thoughts, speech, and behavior; aggression; violence; or any combination of the above. Severe mental disorders include the following:
  - Acute psychosis
  - Chronic psychosis or schizophrenia
  - Mania
  - Postpartum psychosis
- Other disorders include the following:
  - Intoxication or withdrawal from alcohol, drugs (e.g., cannabis, opium), or medication—Patients may present with confusion, aggression, or somnolence.
  - Epilepsy: a brain disorder characterized by spontaneous, repetitive seizures—epilepsy is not a mental disorder, but a neurological disorder with frequent psychosocial problems and stigma. Occasionally epilepsy is confused with panic disorder in children.
- Approach to the patient
  - Exclude organic causes for psychological symptoms
    - Hyperthyroidism or hypothyroidism—change in mood
    - Cardiac, hypertension, or respiratory disease—anxiety states
    - Hypoglycemia or hyperglycemia—change in behavior
    - Infections—change in behavior (encephalitis), mood, or alertness
    - Drug, alcohol, or medication use or withdrawal—changes in behavior, aggressiveness
    - Metabolic disturbances (renal/liver failure)—change in behavior or alertness

Management

The principles of patient care include monitoring of symptoms, ensuring patient safety, and providing effective pharmacological and psychosocial support and therapy (including addressing significant psychosocial stressors). The goals of intervention for patients presenting with psychological disorders in the BPHS setting is to—

- Prevent injury to the patient or others
- Establish whether there may be any organic cause for the patient's symptoms (see "Diagnosis" above)
- Provide basic counseling to the patient and family, and address social factors in a safe and confidential setting

MENTAL HEALTH

- Provide short-term, acute pharmacological therapy for those presenting with common syndromes of mild symptomatology (i.e., not interfering with daily life and activities)
- Provide referral to a trained counselor and health facility with appropriate personnel and interventions to address severe symptomatology (i.e., the illness is preventing normal daily life activities and relationships), those at extremes of age (children and the elderly), and those who have underlying medical conditions or poor response to initial therapy

Nonpharmacologic

Psychosocial counseling is a service provided by trained health staff or counselors to an individual, family, or group for the purpose of improving psychosocial well-being, alleviating distress, and enhancing coping skills. Psychosocial counseling addresses emotional, situational, and developmental stressors and is provided in a confidential setting to individuals, couples, groups, or families. The goal is to achieve positive outcomes and optimal psychosocial development by reducing identified risk factors. There are two types of psychosocial counseling: basic counseling and professional counseling.

Pharmacologic

The three broad categories of medication used to treat common psychiatric disorders are outlined in table 8.

Referral

All patients being evaluated for the first time for psychiatric disorder should see a trained counselor or specialist, particularly if the patient presents with a severe mental disorder (see above) that is disrupting normal work, personal relationships, and lifestyle.

8. Mental Health Conditions

Additional situations where referral is highly recommended include the following:

- All patients who may be a threat to themselves or others
- Children, adolescents, and the elderly
- Patients who have underlying severe medical conditions
- Pregnant and lactating women
- Patients who have recurring symptoms
- Patients who are not responding to initial therapy
- Psychotic patients, both those having a first episode and those experiencing failure of treatment of chronic disease
- People who have poor social support
- Patients exhibiting aggressive behavior or delirium
- Any person who has a bipolar disorder (manic-depression)

Prevention

- Educate the patient and the community to communicate that mental health disorders are common and can be treated.
- Begin intervention before symptoms become severe.
- Rely on social and family support mechanisms.

Patient Instructions

- Advise patients that once pharmacological treatment has been initiated, they must take their medication as directed to prevent dependence and to achieve optimal result.
- Instruct patients to—
  - Avoid drugs, alcohol, and caffeine.
  - Maintain proper sleep, diet, and exercise.
  - Visit the counselor in the case of social and family conflict (if available).

MENTAL HEALTH

TABLE 8. Medications to Treat Psychiatric Disorders

Medication	Use	Dosages	
		Children	Adults
Anxiolytics or Sedatives			
Diazepam	▪ May be used for a short period (i.e., ≤3 weeks) because medicine dependency can develop ▪ Used for treatment of anxiety disorders, insomnia, and agitation (with or without psychosis)	Refer	▪ 5 mg twice daily for maximum of 2 weeks; then taper off over 1 week ▪ For severe agitation, may give 10 mg IM; repeat in 60 minutes if necessary
Mood Elevators[a]			
Amitriptyline	▪ May be used for a clear diagnosis of mild to moderate depression ▪ May be recommended by the referral source as treatment for panic disorder	Refer	▪ Initial dose: 50 mg at night; may increase dose by 25 mg every 14 days for desired effect to a maximum dose of 150 mg nightly ▪ Once initiated, *a minimum* of 6 months of pharmaceutical therapy is typically required ▪ Elderly: begin with 25 mg at night; maximum dose 100 mg nightly

TABLE 8. Medications to Treat Psychiatric Disorders (CONTINUED)

Medication	Use	Dosages	
		Children	Adults
Fluoxetine—available only in DHs	▪ May be initiated by referral source for treatment of depression ▪ May have limited use in treatment of post-traumatic stress disorder (with referral)	Refer	▪ Initial dose: 20 mg in the morning; after 4 weeks if no or partial response, may increase to 40 mg ▪ Elderly: start with 10 mg in the morning; after 4 weeks if no or partial response may increase to 20 mg
Antipsychotic Agents			
Haloperidol—available only in DHs	▪ May be initiated in treatment of acute or chronic psychotic conditions (referral recommended) ▪ May be initiated for treatment of agitation when diazepam has not been effective or when delusional symptoms coexist	Refer	▪ Initial dose: 2.5 mg every 12 hours; may increase to a maximum daily dose of 12.5 mg for symptoms ▪ For severe agitation: 5 mg IM; repeat in 60 minutes if necessary

TABLE 8. **Medications to Treat Psychiatric Disorders** (CONTINUED)

Medication	Use	Dosages	
		Children	Adults
Chlorpromazine	▪ May be initiated in treatment of acute or chronic psychotic conditions (referral recommended) ▪ May be initiated for treatment of agitation when diazepam has not been effective or when delusional symptoms coexist.	Refer	▪ Initial dose: 25 mg every 8 hours; may gradually increase dose for symptoms to a maximum of 100 mg every 8 hours, adjusted according to response, to usual maintenance dose of 75–300 mg daily ▪ For severe agitation: 50 mg IM; may repeat in 60 minutes if necessary to a maximum dose 50 mg every 8 hours

[a] Caution:
- Antidepressant medication, particularly tricyclic antidepressants, may be fatal if taken as an overdose. Use extreme caution if you suspect patient has suicidal thoughts.
- Avoid tricyclic antidepressants in patients who have a history of heart disease, urinary retention, glaucoma, or epilepsy.
- The elderly are more sensitive to antidepressant medication and should be started and maintained on a smaller dose.

CHAPTER 9. OBSTETRICS AND GYNECOLOGICAL CONDITIONS

9.1. Pregnancy and Antenatal Care

Description

Pregnancy is the maternal condition of having a developing fetus in the body. Pregnancy usually lasts 40 weeks and is divided into three trimesters, each lasting approximately 3 months.

Antenatal care is the care a pregnant woman receives during the gestational period.

- Antenatal care (ANC) is organized to ensure that a woman goes through pregnancy, delivery, and the postnatal period in a healthy state, and that a healthy baby is born.
- ANC serves to provide a good history and examination to identify any problems that are likely to occur with the pregnancy, delivery, or during the postnatal period.
- Identified problems are treated or referred to a higher level facility.
- Ideally ANC starts at the preconception stage, although most often it begins during the first trimester when the woman realizes she has missed a menstrual period.
- The aims of ANC are to—
  - Provide education, reassurance, and support to the woman and her partner
  - Advise on minor problems and symptoms of pregnancy
  - Provide prenatal screening and management of problems detected
  - Assess maternal and fetal risk factors at the onset of pregnancy and as they develop throughout pregnancy

- Individualize care for women experiencing a high-risk pregnancy to refer them to the higher level
- Determine the timing, mode, and place of delivery (i.e., design a delivery plan)
- Determine any danger signs such as—
  - Severe anemia
  - Severe headache
  - Hypertension (HTN)
  - Upper body edema
  - Vaginal bleeding or leakage
  - Fever
  - Convulsions
  - Problems with the fetus

Diagnosis

- Pregnancy is suspected when a woman misses her normal menstrual period or demonstrates symptoms of pregnancy that is confirmed with urine pregnancy test.
- Symptoms of pregnancy may include the following:
  - Missed menstrual period
  - Nausea
  - Breast tenderness
  - Fatigue
  - Frequent urination
  - Soft and palpably enlarged uterus
  - Evident fetal heart sounds (140–160 normal)
  - Positive urine pregnancy test (but not in the first weeks)
  - Weight gain (normally 11–13 kg over the course of the pregnancy)
- According to WHO, a pregnant woman should have *at least* 4 ANC visits (see table 9.1).

9.1. Pregnancy and Antenatal Care

OBSTETRICS / GYN

TABLE 9.1. Summary of Routine ANC Visits during Pregnancy

Visits	Interventions
First—during 1st trimester, before 16th week	▪ Obtain a complete history. ▪ Do a physical examination. ▪ Order laboratory (blood and urine) tests as needed. ▪ Record vital signs, height, and weight. ▪ Give information on diet and lifestyle considerations and pregnancy care to the woman and her family, including her husband. ▪ Use Naegele's rule to determine expected date of delivery, as commonly used in Afghanistan: • Determine the first day of last menstruation period. • Add 7 days. • Subtract 3 months. • Add 1 year. ▪ Begin ferrous sulfate and folic acid supplementation. ▪ Check urine for bacteria, glucose, and protein, if possible. ▪ Check blood type and Rh group, if possible.
Second—around the 26th week of pregnancy	▪ Review the findings of first visit. Note if there is any change in the findings (e.g., edema, signs of anemia or other diseases, or alarming signs). ▪ Measure vital signs and uterine height. ▪ Repeat urine examination (i.e., bacteria, protein, glucose) if the test was abnormal at the first visit. ▪ Give information on diet and lifestyle considerations and pregnancy care to the woman and her family, including her husband. ▪ Advise the woman and her husband on the importance of immediate and exclusive breastfeeding for the newborn baby.
Third—around the 32nd week of pregnancy	▪ Perform all the tasks of the second visit. ▪ Record the fetal heart rate. ▪ Measure blood hemoglobin to identify severely anemic women. ▪ Discuss birth spacing methods with the woman and her husband. ▪ Perform a breast examination. ▪ Give a TT vaccination.

9.1. Pregnancy and Antenatal Care

OBSTETRICS / GYN

TABLE 9.1. Summary of Routine ANC Visits during Pregnancy (CONTINUED)

Visits	Interventions
Fourth—between the 36th and 38th week of pregnancy	Perform all the tasks of the third visit. Evaluate the fetal position using a Leopold examination or other systematic evaluation. Look for evidence of a breech fetus or other abnormal fetal position. Make a birth plan for the woman. All information on what to do, who to call, and where to go when labor starts or in the case of other symptoms should be given. Advise the woman and her husband on the importance of immediate and exclusive breastfeeding for the newborn baby.

Management

- Prevent iron deficiency anemia.
  - Give *all* pregnant patients throughout the pregnancy and until 3 months after delivery or abortion—
    - Ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid)—1 tablet once daily (with meal or at night)
  - Give patients who have hemoglobin less than 11 g/dl—
    - Double dose of ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid)—1 tablet every 12 hours for 3 months
      —THEN—
    - Followed by 1 tablet daily for the rest of pregnancy and for 3 months after delivery
- For pregnancy-induced nausea and vomiting, give pyridoxine (vitamin B6)—1 tablet of 25 mg of vitamin B6 every 8 hours per day for 3 days (available in DHs).
- Give TT vaccine to women who have not been fully immunized (i.e., 5 recorded doses).
  - If the pregnant woman has not been immunized and she is seen at the first ANC visit: give standard doses:
    - Give first dose of TT at first ANC visit—0.5 ml IM.
    - Give second dose 4 weeks later.
    - Give third dose 6 months after the second dose (even if it is after delivery)
    - Give fourth dose 1 year after the third dose
    - Give fifth dose 1 year after the fourth dose.
  - If the pregnant woman is not fully immunized, ensure that she receives at least 2 TT vaccinations before delivery.
    - If patient is not sure, ensure that she receives 2 TT vaccinations (at least 4 weeks apart) before delivery.
    - If she has already received 2 or more TT vaccinations, recommend a TT vaccination about 2 months before delivery.
  - If she has documented evidence of having received 5 TT vaccinations and the last one is fewer than 10 years ago, she does not need a TT vaccination.
- Give mebendazole 500 mg (5 tablets of 100 mg at once)—once in trimester 2 or in trimester 3, as recommended by WHO.
  Caution: Do *not* give in the first trimester of pregnancy.

Referral

- All women who have a previous history of significant bleeding or retained placenta following delivery
- Any woman who exhibits—
  - Severe anemia (hemoglobin less than 7g/dl)
  - Uterine size much bigger than gestational age with one fetus present
  - Large abdomen (multiple fetuses or polyhydramniosis)
  - Abnormal fetal position, such a transverse lie or breech
  - Protracted pregnancy—gestational age more than 42 weeks

- Pre-eclampsia or eclampsia
- HTN (blood pressure more than 140/90 mmHg)
- Evidence of any severe illness

- Any woman with a history of—
  - Previous stillbirth or intrauterine growth restriction (i.e., poor growth of the baby in utero; uterine size smaller than gestational age)
  - Neonatal death within the first week of life
  - Previous instrumental delivery—vacuum extraction or forceps delivery
  - Previous Caesarean section
  - Previous uterine surgery (myomectomy) or perforation (postdelivery and Caesarean)
- Any woman who has a family history of genetic disease

Prevention

Complications of pregnancy can best be avoided by having routine ANC and a partogram (see annex C).

Patient Instructions

- Follow the advice and suggestions made during the ANC visits.
  - Take ferrous sulfate and folic acid as directed.
  - Receive TT vaccine as directed.
  - Make a birth plan with the family for trying to deliver at a health facility. A birth plan is especially important if any problems have been identified during the ANC visits. Plan for the following as well:
    - Transport options for delivery—both for routine and emergency
    - Family member who can donate blood if needed during emergency
- Eat a regular diet (i.e., nuts, vegetables, dairy products, meat, fish, fruits).
- Get enough rest and do not to do heavy work.
- Sleep under an insecticide-treated bednet if in a malaria-prone area.

OBSTETRICS / GYN

- Do not take any medication unless prescribed by the health center.
- Stop using tobacco, alcohol, and drugs.
- Make a plan regarding whom to call or where to go in case of bleeding, abdominal pain, or any other emergency.
- Record when you feel the first fetal movement.
- Bring your partner (or a family member) so that they can learn how to support you through your pregnancy.
- Note anything you want to mention about the next visit.
- Learn about breastfeeding and newborn care.
- Review goals of birth spacing.

9.2. Anemia in Pregnancy

Description

Hemoglobin of less than 11 g/dl, typically due to iron deficiency, folate deficiency, or a combination of the two is anemia. Iron deficiency anemia is responsible for 95% of anemia during pregnancy because of increased demand. Severe anemia may cause intrauterine growth retardation, preterm labor, or both.

Diagnosis

- Pallor of conjunctiva, nail beds, tongue
- Easy fatigability, dizziness
- In severe anemia, headache, tachycardia, palpitations, edema in the feet, breathing difficulty (more than 30 breaths per minute; breathlessness at rest)
- In long-standing anemia, inflammation of the corner of the mouth or the tongue, changes in the form of the nails (“spoon nails”)
- In some cases of hemolytic anemia, jaundice
- Blood hemoglobin less than 11 g/dl

Management

Nonpharmacologic

- Measure blood hemoglobin at first antenatal visit.
- Consider (and investigate, if indicated) the following causes of anemia other than iron deficiency:
  - Hookworm
  - Malaria
  - Chronic disease
  - Gastrointestinal blood loss

Pharmacologic

- Prevent iron deficiency anemia.
  - Give *all* pregnant patients throughout the pregnancy and until 3 months after delivery or abortion—
    - Ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid)—1 tablet once daily (with meal or at night).
  - Give patients who have hemoglobin less than 11 g/dl—
    - Double dose of ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid)—1 tablet every 12 hours for 3 months
      —THEN—
    - Followed by 1 tablet daily for the rest of pregnancy and for 3 months after delivery
- Give mebendazole to every women once in 6 months—one dose of 500 mg (5 tablets of 100 mg) at once
  Caution: Do *not* give during the first trimester of pregnancy

Referral

- Hemoglobin less than 8 g/dl at any stage of pregnancy. This is severe anemia. Refer patient to an appropriate facility where blood transfusing is available.
- Hemoglobin less than 11 g/dl at more than 34 weeks of gestation
- Evidence of heart failure
- Anemia of sudden onset
- Anemia and evidence of obstetric complication
- Evidence of chronic disease, TB, malaria

Prevention

- Get routine antenatal care (ANC) including standard iron and folic acid supplementation (see above).
- Eat a balanced, iron-rich diet including fruits and green vegetables (e.g., meat, fish, oils, nuts, seeds, cereals, beans, vegetables, cheese, milk).
- Use insecticide-treated bednets to avoid malaria.
- Avoid obstetrical complications. Make a delivery plan.

Patient Instructions

- Encourage the patient to attend ANC appointments and comply with recommendations.
- Urge patients to resist the urge to eat soil (pica).
- Discuss any incorrect perceptions about iron treatment (e.g., it will make the bleeding worse or will cause the baby to be too large).
- Tell the patient how to take iron tablets (i.e., with meals or, if once daily, at night).

9.3. Hypertension Disorders of Pregnancy

The hypertension (HTN) disorders of pregnancy include chronic HTN, gestational HTN, pre-eclampsia, and eclampsia.

Description

HTN disorders of pregnancy may have serious consequences for both mother and baby. HTN is defined as systolic blood pressure (BP) more than140 mmHg and diastolic BP more than 90 mmHg.

- Chronic HTN is HTN present before pregnancy (see section 6.1 “Systemic Hypertension”).

- Pregnancy-induced HTN is HTN that begins after 20 weeks of gestation and is of 3 types:
  - Gestational HTN (without proteinuria)
  - HTN with proteinuria, or pre-eclampsia
  - HTN with proteinuria and seizures, or eclampsia, which is a life-threatening event with seizures and coma

Diagnosis

- BP taken after 15 minutes of rest more than 150/100. Check BP at least two times, 4 hours apart. Prescribe medication for gestational HTN.
- HTN and presence of proteinuria indicate pre-eclampsia.. Determine if the proteinuria is accompanied by headache, change in vision, upper abdominal pain, nausea and vomiting, dizziness, and sudden gain of weight (i.e., 0.9 kg/week). Look for edema in face and hands as well, but this edema is not specific because it can be present in normal pregnancy.
- HTN, proteinuria, and seizures indicate eclampsia.
  Note: Ensure there is no other cause for seizure such as meningitis, malaria, or a history of epilepsy.
  Note: Eclampsia may still occur in the postpartum period. The patient will need to be monitored.

Management

Nonpharmacologic

- Pregnant patients who have HTN should be monitored *weekly* to check:
  - BP
  - Maternal weight gain and presence of edema
  - Fetal status and growth
  - Urine for protein
  - Priority birth plan (i.e., their plan for delivery in facility and their emergency transport and options)
- All patients who have HTN should be on a low-salt diet.

9.3. Hypertension Disorders of Pregnancy

OBSTETRICS / GYN

- Women with proteinuria (pre-eclampsia) should have home rest and be monitored carefully once a week in the health facility or by a health worker in the home.

Pharmacologic

- For gestational HTN more than 150/100, checked at least two times, 4 hours apart—
  - Give methyldopa tablet—250 mg. Begin with 250 mg (1 tablet) every 8 hours up to maximum dose of 500 mg (2 tablets) every 6 hours if necessary
- For HTN and eclampsia, give **URGENTLY** before referral—
  - First dose of magnesium sulfate—5 g IM (1 ampoule of 500 mg/ml) in each buttock every 4 hours until patient reaches referral center (available in CHCs and DHs)
    —PLUS—
  - Hydralazine injection—5–10 mg slow IV injection; dilute with 10 ml NaCl 0.9% (available in DHs).

Referral

- When possible, refer all pregnant women who have HTN for further investigation and treatment.
- To avoid complications, any pregnant woman who has HTN should be referred at 38 weeks of gestation for admission and delivery to a health facility equipped to treat eclampsia.
- Refer women who have persistent HTN more than 150/100 despite maximum dose of methyldopa for control of BP.
- **REFER URGENTLY** all women who have eclampsia for admission to health facility that can perform Caesarean section.
  - Transport woman on left side, accompanied by a health care worker, and with oxygen, when possible.
  - For woman having seizure, keep airway open and protect her from injury.

Prevention

The complications of HTN disorders of pregnancy may be prevented with careful antenatal care and appropriate referral.

Patient Instructions

- Instruct *all* women who have HTN about the signs and symptoms of pre-eclampsia and eclampsia and the need for immediate return and review at health facility.
- Review the patient's birth plan to ensure emergency transport and referral options.

9.4. Antepartum Hemorrhage

Description

Antepartum hemorrhage (APH) is defined as bleeding from the birth canal (leading from the uterus through the cervix, vagina, and vulva) after the 22nd week of pregnancy up to and including the time of labor. The cause of bleeding may be related to the pregnancy or may stem from a nonobstetrical cause.

- Obstetrical causes
  - Placenta previa—implantation of the baby's placenta partially or totally covers the mother's cervix (i.e., the doorway between the uterus and the vagina); bleeding may occur at any time during the pregnancy
  - Abruptio placenta—detachment of a normally located placenta before delivery of the fetus; bleeding occurs during labor
  - Ruptured uterus—bleeding during labor
    Caution: A ruptured uterus can occur without vaginal bleeding if the blood drains into the abdominal cavity or the broad ligament, rather than into the vagina.
- Nonobstetrical causes
  - Cervical polyps, malignancy, infection, or trauma.
  - Blood-clotting disorder (i.e., coagulopathy)
    Note: Identification of a nonobstetrical cause for bleeding does *not* rule out the possibility of an obstetrical cause of bleeding in the pregnant patient.

Diagnosis

- Analyze vaginal bleeding of the pregnant woman after the 22nd week of gestation. Prior bleeding may indicate abortion or ectopic pregnancy (see section 9.5 "Abortion [Vaginal Bleeding in Early Pregnancy]" and section 9.6 "Ectopic Pregnancy").
- Examine the woman's general condition. Rule out shock.
- Note that abdominal pain may be present and could indicate a uterine rupture or an ectopic pregnancy.
- Evaluate the abdomen for uterus size, shape, fetal position, and evidence of fetal heart sounds.
  - May be normal—some cases of placenta previa and abruptio placenta
  - May be abnormal—uterine rupture, some cases of placenta previa and abruptio placenta
    Caution: Do not perform vaginal examination. In the case of placenta previa, an examination may cause more bleeding.

Management

Nonpharmacologic

- If woman presents with shock, stabilize and **REFER URGENTLY** (see section 16.9 "Shock," and table 16.9C).
- For all cases of APH, the best action is to refer the patient to a facility that can perform a Caesarean section if needed. If the patient cannot be referred safely, then deliver the baby as soon as possible.

Pharmacologic

- If forced to deliver the baby without being able to refer, induce labor with oxytocin (see section 9.8 "Delivery and Postpartum Care").
- Continue to treat for shock with IV fluids until bleeding has stopped.

Referral

- For *all* cases of APH, the preferred action is referral to a facility for more investigation and treatment.
- It is best to transfer the patient with a health care worker and IV infusion when possible.

Prevention

- Any vaginal bleeding during pregnancy is abnormal and should be taken seriously. Women who have a history of even minor bleeding should be referred for an ultrasound, which may detect placenta previa or other problems.
- As part of the woman's birth plan during her antenatal care visits, encourage her to identify options for—
  - Emergency transport to a health facility
  - Family member who can donate blood in case of emergency

9.5. Abortion (Vaginal Bleeding in Early Pregnancy)

Description

Abortion is the expulsion of the fetus and other products of conception *before* the 28th week of pregnancy. It is typically associated with cramping, vaginal bleeding, open cervix, and partial or complete passage of fetus, products of conception, or both.

Types of abortion include the following:

- Threatened—light vaginal bleeding, cervix closed. The pregnancy may not necessarily terminate.
- Inevitable—moderate bleeding, cervix open, abdominal cramping. The pregnancy is in the process of terminating.
- Incomplete—bleeding, clots, or both; some parts of fetus and products of conception have already been expelled; cervix open
- Complete—bleeding, clots; fetus and all products of conception have been passed, and the bleeding has slowed or stopped; cervix closed and firm
- Missed—refers to fetal death in utero before 20 weeks gestation; reversal of symptoms of pregnancy; recurrent bloody vaginal discharge
- Septic—foul-smelling vaginal discharge, abdominal pain or tenderness, and fever more than 38°C; fetus may or may not be retained; may be associated with uterine damage as a frequent complication of unsafe abortion involving instrumentation.
  Caution: **REFER URGENTLY** to hospital.
- Ectopic pregnancy—2 or more of the following signs: abdominal pain, fainting, pallor, and extreme weakness.
  Caution: **REFER URGENTLY** to hospital.

Diagnosis

- Assess the patient's history for missed menstrual period and known pregnancy.
- If she has vaginal bleeding during the first half of pregnancy, consider—
  - Abortion (see types above)
  - Ectopic pregnancy—may be associated with abdominal pain, adnexal mass, shock
- Check for evidence of shock and treat immediately if present (see section 16.9 "Shock" and table 16.9C).
- Assess vagina looking for wounds or foreign bodies.
- Determine whether the cervix is open or closed.

9.5. Abortion (Vaginal Bleeding in Early Pregnancy)

OBSTETRICS / GYN

- Assess the amount of bleeding, blood clots, or products of conception.
  - "Light bleeding" takes more than 5 minutes to soak pad
  - "Heavy bleeding" takes less than 5 minutes to soak pad
- Check for abdominal pain.
- Measure fever if patient feels hot to the touch.
- Assess (gently) the size of the uterus (appropriate for dates) and adnexa.
- Perform laboratory tests.
  - Pregnancy test—if in doubt
  - Hemoglobin
  - Type and cross-match blood if there is a potential for transfusion (i.e., shock or the possibility of shock).

Management

The top priority of management is to look for evidence of shock and treat immediately (see section 16.9 "Shock," and table 16.9C). Always consider ectopic pregnancy for a woman who has missed menstruation and is in shock (with or without abdominal pain and vaginal bleeding)—see section 9.13 "Ectopic Pregnancy". And always check for septic abortion (i.e., abortion with uterine manipulation)

Goals of management:

- Ensure complete evacuation of the uterus.
- Stop bleeding.
- Prevent Rhesus isoimmunization.
- Provide psychological support (i.e., patient counseling).

Nonpharmacologic

Focus on evaluation and treatment of shock, patient counseling, and evacuation of uterus if necessary (and if the appropriate staff and facility are available).

- Threatened abortion—
  - Observe the bleeding for 4–6 hours at the clinic.
    - If the bleeding does not decrease, refer to hospital.
    - If the bleeding does decrease, let the woman go home and rest for a few days.
      - Advise her on the following hygiene practices:
        - Change pads every 4–6 hours.
        - Wash perineum daily.
        - Avoid sexual relations until bleeding stops.
      - Advise her to return immediately if she has any of the following danger signs:
        - Increased bleeding
        - Continued bleeding for 2 days
        - Foul-smelling vaginal discharge
        - Abdominal pain
        - Fever and weakness
        - Dizziness and fainting
  - Advise the patient on the use of family planning methods.
- Complete abortion—
  - Provide patient counseling on self-care (see "Threatened abortion" above).
  - Check preventive measures such as TT immunization status.
  - Prescribe iron and folate supplementation (see below).
  - Advise the patient to return in 2 days for follow-up.
- Incomplete abortion—
  - If the appropriate staff and facility are available, evacuate the retained products of conception.
    - If bleeding is light to moderate and pregnancy is less than 16 weeks, use your fingers to remove any products of conception that are protruding through the cervix.
    - If bleeding is heavy and pregnancy is less than 16 weeks, evacuate the uterus.

9.5. Abortion (Vaginal Bleeding in Early Pregnancy)

OBSTETRICS / GYN

- If the appropriate staff and facility are *not* available or if you do *not* have the ability to evacuate the uterus—
  - Start IV fluid.
  - Administer ergometrine 0.2 mg IM.
  - Refer the patient.

- Inevitable abortion—
  - Evacuate uterus after expulsion of fetus.
  - Administer appropriate medication (see below).
- Septic abortion—
  - Treat for shock, if needed (see section 16.9 "Shock," and table 16.9C).
  - Insert an IV line and give fluids.
  - Give paracetamol for pain. Refer to table A15 in annex A for standard dosages.
  - Give appropriate IM or IV antibiotics (see below).
  - **REFER URGENTLY** to hospital.
- Ectopic pregnancy—
  - Treat for shock if needed (see section 16.9 "Shock," and table 16.9C).
  - Insert an IV line and give fluids.
  - **REFER URGENTLY** to hospital for surgery.

Pharmacologic

Use when needed depending of the type of abortion (see above).

- Give an analgesic for severe pain.
  - Tramadol—50 mg IM injection (available in CHCs and DHs)
    —OR—
  - Paracetamol. Refer to table A15 in annex A for standard dosages.
- Use an oxytocic medicine when uterine contractions are needed to expel products of conception (i.e., in an incomplete or inevitable abortion), to stop uterine bleeding, or both.

9.5. Abortion (Vaginal Bleeding in Early Pregnancy)

OBSTETRICS / GYN

- Give oxytocin—
  - 40 units in 1 liter of 0.9% NaCl and infuse at 30 drops/minutes
    —OR—
  - To stopping bleeding (after all products of conception expelled)—10 units IM (one vial of 1 ml)
- If oxytocin fails to stop bleeding, give—
  - Ergometrine—0.2 mg IV
  - Refer.

  Caution: Avoid ergometrine in patients who have hypertension.
- Prescribe iron and folic acid supplements.
  - If the patient's hemoglobin is more than11g/dl, prescribe—
    - Ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid) 1 tablet daily for 3 months
  - If the patient's hemoglobin less than 11 g/dl, prescribe—
    - Ferrous sulfate **PLUS** folic acid (60 mg elemental iron **PLUS** 0.4 mg folic acid) 2 tablets daily for 3 months
- Give antibiotics for septic abortion give initial dose then *refer* for evaluation or uterine evacuation under general anesthesia.
  - Ampicillin 2 g IV every 6 hours
    —OR—
  - In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
    —PLUS—
  - Gentamicin 5 mg/kg body weight IV every 24 hours
    —PLUS—

- Metronidazole 500 mg IV every 8 hours (available in CHCs and DHs)

- TT
  - Check woman's TT immunization status.
  - If needed or if unknown, give 0.5 ml TT IM in upper arm to be followed according to the TT immunization schedule (see chapter 19 "Immunization").

Referral

- Patients who have septic abortion—after giving initial dose of antibiotics, starting IV infusion, and treating for shock
- Patients requiring uterine evacuation when proper staff or facility are not available
- Suspicion of ectopic pregnancy—after starting IV infusion and preparing to treat for shock
- Missed abortion
- Rh (D) negative women—for evaluation and administration of anti-D Rh immunoglobulin, within 72 hours (available only in provincial and regional hospitals)

Prevention

Timely antenatal care as per national guideline recommendations

Patient Instructions

- Provide psychological support. Reassure patient that her chances of normal pregnancy in future remain good.
- Discuss family planning. Advise the patient to avoid pregnancy for at least 6 months.
- Instruct the patient to return if she has a fever or continued bleeding.
- In the case of anemia, advise the patient to continue to take the iron and folic acid supplement daily for 3 months.

9.6. Ectopic Pregnancy

Description

Ectopic pregnancy occurs when a fertilized egg implants in a location outside the endometrial lining of the uterus. The egg may implant in the fallopian tube or in the abdominal cavity. Ectopic pregnancy should be suspected in any woman of reproductive age who has pelvic pain. The incidence of ectopic pregnancy is slightly increased in women who have a history of previous ectopic pregnancy, pelvic inflammatory disease, intrauterine device use, tubal surgery, or infertility.

The major risk of ectopic pregnancy is rupture, which can lead to intra-abdominal bleeding, shock, and death. Ruptured ectopic pregnancy is a *surgical emergency*.

Diagnosis

- Missed menstrual period
- Symptoms of early pregnancy
- Positive pregnancy test
  Note: A negative urine pregnancy test does not necessarily rule out ectopic pregnancy.
- Pain in the lower abdomen
- Adnexal mass or cervical pain
- Vaginal bleeding (usually mild)
- Shock (if ruptured)—weakness, pallor (paleness), syncope, tachycardia, hypotension with a sudden sharp and stabbing pain at the hypogastrium and shoulder rips pain on lying down.

Management

Pharmacologic

Monitor vital signs, start IV, and give fluid if you suspect a ruptured ectopic pregnancy. Treat for shock if patient has tachycardia or hypotension (see section 16.9 "Shock" and table 16.9C), and refer.

9.7. Preterm Labor

Referral

REFER URGENTLY all cases of suspected ectopic pregnancy for observation or surgery.

9.7. Preterm Labor

Description

Preterm labor is defined as regular uterine contractions at more than 20 weeks, but less than 37 weeks of gestation, with associated cervical shortening and effacement. Preterm birth is the leading cause of neonatal mortality.

Diagnosis

Early diagnosis is key to effective management of preterm labor. Look for these danger signs:

- Palpable contractions (more than 4 per hour)
- Watery or bloody vaginal discharge
- Cervical dilation more than 2 cm
- Effacement of the cervix more than 50 percent

Management

Nonpharmacologic

- Allow labor to progress if—
  - Gestation is more than 36 weeks
  - Cervix is more than 3 cm dilated
  - There is active bleeding
  - The fetus is distressed or dead
  - There is infection or pre-eclampsia
- Prepare for possibility of premature birth.
- If gestation is more than 26 weeks, refer with tocolytic medicine to inhibit uterine contractions.
- If gestation is less than 26 weeks, refer without tocolytic medicine.

Pharmacologic

- Give medication to stop labor (tocolysis) for pregnancy at 26–36 weeks of gestation. The primary goal of treatment is to delay delivery long enough (about 48 hours) so that steroids, which promote development of the baby's lungs, can be given. These steroids are needed when pregnancy is at 24–34 weeks of gestation. Delaying preterm delivery also allows the woman to be transferred, if necessary, to a facility that can provide specialized care to a premature infant.
  - Salbutamol tablets—give an initial dose of 2 to 5 mg, and then give 2 mg every 8 hours for the next 48–72 hours.
    —OR—
  - Nifedipine (tablet 20 mg)—initial dose of 1 tablet orally once, and then 10–20 mg every 6–8 hours for 24–48 hours, and **REFER**.
    Caution: Do *not* give nifedipine if you suspect infection of the upper genital tract or if patient's blood pressure is less than 120/80. Nifedipine is contraindicated if the woman has cardiac disease and should be used with caution if she has diabetes or multiple pregnancy owing to the risk of pulmonary edema.
- Give antibiotics to prevent infection in the case of amniotic fluid leakage:
  - Oral erythromycin ethylsuccinate—400 mg every 8 hours for 5–7 days
    —OR—
  - Amoxicillin tablet—500 mg every 8 hours for 5–7 days
    —OR—
  - If the woman is not able to swallow—500 mg ampicillin vial IM every 8 hours

Referral

All patients who have danger signs should be stabilized and then referred.

OBSTETRICS / GYN

Prevention

Routine antenatal care (see section 9.1 "Pregnancy and Antenatal Care")

Patient Instructions

- If medication is effective in preventing labor and stopping contractions, advise home rest until the end of the pregnancy, and convince the patient's family to support her during this period.
- Ensure that mother is well hydrated. Special care is needed during summer months to prevent dehydration.
- Advise the mother to return if contractions start again.
- Ensure that the mother has a birth plan to ensure planning for transport and emergency care if needed during labor.

9.8. Delivery and Postpartum Care

Description

Normal delivery takes place between 36 and 40 weeks of pregnancy. Healthy delivery is supported by proper antenatal care visits.

Diagnosis

Suspect labor when the pregnant woman has intermittent uterine contractions associated with cervical effacement and dilatation that is often accompanied with blood-stained mucosal discharge (blood spotting).

Normal delivery is divided into the three stages of labor:

- *First stage:* From the onset of regular contractions up to 10 cm (i.e., full) dilatation of the cervix or effacement. Regular contractions happen when the patient enters into the first stage of labor, which itself has two phases:
  - Latent phase: cervix is dilated 1–4 cm
  - Active phase: cervix is dilated 4–10 cm. The term *regular contraction* in the active phase refers to 3–4 contractions of a 25- to 30-second duration each, within 10 minutes.
- *Second stage*: From full (10 cm) dilatation of cervix to delivery of the baby.
- *Third stage:* From delivery of the baby to delivery of the placenta.

Note: An incorrect diagnosis of labor can lead to unnecessary anxiety and intervention.

Management

All patients should have labor monitored with a partograph to avoid complications. See annex C.

Prepare for labor and delivery.

- Review the patient's history and antenatal record.
- Ensure that the environment, equipment are clean and sterile and that staff have followed proper delivery hygiene procedures.
- Let the women choose any position that she wants for comfort; encourage her to eat and drink as she wishes during labor.
- Encourage the woman to empty her bladder properly.

Assess the progress of labor.

- *The first stage*: The time taken for cervical effacement and dilatation is slow until 3 cm (latent phase); after that (in the active phase) the minimum acceptable rate of dilation is 1 cm/hour (8–12 hours in a primipara and 6–8 hours in a multipara).
  - Monitor the fetal heart rate with a fetoscope every 30 minutes.
  - Check maternal pulse every 30 minutes, blood pressure every 4 hours, and temperature every 2 hours.
  - Assess contractions every 30 minutes. Check

for frequency (i.e., the number/10 minutes) and duration in seconds.
- Perform a vaginal examination every 4 hours to assess the rate of cervical dilatation and effacement, position, and station of presenting part, presence of caput and molding, and character of discharge.

- *The second stage:* The duration of the second stage of labor in the primipara is 30 minutes to 3 hours and 5–30 minutes in the multipara. In this stage, fetal descent continues as the presenting part reaches the pelvic floor. The woman may also begin to have the urge to push.
  - Perform a vaginal examination to determine the descent of the fetus at least once every hour.
  - Monitor the fetal heart rate after each contraction.
  - Provide support to the perineum during delivery of the head and shoulders to control delivery and prevent perineal tears.
  - Consider an episiotomy in cases of—
    - Complicated vaginal delivery (i.e., breech presentation of the baby, vacuum extraction, large baby)
    - Fetal distress
    - Previous scarring
- *The third stage*: Separation of the placenta generally occurs within 2–10 minutes of the end of the second stage, but it can take 30 minutes. Active management of this stage helps to prevent PPH and includes the following:
  - Give oxytocin immediately after making sure there are not multiple births. In the case of multiple births, give immediately after delivery of the last baby. Give 10 units IM injection.
  - Control the cord traction. Clamp the cord near to the perineum. When the uterus becomes firm and

rounded or the cord lengthens, cord traction is applied with the right hand, while supporting the fundus of the uterus (counter traction) with the left hand. To prevent tearing of the thin membranes, hold the placenta in two hands and turn it until the membranes are twisted, and then slowly pull. The placenta should be examined to ensure its removal has been complete.
  - After delivery of the placenta, examine the woman carefully, and repair the episiotomy or any tears, if needed.
  - Perform uterine massage. Massage the fundus of the uterus through the woman's abdomen until the uterus is contracted. Repeat uterine massage every 15 minutes for first 2 hours. Ensure that the uterus does not become soft (relaxed) after you stop the massage.

Note: Oxytocin IV injection may be used in the case of unsatisfactory progress during first or second stage of labor (i.e., if the contractions are irregular or infrequent) as follows:

- Re-evaluate the condition of baby's presentation and position to ensure normal findings.
- If a trained attendant is present, augment the labor with 10 units oxytocin in 1,000 ml Ringer's lactate or physiologic serum, and give IV at the rate of 8 drops/minute. To achieve optimal contraction (regular contractions, i.e., 3 contractions in 10 minutes each lasting 30 seconds), you may increase the infusion rate to a maximum of 8 drops per minute every 30 minutes until a good contraction pattern is established not to exceed a total of 50 drops/minutes.
  Caution: Be careful when increasing the dose. If hyperstimulation of the uterus occurs (i.e., contractions lasting longer than 60 seconds or more

9.8. Delivery and Postpartum Care

OBSTETRICS / GYN

than 4 contractions/10 minutes), stop the oxytocin infusion.

Postpartum Care

Postpartum care includes the first 6 weeks following the delivery. The immediate postpartum period (first 2 hours following delivery) is critical both for mother and baby. During this period mother is monitored with frequent vital signs checks, and checked for vaginal bleeding and proper uterine contraction.

- Check vital signs every 15 minutes for first 2 hours.
- Massage uterus every 15 minutes for first 2 hours.
- Have the mother begin breastfeeding the baby immediately.
- Mother and baby may be discharged after 6 hours if doing well, with the following instructions to the mother:
  - Continue breastfeeding.
  - Keep the baby warm.
  - Eat well and drink lots of fluid.
  - Get enough rest
  - Begin using a family planning method.
  - Return for mother and baby evaluation in 1 week and again in 1 month.

Referral

In many instances, you will not have enough time to make a referral once labor has begun, depending on distance and accessibility to referral facility. If considering referral, do it early. Conditions requiring consideration for referral include the following:

- Extremely small woman or large baby
- Evidence of malpresentation or malposition of the baby
- Unsatisfactory progress of first or second stage of labor
- Prolonged labor. If after 8 hours of labor contractions are stronger and more frequent and there is no progress in cervical dilatation with or without membranes rupture, **REFER URGENTLY** to hospital.
- Rupture of membranes without labor beginning
- Meconium staining
- Vaginal bleeding during first or second stages of labor
- Signs of fetal distress (i.e., fetal heart rate fewer than 120 or more than 180 beats/minute)
- Prolonged or excessive PPH (see section 9.9 "Postpartum Hemorrhage")
- Incomplete delivery of the placenta
- Fever in the mother
- Visible tears in the vagina, painful swelling of vulva or perineum (hematoma), or both
- Uterine inversion
- Any other serious complications noted for mother or baby

  Note: If making a referral, place IV infusion when possible, have mother lie on her left side, and give oxygen when available.

Patient Instructions

If after 8 hours of the first stage of labor there is no increase in contractions, the membranes have not ruptured, and there is no progress in cervical dilatation, discharge the woman and advise her to return when pain or discomfort increases, if she experiences vaginal bleeding, or if her membranes rupture.

9.9. Postpartum Hemorrhage

9.9. Postpartum Hemorrhage

Description

PPH is defined as blood loss more than 500 ml during a vaginal delivery or more than 1,000 ml with a Caesarean delivery. The two types of PPH are—

- Early (primary) PPH
  - Occurs within 24 hours of delivery
  - May be caused by retained placenta, atonic uterus, trauma of birth canal, and blood clotting disorder (i.e., coagulopathy)
- Late (secondary) PPH
  - Occurs 24 hours to 6 weeks after delivery
  - May be caused by retention of placenta or infection

Diagnosis

- Take a complete history, record vital signs, and perform a physical examination.
- Look for causes and etiology of the bleeding, keeping in mind the "4 Ts" of PPH: tone, trauma, tissue, and thrombin (coagulopathy). See table 9.9.

Management of Early (Primary) PPH

Nonpharmacologic

- Obtain help. Urgently mobilize all available personnel.
- If the placenta has *not* been expelled, control cord traction.
- If the placenta *has* been expelled, massage the uterus. ***Note:*** If the placenta has been expelled and the uterus is contracted, examine the patient in the lithotomic position (with good light) for evidence of tear of cervix, vagina, or uterus.
- Rapidly assess the mother's general condition.
- If shock is suspected, immediately begin treatment (see section 16.9 "Shock" and table 16.9C).
- Send blood for hemoglobin check, and cross-match

TABLE 9.9. Diagnosing Vaginal Bleeding after Childbirth

Symptoms and Signs Typically Present	Symptoms and Signs Sometimes Present	Probable Diagnosis
▪ Immediate PPH ▪ Uterus soft and not contracted	▪ Shock	Atonic uterus
▪ Immediate PPH	▪ Complete placenta delivered ▪ Uterus contracted	Tears of cervix, vagina, or perineum
▪ Placenta not delivered within 30 minutes after delivery	▪ Immediate PPH ▪ Uterus contracted	Retained placenta
▪ Portion of maternal surface of placenta missing ▪ Torn membranes with vessels	▪ Immediate PPH ▪ Uterus contracted	Retained placenta fragments
▪ Uterine fundus not felt on abdominal palpation ▪ Slight or intense pain	▪ Inverted uterus apparent at vulva ▪ Immediate PPH	Inverted uterus
▪ Immediate PPH ▪ Intra-abdominal, vaginal bleeding, or both ▪ Severe abdominal pain that may decrease after rupture	▪ Shock ▪ Tender abdomen ▪ Rapid maternal pulse	Ruptured uterus
▪ Late PPH; bleeding occurs >24 hours after delivery ▪ Uterus softer and larger than expected for elapsed time since delivery	▪ Bleeding is variable (light or heavy, continual, or irregular) and foul-smelling ▪ Anemia	▪ Retention of placenta ▪ Infection

blood (2 units) for possible transfusion (if the facility has the capacity to do this).

- If facilities for manual removal of retained placenta under anesthesia are not available, prepare patient for emergency transfer. A health care worker should accompany the patient to the hospital so the treatment for shock is uninterrupted.

Pharmacologic

- In the case of uterus atony, give oxytocin 20 units in 1,000 ml normal saline infused rapidly (60 drops/minute). The continuing dose, if patient is still bleeding, is oxytocin 10 units in 1,000 ml normal saline (30 drops/minute).
  Caution: Do *not* give more than 3 liters (3,000 ml) of IV fluids containing oxytocin.
  —OR—
  If IV fluids are not available, give IM or IV 10 units of oxytocin. If heavy bleeding persists, repeat after 20 minutes.
- If oxytocin therapy is not successful, give ergometrine 0.2 mg slow IV or IM. If heavy bleeding persists, repeat 0.2 mg ergometrine IM after 15 minutes to a maximum of no more than 5 doses (total of 1 mg).
  Caution: Avoid ergometrine in hypertensive patient unless shock is present.
- If shock is suspected, immediately begin treatment (see section 16.9 "Shock" and table 16.9C). A second IV line is required.

Referral

When a referral facility is accessible and patient can be transferred safely, refer all of the following:

- Patients requiring anesthesia or surgery for trauma or retained placenta
- Patients requiring a blood transfusion to treat shock.

9.9. Postpartum Hemorrhage

OBSTETRICS / GYN

Try to stop the bleeding, and treat the shock before transfer.

A health worker should accompany the patient and apply aortic compression if necessary.

Management of Late (Secondary) PPH

Nonpharmacologic

If the woman shows evidence of severe blood loss, check her hemoglobin and cross-match blood (2 units) for possible transfusion (if the facility has the capacity to do this).

Pharmacologic

Treat mild blood loss with oral antibiotics.

- Amoxicillin—500 mg every 8 hours for 7 days
  —OR—
- In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
  —PLUS—
- Metronidazole—500 mg every 8 hours for 7 days
  Note: Women with excessive PPH should receive iron therapy for 3 months (60 mg iron and 0.4 mg folic acid tablet) 2 tablets daily.

Referral

- Women requiring examination of the uterus under anesthesia or ultrasound
- Women showing signs of severe infection
- Women showing signs of blood clotting disorder (coagulopathy)

Prevention

Active management of the third stage of labor reduces the incidence of PPH

- Use uterine massage.
- Apply gentle cord traction when required.

9.10. Newborn Care

- Administer oxytocin—10 units IM after delivery of baby.
- Ensure complete delivery of placenta and good uterine tone during stage 3 of labor and before the woman goes home.

Patient Instructions

Advise the patient to return to health facility immediately if she experiences abnormal bleeding.

9.10. Newborn Care

Description

The newborn or neonatal period is defined as the first 28 days of life. The majority of infant (i.e., children younger than 1 year) deaths occur during this neonatal period, especially in the first 24 hours of life. Planning, care, and treatment of emergencies during the neonatal period can have a significant impact on childhood survival.

Newborn care refers to those interventions required during the first 28 days of life:

- *Essential newborn care* refers to procedures to be followed for *all* neonates.
- *Extra newborn care* refers to procedures to be followed for *at-risk* neonates, including the following:
  - Low birth weight (less than 2,500 grams) neonates
  - Neonates born to sick mothers
  - Neonates who have had difficult or complicated deliveries
- *Emergency newborn care* refers to procedures to be followed for neonates identified with an illness or complication such as the following most common complications:
  - Asphyxia
  - Hypothermia
  - Infection or sepsis
  - Jaundice
  - Bleeding
  - Feeding difficulties
  - Congenital malformations

Diagnosis

- Neonatal care begins with a basic assessment at delivery, and continues for the first 28 days of life. Determine which level of care the neonate requires: essential, extra, or emergency.
- The top priority is to identify neonates requiring emergency care or resuscitation (see annex B), those with danger signs requiring immediate intervention, and those who are at higher risk of developing complications in the first weeks of life, including—
  - Low birth weight neonates
  - High birth weight neonates
  - Neonates born to mothers with underlying illness, complications of pregnancy (e.g., hypertension, diabetes, eclampsia, human immunodeficiency virus [HIV])
  - Neonates who experienced complications during delivery
- Neonatal danger signs include the following:
  - Difficulty breathing (e.g., abnormal respirations, chest in-drawing, grunting on expiration, gasping) ***Caution:*** A respiratory rate more than 60 breaths/minute or fewer than 20 breaths/minute is of concern.
  - Convulsions, spasms, or loss of consciousness
  - Cyanosis (blueness)
  - Floppiness or stiffness
  - Fever (i.e., hyperthermia, or a body temperature of more than 37.5°C) or hypothermia (i.e., a body temperature of less than 36.5°C)
  - Bleeding from stump

OBSTETRICS / GYN

9.10. Newborn Care

OBSTETRICS / GYN

- Abnormal jaundice, presenting at or before 2 days of age and severe in nature
- Poor feeding
- Diarrhea
- Continuous vomiting
- Pus or redness of the umbilicus extending to eyes or skin (i.e., more than 10 skin pustules or bullae or swelling, redness, hardness of skin)
  - Evaluate for cord infection or neonatal tetanus
  - Evaluate for severe conjunctivitis (i.e., ophthalmia neonatorum)
- Swollen limb or joint
- Pallor or blue lips or tongue

Management

Provide basic assessment to—

- Ensure newborn well-being
- Identify special needs
- Identify potential complications
- Treat emergency conditions; transfer to higher level facility, when required

Nonpharmacologic

- Provide essential care to all newborns.
  - Dry newborn with clean towel.
  - Provide adequate warmth. Use the "Kangaroo method"—skin-to-skin contact with the mother.
    - Check temperature regularly every 4 hours by touching baby's feet. Watch for the danger signs of hypothermia:
      - Decreased activity or lethargy
      - Floppiness
      - Poor feeding
      - Weak cry
      - Shallow respirations
      - Red skin or face
    - Wait at least 24 hours to bath the newborn.
    - Maintain a temperature of 25°C in the room where the baby is staying.
  - Provide good cord care:
    - Wash your hands before and after cord care.
    - Put nothing on the stump.
    - Fold nappy (diaper) below stump.
    - Keep cord stump loosely covered with clean clothes.
    - If the stump is soiled, wash it with clean water and soap, and dry it thoroughly with clean cloth.
  - Begin immediate, exclusive breastfeeding (within 1 hour of delivery).
  - Encourage "rooming in" immediately (i.e., baby stays with mother).
- Provide extra newborn care to at-risk neonates as defined above. Provide extra support regarding clinical condition, feeding, and maintaining warmth.
- Provide emergency newborn care based on "The Eight Components Requiring Emergency Newborn Care" in the *National Standards for Reproductive Health, Newborn Care Services*:
  - Identify of neonatal danger signs (see above).
  - Provide quality emergency care of the sick baby.
    - Provide neonatal resuscitation as required (see annex B.)
    - Assess for and treat hypoglycemia
      - Maintain constant breastfeeding feeding schedule (i.e., *at least* 8 times per 24 hours and on demand).
      - Provide feeding support for sick or very low birth weight newborns with a nasogastric tube.
  - Watch for neonatal asphyxia.
  - Watch for severe neonatal infection.
    - Identify meningitis, sepsis, pneumonia, and severe conjunctivitis.

9.10. Newborn Care

OBSTETRICS / GYN

Caution: Premature labor is often associated with maternal infection. Check newborn carefully.

- Watch for neonatal tetanus.
- Watch for neonatal jaundice.
  - Severe jaundice appears at 2 days of life and progresses.
  - Physiologic jaundice typically is not noted until 3–4 days of life and is very mild.
- Watch for severe bleeding in the neonate.
- Examine neonate for birth defects and congenital malformations.

Pharmacologic

- Provide essential care of newborns:
  - Give normal weight neonates vitamin K (phytomenadione)—1 mg IM once.
  - Provide eye care within 1 hour of delivery.
    - Wipe eyes with dry and clean cloth and then irrigate with clean water.
    - Apply tetracycline eye ointment (1%) to each eye, one time.

      Note: Breast milk irrigation of the newborn eyes, nose, and ears is *not* recommended.
  - Initiate immunizations before discharge, if possible, and always within the first 2 weeks of life (see also chapter 19 "Immunization"):
    - BCG
    - OPV-0
    - Hepatitis B (if available)

      Caution: Babies born to mothers who have TB should *not* receive BCG; for further evaluation, refer mother and infant to TB center.
- Treat suspected severe infections or complications: sepsis, pneumonia, meningitis, skin, or umbilical cord infections.
  - Initiate first-line antibiotic therapy (see IMCI flipchart for young infant age birth to 2 months) IM:
    - Ampicillin—50 mg/kg/dose, every 6 hours

      —PLUS—
    - Gentamicin:
      - First week of life—2.5 mg/kg/dose, every 12 hours
      - From 2 weeks to 2 months of life—2.5 mg/kg/dose, every 8 hours
  - If first-line antibiotic therapy is not available or is ineffective, change to second-line antibiotic therapy if available (i.e., in DHs).
    - Ceftriaxone—50 mg to 100 mg/kg once daily
  - Refer. If referral is not possible give antibiotics for at least 5 days.
- Treat skin pustules or umbilical infections.
  - For 5 days, do the following 3 times daily:
    - Wash your hands with clean water and soap.
    - Gently wash off pus and crusts with boiled and cooled water and soap.
    - Dry the area with a clean cloth.
    - Paint the area with gentian violet.
    - Wash your hands again.
  - Reassess in 2 days.
    - If worse, refer.
    - If improved, tell mother to continue treatment at home.
- Treat eye infection.
  - For 5 days, do the following 6–8 times daily:
    - Wash your hands with clean water and soap.
    - Wet clean cloth with boiled and cooled water.
    - Use the wet cloth to gently wash off pus from baby's eyes.
    - Apply 1% tetracycline eye ointment in each eye every 8 hours.
    - Wash your hands again.

9.10. Newborn Care

OBSTETRICS / GYN

- Reassess in 2 days.
  - If worse, refer.
  - If improved, tell mother to continue treatment at home.
- Treat suspected severe conjunctivitis (ophthalmia neonatorum).
  - Apply tetracycline eye ointment (1%) every 8 hours.
  —PLUS—
  - Prescribe systemic antibiotics: ampicillin **PLUS** gentamicin (see treatment for infections above).

Referral

- *All* newborns who are exhibiting danger signs
  - Provide emergency treatment and stabilization before referral.
  - Transfer with a health worker, when possible.
  - Provide support to keep newborn breathing, warm, and feeding during transfer.
- *All* very low birth weight newborns (i.e., less than 1,750 g) for feeding support and monitoring.
  Note: Some newborns weighing between 1,750 and 2,500 g will require referral depending on how well they are feeding and maintaining body temperature.
- Newborns who are bleeding, who require a blood transfusion, or both
- Newborns who have severe jaundice that may require exchange transfusion
- Newborns who have suspected infections or sepsis (e.g., tetanus, meningitis)
- Newborns who have a congenital malformation for evaluation and treatment plan
  Note: Non–life-threatening malformation (e.g., cleft lip, club foot) may have elective referral.

Include a copy of antenatal care (ANC) and delivery record with referral materials.

Prevention

- A healthy newborn state is directly linked to a healthy maternal and pregnancy state:
  - Ensure pre-pregnancy health with good nutrition, hygiene, and medical care.
  - Ensure family planning and birth spacing are maintained between pregnancies.
  - Ensure proper maternal ANC, including routine visits:
    - Give ferrous-folate supplement.
    - Keep immunization status up to date.
    - Develop an emergency birth plan (see section 9.1 "Pregnancy and Antenatal Care").
    - Identify any complications of pregnancy (e.g., hypertension, anemia, eclampsia, critical fetal position).
- Ensure clean and safe delivery (see section 9.8 "Delivery and Postpartum Care").
- Ensure proper postpartum care to include general support, iron supplement, and vitamin A supplement (see section 9.8).
- Provide treatment of sexually transmitted infection to the mother, as needed, during pregnancy.
- Provide antibiotics to the mother if she has either of the following:
  - Prolonged rupture of membranes (more than 24 hours before delivery)
  - Preterm rupture of membranes (rupture before the 37th week of pregnancy)

Patient Instructions

- Promote early, exclusive, and on-demand breastfeeding for all newborns.
- Initiate vaccination regimen for all newborns (see EPI).

- Review essential maintenance of body warmth, hygiene (washing and bathing), infection prevention, and cord care.
- Advise the mother that the newborn should be examined *at least* at 6 hours, 6 days (preferably within 2–3 days), and 4–6 weeks after birth.
- Clean cord properly using the instructions outlined above. Discourage the use of traditional medicines and techniques for cord care.
- Counsel complication readiness for all caretakers by ensuring that they know how to—
  - Recognize danger signs
  - Make emergency decisions about when and where to seek help
  - Plan for emergency funds and transport

9.11. Cracked Nipples during Breastfeeding

Description

Tenderness of the nipples is a common symptom during the first days of breastfeeding and generally begins when the baby starts to suck. As soon as milk begins to flow, nipple sensitivity usually subsides. It can be caused by poor attachment of the baby to the breast or removing the baby from the nipple before suction is over. *Candida* infection can cause chronic severe sore nipple without remarkable physical findings.

Diagnosis

- Severe pain
- Fissure—may prevent normal letdown of milk
- Local infection around the fissure may lead to mastitis (see section 9.12 "Mastitis and Breast Abscess")
- Tender, swollen, warm breast

9.11. Cracked Nipples during Breastfeeding

OBSTETRICS / GYN

Management

Nonpharmacologic

- Apply warm compresses on the breast.
- Measure patient's temperature, and ensure she has no fever.
- Encourage the mother to continue breastfeeding.
- Observe mother breastfeeding.
- Teach the patient the correct positioning and attachment of the baby (see "Prevention and Patient Instructions" below).
- Instruct the mother to apply expressed breast milk to the nipples and let it dry between feedings.
- Instruct the mother to express breast milk manually before the feeding. If expressing milk or nursing the baby is too painful on the affected side, advise her to begin nursing on the other breast and to expose the breast with the fissure to air to allow the initial letdown to occur.
- On rare occasions, it may be necessary to stop nursing temporarily on the affected side and to empty the breast either manually or by gentle pumping.

Pharmacologic

- Advise use of an analgesic.
  - Paracetamol. Refer to table A15 in annex A for standard dosages.
  - Ibuprofen—200 mg every 8 hours as needed
- Prescribe a topical agent.
  - Vitamin A and D ointment or hydrous lanolin (if available), which do not have to be removed during feeding the baby
  - If candidiasis is suspected, prescribe nystatin topical drops (100,000 IU/ml)—applied every 8 hours for 5 days
  - During treatment, teach the mother how to express breast milk from the affected breast and feed the

baby by cup; she should continue breastfeeding on the healthy side.

Prevention and Patient Instructions

- Ensure that the positioning and attachment between infant and breast is correct.
  - Show the mother how to hold her baby. She should—
    - Ensure that the baby's head and body are in a straight line
    - Ensure that the baby is facing the breast and that the baby's nose is opposite her nipple
    - Hold the baby's body close to her body
    - Support the baby's whole body, not just the neck and shoulders
  - Show the mother how to help her baby to attach. She should—
    - Touch her baby's lips with her nipple
    - Wait until her baby's mouth is opened wide
    - Move her baby quickly onto her breast, aiming the infant's lower lip well below the nipple
  - Tell the mother to look for signs of good attachment:
    - More of areola is visible above the baby's mouth
    - Baby's mouth is wide open
    - Baby's lower lip is turned outward
    - Baby's chin is touching the breast
  - Instruct the mother to look for signs of effective suckling (i.e., slow, deep sucks, sometimes pausing).
  - Advise the mother that if the attachment or suckling is not good, she should try again and then reassess.
  - If her breasts are engorged, tell the mother to express a small amount of breast milk before starting breastfeeding to soften nipple area so that it is easier for the baby to attach
- Advise the mother to observe good hygiene of nipples to avoid infection and mastitis.

- Instruct the mother to continue to breastfeed unless there is a clear reason to stop.

9.12. Mastitis and Breast Abscess

9.12.1. Mastitis

Description

Mastitis means that the breast is inflamed. It occurs most often in primiparas. Usually only one breast is affected. *Staphylococcus* is the most common causative agent.

Diagnosis

- Breast swelling
- Redness
- Tenderness
- Pain and fever
- Cracked or bleeding nipples

Management

Nonpharmacologic

- Advise rest.
- Encourage the woman to breastfeed frequently on the affected side, and use a breast pump or hand expression to get the milk out.
- Teach correct positioning and attachment of the baby to the breast (see section 9.11 "Cracked Nipples during Breastfeeding").
- Support breasts with a binder.
- Apply cold compresses to the breasts between feedings to reduce swelling and pain.

Pharmacologic

- Treat with antibiotics:
  - Cloxacillin—500 mg by mouth every 6 hours for 10 days (available in CHCs and DHs)
    —OR—

- Erythromycin—250–500 mg by mouth every 6 hours for 10 days.

- Give analgesics for fever and pain
  - Paracetamol—500 mg by mouth every 4–6 hours for 3 days or as needed
- Instruct patient to follow up 3 days after initiating management to ensure response to treatment.
  Note: Mastitis without infection (i.e., sore nipples) is mostly due to missed feedings or intervals between feedings that are too long, and there is no need for specific treatment.

Referral

If no response to initial treatment or recurrent mastitis diagnosed

Patient Instructions

- Practice early, regular, and frequent breastfeeding (including at night).
- Avoid compressing breasts.

9.12.2. Breast Abscess

Description

A breast abscess is a localized compartment of infection containing pus in the breast tissue. It is caused by a bacterial attack through an irritated or cracked nipple in a woman who has recently delivered.

Diagnosis

- Red, hard, swollen, painful, warm breast
- Fever
- Breast mass of variable shape and size (the mass is usually near or around the nipple)
- There may be discharge from the mass or the nipple of the affected breast.

Referral

All breast abscesses should be referred to hospital for drainage and antibiotic therapy.

Prevention

Early and frequent breastfeeding.

9.13. Dysmenorrhea

Description

Dysmenorrhea refers to cyclic lower abdominal pain associated with menstruation (i.e., the pain or cramps occur before or during menstruation). Dysmenorrhea may be—

- Primary dysmenorrhea—no organic cause identified
- Secondary dysmenorrhea—organic cause identified including the following:
  - Cervical stenosis
  - Endometrial polyps
  - Pelvic inflammation
  - Uterine fibroids
  - Endometriosis
  - Intrauterine device

Diagnosis

- Take a careful medical history.
- Perform a physical examination, including a pelvic examination (when appropriate staff members are available).
  - In primary dysmenorrhea, the pelvic examination is normal.
  - In secondary dysmenorrhea, an abnormality may be found on pelvic examination.
- Look for recurrent lower abdominal pain and cramps associated with menstruation. Symptoms may also include backache, nausea, vomiting, diarrhea, and headache.

- Occasionally, pelvic ultrasound may identify an organic cause. Refer patient for ultrasound, if possible.

Management

Nonpharmacologic

- Advise low-level topical heat therapy (e.g., hot pad on the lower abdomen).
- Provide emotional support and reassurance to the patient.

Pharmacologic

For primary dysmenorrhea:

- For mild cases, give—
  - Give paracetamol tablet as needed for 2–3 days. Refer to table A15 in annex A for standard dosages.
  —OR—
  - Acetylsalicylic acid (aspirin) tablet—500 mg every 8 hours, as needed for about 2–3 days (until pain subsides)
- For moderate to severe cases, give—
  - Ibuprofen—200-400 mg every 8 hours for 2–3 days to take with or after food to minimize gastric irritation

Referral

- Women with identified cause of dysmenorrhea (i.e., secondary dysmenorrhea)
- Women who do not obtain adequate relief from ibuprofen or cannot maintain normal activity

Prevention

- A low-fat diet may help to decrease dysmenorrhea.
- Moderate, regular exercise may help to decrease dysmenorrhea.

Patient Instructions

Encourage the woman to try to continue with her normal activities.

9.14. Abnormal Vaginal Bleeding

Description

Bleeding that deviates from the normal pattern for a woman's age, menstrual cycle, or both in terms of amount, duration, or interval is considered abnormal. The causes depend on the age of the patient and whether the woman is pregnant and include the following:

- Infancy and childhood
  - Traumatic lesions of vulva or vagina (e.g., accidental, foreign body or instrumentation, rape)
  - Vaginitis
  - Rarely, prolapse of urethral meatus, tumors
- Women and adolescents of childbearing age
  - Complications of pregnancy
  - Complications of hormonal or intrauterine contraception
  - Trauma: coital lacerations, instrumentation, rape
  - Infection or inflammation of the vagina, cervix, or pelvic inflammatory disease
  - Tumors
    - Cancer of the cervix, endometrium, vagina, vulva, or ovaries; choriocarcinoma
    - Benign fibroids
  - Dysfunctional uterine bleeding (i.e., when the endometrium sloughs in a severe and irregular manner, often associated with anovulatory cycle). Dysfunctional uterine bleeding occurs most commonly at the extremes of menstrual life, in adolescents, and women over 40 years.
- Postmenopausal women (defined as women who have stopped having menstruation for 6 or more months)
  - Cancer of the cervix, endometrium, vagina, vulva, or ovaries
  - Withdrawing from estrogen therapy

- Atrophic vaginitis or endometritis
- Trauma: coital, foreign body or instrumentation, rape

Diagnosis

- Take a history regarding menstrual cycles, pregnancy, trauma, and systemic symptoms.
- In woman of childbearing age, do a laboratory pregnancy test.

Management

- Treat the immediate, identified cause and then refer.
- In pregnant patients, look for complications of pregnancy.
  - Early pregnancy (uterus *not* above umbilicus)
    - If bleeding is heavy (i.e., pad or cloth soaked in less than 5 minutes)—
      - Insert an IV line, and give fluids rapidly.
      - Give 0.2 mg ergometrine IM.
      - Repeat 0.2 mg ergometrine IM/IV if bleeding continues.
    - If you suspect a septic abortion, give appropriate antibiotics (see section 9.5 "Abortion [Vaginal Bleeding in Early Pregnancy]").
    - **REFER URGENTLY** to hospital because the abnormal bleeding may indicate abortion, menorrhagia, or ectopic pregnancy.
  - Late pregnancy (uterus above umbilicus)
    - Any bleeding is dangerous.
      Caution: Do not do a vaginal examination.
    - Insert an IV line.
    - Give fluids rapidly if bleeding is heavy or if the patient is in shock (see section 16.9 "Shock," and table 16.9C).
    - **REFER URGENTLY** to hospital because the abnormal bleeding may indicate placenta praevia, abruptio placentae, or a ruptured uterus.
  - During labor, before delivery of baby; bleeding more than 100 ml since labor began
    Caution: Do *not* do a vaginal examination.
    - Insert IV line.
    - Give fluids rapidly if bleeding is heavy or if the patient is in shock (see section 16.9 "Shock," and table 16.9C).
    - **REFER URGENTLY** to hospital because the abnormal bleeding may indicate placenta praevia, abruptio placentae, or a ruptured uterus.
  - PPH (see section 9.9 "Postpartum Hemorrhage")

Referral

- *All* cases of abnormal vaginal bleeding for further investigation and treatment
  Note: Do not refer if bleeding is due to contraception. Advise patient to return if bleeding or symptoms do not improve over next menstrual cycle.
- Complications of cancer, trauma, and metrorrhagia (i.e., dysfunctional uterine bleeding)

Prevention AND Patient Instructions

- Advise routine antenatal care in pregnant women.
- Instruct patient to return if bleeding increases or symptoms do not improve over next menstrual cycle.

9.15. Postmenopausal Bleeding

Description

Menopause is the cessation of menstruation at about age 45–51. Postmenopause is the phase of life after menopause. No vaginal bleeding should occur after menopause.

PMB is the bleeding that occurs after 12 months of amenorrhea in a middle-aged woman. PMB is more likely to be caused by pathologic disease and must be always investigated seriously. PMB is not preventable.

OBSTETRICS / GYN

PMB is classified in two categories:

- Nongynecological causes such as exogenous hormones or anticoagulants
- Gynecological causes such as the following:
  - Vaginal atrophy with or without trauma
  - Endometrial hyperplasia (most common in obese women)
  - Endometrial polyp
  - Endometrial cancer and other genital organ cancers

Diagnosis

- Careful history taking is vital.
- Occasionally hematuria (blood in the urine) or rectal bleeding may mistakenly present as PMB.
- The clinical examination should include an abdominal examination, looking for abdominal masses.
- A speculum examination should be performed to allow assessment of atrophic vaginitis and to rule out cervical polyps and tumors of the cervix, vagina, or vulva.
- Thin tissue of the vagina and ecchymosis (patchy reddening) are sign of vaginal atrophy. Try to expose any vaginal tear if it is present due to trauma (e.g., postcoital bleeding).
- Remember that an atrophic vagina does not exclude other causes. Careful history will inform you, for example, about whether the patient has taken or is taking exogenous hormones (e.g., for treatment of osteoporosis).

If the cause was not exogenous hormones or atrophy of the vagina, **REFER.**

Management

- Discontinue exogenous hormone.
- For vaginal atrophy, prescribe a topical, vaginal estrogen such as estradiol 0.625 mg per gram, in 42.5 g tube (not in the EDL).

- Because PMB can be the first sign of endometrial cancer, **REFER** the patient without delay.

Patient Instructions

- Practice good reproductive tract hygiene.
- Avoid obesity. Maintaining a healthy weight decreases the chance of PMB.
- Eat fruits and vegetables in addition to other foods.
- Report any PMB. PMB must be seriously investigated, no matter how minimal or insignificant the bleeding may appear.

9.16. Pelvic Inflammatory Disease

Description

Pelvic inflammatory disease (PID) is a general term for female upper genital tract infections (i.e., of the uterus lining, fallopian tubes, ovaries, or other pelvic organs). It may be acute (i.e., acute onset of pelvic infection) or chronic (i.e., with pelvic pain, painful menstrual periods, and pain with intercourse). PID may be sexually transmitted, caused by organisms that ascend from the lower genital tract, or from a sexually transmitted infection (STI)–related organism (e.g., anaerobic bacteria, gonorrhea, chlamydia), or arise after childbirth or abortion. PID may be complicated by peritonitis, abscess, septicemia, chronic pelvic pain, increased risk of ectopic pregnancy, or infertility.

Diagnosis

Many women who develop pelvic inflammatory disease either experience no signs or symptoms or do not seek treatment. Others may exhibit the following symptoms:

- Pain or tenderness in the pelvis and lower abdomen that may be associated with fever, nausea, or vomiting.
- Vaginal or cervical discharge with abnormal color or odor

9.16. Pelvic Inflammatory Disease

- Menstrual cramping
- Irregular menstrual bleeding
- Difficult or painful urination
- Pain with sexual intercourse (dyspareunia)

Infection is probable when one or more of the above symptoms are associated with—

- Pain with movement of the cervix
- Adnexal tenderness
- Adnexal or pelvic mass (tubo-ovarian abscess)

PID should be ruled out when the patient has the following:

- Ruptured ectopic pregnancy (see section 9.6 "Ectopic Pregnancy")
- Intestinal inflammation or abscess
- Peritonitis
- Appendicitis
- Torsion or rupture of ovarian cyst (see section 16.2 "Acute Abdominal Pain")

Management

Nonpharmacologic

- Be careful to screen for pregnancy. Check menstrual history; give urine pregnancy test.
  - All pregnant patients who have pelvic pain should be referred for complication of pregnancy or PID during pregnancy.
  - Postpartum patients may have retained placenta or other complication of delivery.
- If an intrauterine device is present, remove it.
- Provide hydration; prevent dehydration.
- Evaluate for evidence of other STIs (e.g., candidiasis, vaginitis, or genital ulcers or warts)

Pharmacologic

Treat mild cases with oral therapy. Treat severe cases with IV therapy, and refer.

- Give antibiotics.
  - Doxycycline (capsule 100 mg). Refer to table A10 in annex A for standard dosages.
    Caution: Do *not* give doxycycline to pregnant or lactating women.
    —PLUS—
  - Metronidazole—400–500 mg every 8 hours for 10 days
- Give an antipyretic or analgesic, if needed.
  - Paracetamol. Refer to table A15 in annex A for standard dosages.

Referral

- All pregnant (suspected), postpartum, or postabortion patients
- Patients who have severe illness or who are unable to tolerate oral medication
- Patients who have abnormal vaginal bleeding
- Patients who have a high fever (more than 39°C) or septicemia
- Suspicion of pelvic abscess or peritonitis—for surgical consult
- Progression of symptoms at any time, or failure to improve within 48 hours of beginning oral treatment

Prevention and Patient Instructions

- Educate the patient regarding spread of STIs, and urge condom use.
- Instruct the patient to return to the clinic for follow-up. If no improvement after 48 hours on treatment, refer.
- Instruct the patient to return to the clinic at end of the course of treatment to ensure resolution and 4 weeks after therapy to ensure no relapse of infection.
- Advise the woman that her spouse should be treated. Give him—

OBSTETRICS / GYN

- Ciprofloxacin—500 mg as single dose (available in CHCs and DHs)
  —PLUS—
- Doxycycline—100 mg every 12 hours for 7 days

- Counsel the patient regarding compliance of treatment, risk reduction of STIs, and complications of STIs and PID.
- Counsel the patient regarding personal and genital hygiene.

9.17. Infertility

Description

Infertility is the inability of a couple who want children, who are having regular intercourse, and who are not using any form of contraception to conceive within 1 year of trying. Infertility is called *primary* when the couple has never conceived and *secondary* when the couple has conceived in the past. Difficulty in conceiving can be due to male factors, female factors, or a combination of both.

Diagnosis

Patients complain of not having conceived for 1 year. Any infertility complaint should be taken seriously, since some of the causes are easily treated if found early on. Always reassure the couple that many causes of infertility can be cured, but that it may take some time (6–12 months) depending on the cause.

In the woman—

- Check for abnormal vaginal discharge and possible pelvic inflammatory disease. Treat any suspected infection appropriately. Always treat both the man and the woman at the same time (see section 9.16 "Pelvic Inflammatory Disease").
- Determine if the woman is ovulating. Inquire about any history of abnormal or irregular monthly bleeding. If you suspect abnormal monthly bleeding, refer the woman to a gynecologist for further investigation.
- If the woman complains of painful episodes during monthly periods, suspect endometriosis and refer to gynecologist.
- Ask about any past surgical interventions, both gynecological and abdominal.

In the man—

- Check for anatomical abnormalities of the urethra and testes. If any are found, refer for correction.
- Check for dilated veins in the scrotum (varicocele). If found, refer for surgery.
- Check for infections of urethra, prostate, or both. Treat any suspected infection appropriately. Always treat both the man and the woman at the same time.
- Ask about past testicular mumps or past injury or any other inflammation to the testes.

In both—

- Check for conditions that may negatively alter normal fertility such as age, stress, poor or unbalanced diet, athletic training or heavy physical activity, being overweight or underweight, smoking, substance abuse, exposure to environmental toxins such as pesticides and lead, certain medicines, or radiation treatment and chemotherapy for cancer.
- Carefully try to find out if intercourse is happening in a way that allows for conception. If it is not, advise the couple accordingly. In addition, check whether intercourse happens during the fertile period for the woman: 10–17 days after the first day of the last period.

Management

Nonpharmacologic

For both partners give general advice on healthy lifestyles:

- Advise on correct intercourse if necessary.

- Recommend that the couple—
  - Avoid stressful situations and activities
  - Abstain from using any unhealthy substances (e.g., tobacco, hashish, opium)
  - Eat a balanced diet
  - Practice good hygiene

Pharmacologic

Treat all suspected infections appropriately (see section 9.16 "Pelvic Inflammatory Disease"), and treat both partners at the same time.

Referral

Refer all unsolved infertility problems to gynecologist and andrologist (specialist of male reproductive system).

Patient Instructions

- Regardless of treatment, advise the couple to follow the above-mentioned nonpharmacological treatment, to continue regular intercourse, and to follow up on your referral advice.
- Reassure them that many infertile couples can get treated, but that it may take time.
- If possible, advise family members to not stress the couple over the problem.

CHAPTER 10. NUTRITIONAL AND BLOOD CONDITIONS

10.1. Anemia

Description

Anemia is defined as a low level of hemoglobin in the blood, as evidenced by a reduced quality or quantity of red blood cells. A decreased number of red blood cells may be the result of the following:

- Decreased production
  - Nutritional deficiency of iron, folate, or both, and of vitamin B12, which are needed to produce hemoglobin
    - Malnutrition—nutrient deficiency is the most common cause of anemia
    - Pregnancy (see section 9.2 "Anemia in Pregnancy")
    - Chronic systemic illness
  - Decreased bone marrow production (leukemia or other diseases)
  - Infection
  - Malabsorption
- Increased destruction (hemolysis)
  - Malaria
  - Infections (viral, bacterial)
  - Medicine reactions (e.g., cytotoxics, co-trimoxazole, primaquine, or nitrofuran derivatives)
  - Hypersplenism, enzyme deficiency
- Blood loss
  - Parasitic infection (e.g., hookworm, whipworm)
  - Blood loss from heavy menstruation or delivery
  - Chronic blood loss from, for example, peptic ulcer disease, hemorrhoids, or intestinal cancer

Diagnosis

Signs and symptoms of anemia vary with degree of severity and chronicity.

- Mild anemia may be asymptomatic. Major findings may include the following:
  - Pallor—of conjunctiva, mucous membranes, nailbeds
  - Fatigue, anorexia, cold intolerance
  - Headache and dizziness
- Severe anemia (Hb less than 7.0 g/dl) is associated with severe pallor of the palms. It may lead to shortness of breath and heart failure (see section 6.2 "Cardiac Failure")
- Values defining anemia vary according to age and sex; generally less than 10 g/dl in children (corresponds to hematocrit of 28) and less than 12 g/dl in adults (corresponds to hematocrit of 32) define anemia. (See table 10.1A.)

TABLE 10.1A. Hemoglobin Values Defining Anemia for Population Groups

Age or Sex Group	Hemoglobin Value Defining Anemia (g/dl)
Children 6–59 months	<10.0
Children 5–11 years	<11.5
Children 12–14 years	<12.0
Nonpregnant women >15 years	<12.0
Pregnant women	<11.0
Boys and men >5 years	<13.0

Source: WHO, UNICEF, UNU (2001); values used in DHS

Management

Nonpharmacologic

- Assess the child's feeding, and counsel the mother or caregiver on feeding. If the child has a feeding problem, follow up in 5 days (see IMCI flipchart).
- Encourage a diet rich in iron. Meat, cereals, vegetables, and fruit all contain iron, but heme iron is much more easily absorbed than non-heme iron. (See table 10.1B.)

Pharmacologic

- Treat any underlying causes of anemia such as infection, worms, malaria, or chronic disease (refer to IMCI flipchart for children younger than 5 years).
- Give iron supplementation: ferrous sulfate and folic acid.

TABLE 10.1B. Dietary Sources of Iron

Sources of Iron	Amount of Iron (in mg per 100 g)
Sources of Heme Iron	
Liver	7–21
Red meat	1–3.5
Eggs	2
Milk (dried, skimmed)	0.4
Sources of Non-Heme Iron	
Millet	3.8–8
Pulses	1.9–14
Dried fruit	1.6–6.8
Bread	1.7–2.5
Green leafy vegetables	0.4–18
Rice	0.5

10.1. Anemia

- *Double* the dose shown in table 10.1C, which is the iron supplementation to *prevent* anemia. This doubled dose should be given for 3 months in confirmed anemia.
- In pregnant women and infants (i.e., children younger than 1 year), this therapeutic treatment should be followed by the preventive supplementation regimen as shown in table 10.1C.
- If a child is severely malnourished, he or she should be assumed to be severely anemic; however, iron supplementation should be delayed until the child regains appetite and starts gaining weight, usually 14 days after the nutritional rehabilitation has begun.

Referral

- Unknown cause of anemia
- Signs and symptoms of severe anemia (e.g., syncope, palpitations, and shortness of breath)
- Pregnant women more than 36 weeks gestation who have severe anemia
- Evidence of cardiac failure (see section 6.2 "Cardiac Failure")
- Signs of chronic disease (e.g., TB)
- Anemia associated with enlargement of the liver, spleen, or lymph nodes
- Signs and symptoms of acute blood loss or bleeding disorder
- Repeated blood in stool (undefined cause)
- No improvement despite correct treatment at the week 4 follow-up visit (i.e., hemoglobin increased less than 2.0 g/dl over a 2–3 week period)

Prevention

- Recommend a diet rich in iron.
- Provide an adequate quantity of iron supplement tablets to patient or caregiver at each follow-up visit.

TABLE 10.1C. Dosage and Schedule for Iron Supplementation to Prevent Iron Deficiency Anemia

Age	Specifics	Dosage	Duration
Low birth weight infants <2,500 g	Universal supplementation	Iron: 2 mg/kg body weight/ day	2–23 months of age
Children from 6 to 23 months of age; normal weight	Where the diet does not include foods fortified with iron or where anemia prevalence is >40%	Iron: 2 mg/kg body weight/ day	6–23 months of age
Children 24–59 months	Where anemia prevalence is >40%	Iron: 2 mg/kg body weight/ day up to 30 mg	3 months
School-age children (>60 months)	Where anemia prevalence is >40%	Iron: 60 mg/day Folic acid: 0.4 mg/day	3 months
Women of childbearing age	Where anemia prevalence is >40%	Iron: 60 mg/day Folic acid: 0.4 mg/day	3 months
Pregnant women	Universal supplementation	Iron: 60 mg/day Folic acid: 0.4 mg/day	As soon as possible after gestation starts—no later than the 3rd month—and continuing for the rest of pregnancy
Lactating women	Where anemia prevalence is >40%	Iron: 60 mg/day Folic acid: 0.4 mg/day	3 months postpartum

Source: UNICEF, United Nations University, WHO 2001

NUTRITION AND BLOOD

- Distribute antihelmintics with vitamin A supplements. Give 1 dose of mebendazole when children are more than or equal to 1 year and have had no mebendazole within the last 6 months.
- 250 mg if child is younger than 2 years
  - 500 mg if child is 2 years or older
  - Screen for severe anemia in growth-monitoring programs for young children and antenatal care visits for pregnant women.
- Establish nutrition programs.

Patient Instructions

- Follow recommendations for a diet rich in iron.
- If feeding problems persist after the caregiver has been counseled on how to feed the child, assess whether the caregiver understands and ask him or her to return regularly to the clinic as needed.
- Tell the patient or caregiver that epigastric discomfort, nausea, diarrhea, or constipation may appear with a daily dose of iron 60 mg or more. If these symptoms occur, instruct the patient to take the supplement with meals.
- Tell the patient or caregiver that his or her feces may turn black, which is not harmful. Treatment of iron should continue.
- Advise the patient or caregiver that all iron preparations inhibit the absorption of tetracyclines, sulphonamides, and trimethoprim. Thus, iron should not be taken together with these agents.
  Caution: Iron overdose can cause critical illness. Store medicine in a safe place away from children.

10.2. Thalassemia

Description

Thalassemia represents a spectrum of anemia that runs in families (i.e., it is inherited) whereby there is abnormal and decreased globulin—the protein responsible for carrying oxygen in red blood cells. Thalassemia is of two types:

- Thalassemia major—patients have a serious illness that includes severe anemia and shortened life expectancy
- Thalassemia minor (carrier state)—patients are often asymptomatic; the diagnosis is made from family history and evidence of microcytic (small) red blood cells on smear

Diagnosis

Consider thalassemia when—

- There is a known family history of thalassemia
- A child presents with hypochromic, microcytic anemia that does not respond to iron (or folate) therapy
- A child presents with severe anemia leading to exercise intolerance, failure to thrive, or an enlarged spleen
- A child with anemia presents with bony changes such as "bossing" (i.e., protuberant) frontal bone, depressed nasal bone, and pathologic fractures

A blood smear test (if possible) may be needed for diagnosis.

Caution: Complications of untreated thalassemia major may lead to heart failure, liver problems, and susceptibility to infections.

Management

Patients who have suspected thalassemia should be referred to hospital for further investigation and treatment.

10.3. Malnutrition and Under-Nutrition

Description

Malnutrition is a clinical syndrome due to a significant imbalance between nutritional intake and individual body's needs. It is most often caused by both quantitative (number of kilocalories per day) and qualitative (vitamins and minerals, etc.) deficiencies. Complications are frequent and potentially life-threatening. More than 50% of child deaths are associated with malnutrition; 10% are associated with severe malnutrition. Moderate and mild malnutrition are by far the biggest killers of children younger than 5 years. There are two classes of malnutrition: over-nutrition and under-nutrition. Only under-nutrition is discussed here.

Clinical manifestation of under-nutrition and its classifications are as follows (see also figure 10.3):

- Moderate type (*low weight*)—weight-for-height (or length) is 70–79%
- Severe malnutrition (*very low weight*))—weight-for-height (or length) is less than 70%
  - Marasmic type (muscle-wasting): significant loss of muscle mass and subcutaneous fat result in a skeletal appearance
  - Kwashiorkor (edematous form): bilateral edema of the lower limbs/edema of the face, often associated with cutaneous signs (shiny or cracked skin, burn-like appearance; discolored and brittle hair)
  - Marasmo-Kwashiorkor: the 2 forms are associated—upper limb wasted and lower limb edema

Causes of death from under-nutrition include hypothermia, hypoglycemia, electrolyte imbalance, dehydration, infection (i.e., septic shock), and vitamin and mineral deficiency.

10.3. Malnutrition and Under-Nutrition

NUTRITION AND BLOOD

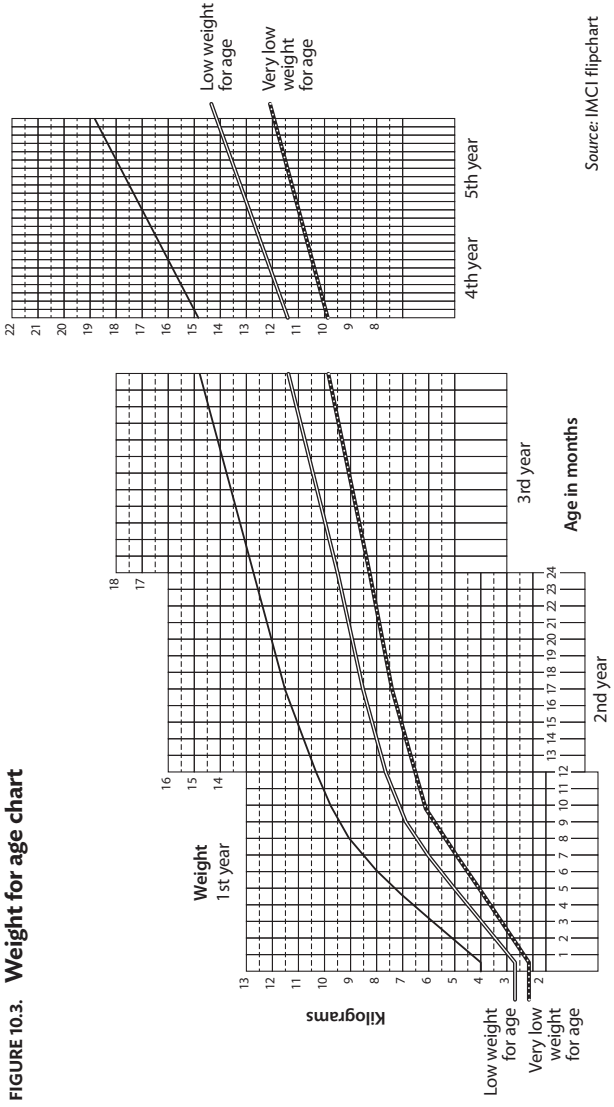


FIGURE 10.3. **Weight for age chart**

Diagnosis

- Mild wasting (early upper limb, late lower limb)
- Edema in lower limb
- Miscellaneous
- Acute and persistent diarrhea
  - Recurrent infections (chest infection, pneumonia); sometimes difficult to identify due to absence of fever and specific symptoms
  - Hypothermia (cold extremities)
  - Anorexia
  - Anemia

Management

Moderate malnutrition

- Advise home-based management, or refer to supplementary feeding center if available.
- Assess the child`s feeding, and counsel the mother or caregiver on feeding : take the time to review with the mother or caregiver the "Feeding Recommendations During Sickness and Health" of the IMCI flipchart and propose follow-up visits at 5 days and then 30 days to ensure that proper feeding instructions are followed at home. At day 30, weigh the child and congratulate the mother or caregiver if the child is gaining weight, and review again the feeding recommendations for reinforcing new knowledge. At day 30, if the child is still *very low weight for age,* counsel the mother about feeding problem found and ask the mother or caregiver to return every month to weigh the child.
  - If child is sick (pneumonia, dysentery, persistent diarrhea, acute or chronic ear infection, any other illness) advise mother or caregiver to increase fluid during illness and to maintain a sufficient feeding and ask her/him to return within 2- 5 days for a follow-up visit or immediately if condition is worsening (not able to drink or breastfeed, child becomes sicker, fever develops, fast-breathing, difficult breathing, blood in stool, drinking poorly)
  - If infant is younger than 6 months: assess breastfeeding practice: assess the proper attachment of the baby, ensure that breastfeeding happens at least 8 times in 24 hours (including at night), ask mother to reduce other foods or drinks if she does and to increase breastfeeding. Propose follow-up visits in 2 days and in 14 days.
  - If you do not think that feeding will improve, or if the child has lost weight at the follow-up visit, refer the child
- Give 1 dose of mebendazole if child is 1 year old or older and has had no mebendazole within last 6 months.
  - 250 mg if the child is younger than 2 years
  - 500 mg if the child is 2 years old or older
- Treat other possible causes (e.g., pneumonia, acute or persistent diarrhea, or hypoglycemia. Refer to specific condition.

Severe malnutrition

- All children who have severe malnutrition must be referred to a therapeutic feeding unit or hospital.
- Before referral—
  - Give 1 dose of vitamin A (see section 10.4 "Vitamin A Deficiency").
  - Treat the child to prevent low blood sugar:
    - Make sugar water by dissolving 4 level teaspoons of sugar (20 g) in a 200-ml cup of clean water.
    - If the child is not able to swallow, give 50 ml of milk or sugar water by nasogastric tube.
  - Give first dose of antibiotic if the patient has signs or symptoms of infection (e.g., amoxicillin, co-trimoxazole, or ampicillin), and refer (see IMCI flipchart). See annex A for standard dosages of

10.3. Malnutrition and Under-Nutrition

NUTRITION AND BLOOD

antibiotics. In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

- Prevent hypothermia during the transport: keep the child next to the mother's body (kangaroo method) and provide blankets.

Prevention

- Weigh systematically all children younger than 5 years.
- Ensure birth spacing, antenatal care visits, and good (and increased) nutrition for pregnant women.
- Avoid young-age marriages.
- Practice early, exclusive breastfeeding until infant reaches 6 months age. Continue breastfeeding until child is 2 years old, but introduce complementary food at 6 months.
- Introduce solid and semi-solid foods at the age of 6 months. Increase the consistency, diversity, and frequency of feeding as the child grows up. Refer to the "Feeding Recommendations During Sickness and Health" of the IMCI flipchart.
- Continue feeding sick children and increase fluids intakes.
- Promote full vaccination in children younger than 2 years according to EPI schedule (see chapter 19 "Immunization").
- Seek health education from health facility or community health worker. Gather information about the complications of malnutrition and the importance of a balanced diet.

10.4. Vitamin A Deficiency

Description

Deficiency in vitamin A most often affects the skin, mucosa, and the eyes, and it is most common in children 1–5 years old. Vitamin A deficiency may be combined with measles, diarrhea, or malnutrition, and can increase the mortality of these diseases. If left untreated, it is the most common cause for blindness in children.

Diagnosis

- Night blindness; often, the first complaints are that the patient fell or hit something at night or dusk
- Eye changes
  - White foamy patches on the eye (Bitot's spots)
  - Dry eyes and eyelids
  - Cornea becoming wrinkled and cloudy
  - Cornea becoming soft and bulging, leading to irreversible blindness
- Skin changes
  - Bumpy appearance
  - Rough, dry texture
  - Hair follicles become plugged with keratin
- Growth-related changes; in areas of the world where vitamin A deficiency exists, poor growth follows

Management

Nonpharmacologic

- Increase intake of foods rich in vitamin A (see table 10.4A).

TABLE 10.4A. Important Sources of Vitamin A

Mainly as Retinol	As Carotene
▪ Breast milk—colostrum, in particular, is very rich in vitamin A. ▪ Liver from animals, birds, and fish, especially small fish that are eaten whole with their livers ▪ Kidney ▪ Eggs ▪ Butter and animal ghee	▪ Red palm oil (the carotene makes the oil red) ▪ Orange and yellow fruits and mangoes ▪ Orange vegetables such as carrots and pumpkins. ▪ Dark green leaves, for example, spinach and beans. ▪ Yellow maize and banana

10.4. Vitamin A Deficiency

TABLE 10.4B.
Treatment Schedule of Xerophthalmia in Children

Dose	When to Administer	Timing Based on Different Ages	Vitamin A Dosage
First	Immediately on diagnosis	<6 months of age	50,000 IU
		6–12 months of age	100,000 IU
		>12 months of age	200,000 IU
Second	Next day		The same age-specified dose
Third	2 weeks later		The same age-specified dose

Pharmacologic

The treatment refers to all children who have not received a vitamin A capsule during the National Immunization Days (NIDs) campaign (i.e., within the last 30 days) and have developed the following conditions:

- Xerophthalmia—cases of eye diseases that are related to acute vitamin A deficiency, such as night blindness, xerosis, keratomalacia, and corneal melting (see table 10.4B).
- Other specified high-risk illnesses—children with measles, severely malnourished children, children with chronic diarrhea (see table 10.4C).

Note: Always administer the vitamin A capsule in the clinic. Do not give to be administered at home. Make sure children swallow.

All children with measles, severe protein-energy malnutrition, and chronic diarrheal diseases have an increased risk of vitamin A deficiency. These conditions deplete the body's store of vitamin A, put the child at risk of vitamin A deficiency, and can increase the severity of subsequent infections. Vitamin A supplementation for

TABLE 10.4C. **Treatment Schedule for Diseases Causing Vitamin A Deficiency**

Condition and Age Group	Doses	Timing
Measles 6–12 months >12 months to 5 years	 100,000 IU 200,000 IU	Age-specific dose on day 1, day 2, and day 14 (total of 3 doses)
Severe malnutrition <6 months 6–12 months >12 months to 5 years	 50,000 IU 100,000 IU 200,000 IU	Age-specific dose on day 1, day 2, and day 14 (total of 3 doses)
Chronic diarrheal disease <6 months 6–12 months >12 months to 5 years	 50,000 IU 100,000 IU 200,000 IU	One dose as per age specified

a child with an existing measles infection dramatically lowers measles morbidity and mortality.

Referral

All patients who have eye symptoms, severe malnutrition, or other complications

Prevention

All children older than 5 years should receive vitamin A supplementation every 6 months as shown in table 10.4D, and postpartum women should receive it once.

Patient Instructions

- All children younger than 5 years must follow the national program of prevention of vitamin A deficiency and follow the vitamin A supplementation preventive program.
- All women who are postpartum should have a postnatal visit.
- To prevent vitamin A deficiency, eat foods rich in vitamin A, and whenever any sign and symptom of vitamin A deficiency appears, consult a doctor.

NUTRITION AND BLOOD

TABLE 10.4D. **Preventive Dosage Schedule for Vitamin A Supplementation**

	Age	Vitamin A Dosage	Vitamin A Capsule		
			200,000 IU	100,000 IU	50,000 IU
Single Dose	>6–12 months	100,000 IU every 6 months	½ capsule	1 capsule	2 capsules
	12 months to 5 years	200,000 IU every 6 months	1 capsule	2 capsules	4 capsules
	Postpartum—ideally 48 hours after delivery, but at least within 6 weeks after delivery. Do not give after 42 days postpartum.	200,000 IU	1 capsule	2 capsules	4 capsules

10.5. Vitamin D Deficiency and Rickets

Description

Vitamin D is produced in the body in response to sunlight and certain food sources including fish, liver, oils, egg yolk, butter, some grains, and milk. Vitamin D is essential for strong bones since it plays an important role in the metabolism of calcium and phosphate.

Deficiency in vitamin D may lead to poor mineralization of bone with calcium and contribute to the following:

- Rickets—a childhood disease characterized by "soft bones," growth abnormalities, and deformity of the long bones
- Osteomalacia—a bone-thinning disorder that occurs in adults and is associated with proximal muscle weakness and bone fragility
- Osteoporosis—poor mineralization of developed bone, associated with bone fragility (in elderly)

Diagnosis

- Symptoms are subtle and nonspecific until bone changes occur. Consider a diagnosis of vitamin D deficiency in young children who have growth disturbance or bony deformities—early treatment prevents permanent disability.
- Rickets—seen most commonly at 6–24 months of age
  - Craniotabes—softening of the membranous bone of the skull causing spherical indentations ("ping pong ball"), and bossing of frontal bones
  - Bone pain, deformity, and delayed growth
  - Delay of tooth formation
  - Skeletal abnormalities
    - Curvature of legs ("bowlegs" or "knock knees")
    - Nodules of the ribs ("rachitic rosary")
    - Protruding sternum ("pigeon chest")
    - Spine curvature—kyphosis, scoliosis, or both

- X-ray may show wide epiphyseal plate or widening of bony ends (particularly distal radius and ulna)

- Osteoporosis and osteomalacia—in adults
  - Poor mineralization on X-ray
  - Bone fragility—fractures occur with unusually small stress

Management

Focus of treatment is adequate replacement of vitamin D, calcium, and phosphorous.

Nonpharmacologic

- Splinting and physiotherapy may be helpful in advanced cases of rickets
  Note: Bone changes normalize rapidly with proper treatment during early phases of rickets.
- Diet supplement
  - Vitamin D (see below)
  - Calcium from dairy products and green vegetables
- Adequate exposure to sunlight

Pharmacologic

When available

- Give vitamin D.
  - 500–1000 IU daily for 1 month
  - Then 400 IU daily as prophylactic
- Give a calcium supplement.
  - Micronutrient or multivitamin tablet daily
  - Dietary sources—dairy products and green vegetables

Referral

All cases of suspected rickets or severe osteoporosis should be referred for laboratory testing, X-ray confirmation, and treatment.

Prevention

Adequate dietary intake of vitamin D and calcium (see above)

Patient Instructions

- Review instructions (from referral facility) for proper administration of supplements and therapy.
- Instruct the patient to return in 2 weeks if bony changes are not improving.

10.6. Iodine Deficiency

Description

Iodine deficiency disorders refer to the wide spectrum of effects of iodine deficiency on growth and development. Endemic goiter, endemic cretinism, and impaired mental function in children and adults can be manifestations of iodine deficiency.

Diagnosis

- Lack of iodine in the mother may result in abortion and stillbirth.
- Congenital anomalies, neurological and myxedematous cretinism (i.e., mental retardation, short stature, large tongue, dry skin, sparse hair, protuberant abdomen), goiter, and psychomotor defects appear during the neonatal period.
- In children, iodine deficiency may result in goiter, juvenile hypothyroidism, impaired mental function, and retardation of physical and sexual growth.

Management and Prevention

Iodine deficiency can be prevented by the use of iodized salt through national program.

NUTRITION AND BLOOD

11.1. Urinary Tract Infection

CHAPTER 11. URINARY TRACT AND RENAL CONDITIONS

11.1. Urinary Tract Infection

11.1.1. Acute Pyelonephritis

Description

Acute pyelonephritis is an infection of the kidney parenchyma and pelvis. It is most often the result of an ascending infection of the urinary tract by gram-negative bacteria (most common, *E. coli*) or gram-positive bacteria (*Enterococcus*, *Staphylococcus*). If not correctly treated, it can be potentially life threatening from septicemia, peritonitis, or both. Patients who have acute pyelonephritis must be referred.

Diagnosis

- Fever, chills, or both, usually with nausea and vomiting
- Flank pain (tenderness to percussion)
- Burning and frequency of urination
- Cloudy or bloody urine—or may look normal
  - Urine dipstick may show leukocytes and nitrates.
  - Urine microscopy may show white blood cells, red blood cells, and bacteria.

Management

Nonpharmacologic

Encourage high fluid intake.

Pharmacologic

- For fever and pain, give paracetamol. Refer to table A15 in annex A for standard dosages.
- Give an antibiotic.
  - Children
    - Ampicillin for 10 days. Refer to table A4 in annex A for standard dosages.

—OR—

In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

—PLUS—

- Gentamicin for 7 days. Refer to table A13 in annex A for standard dosages.

—OR—

- Alternatively, when available (i.e., in DHs), ceftriaxone—80 mg/kg once daily for 10 days

  - Adults
    - Ampicillin (vial 1 g)—1 g IV every 6 hours for 14 days

—OR—

In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

—PLUS—

- Gentamicin (ampoule 40 mg/ml) —60 mg (1.50 ml) slow IV or IM every 8 hours for 7 days

—OR—

- Alternatively, when available (i.e., in DHs), ceftriaxone (vial of 500 mg)—1 g IM every 24 hours for 10 days

  - Pregnant women
    - Ceftriaxone as for other adult patients

Referral

- Refer *all* patients who have suspected pyelonephritis for management.
- Give first dose of antibiotic treatment *before* referral.

Patient Instructions

- Keep fluid intake high.
- Seek early treatment of urinary tract infections.
- Follow referral advice as directed.

URINARY AND RENAL

- Obtain ultrasound in the case of recurrent urinary tract or kidney infections to rule out stones or other abnormality.

11.1.2. Cystitis and Urethritis

Description

Cystitis and urethritis are infections of the urinary bladder and urethra, respectively. Uncomplicated cases of cystitis and urethritis may be seen in menstruating women with a normal urinary tract. All other cases (i.e., men, children, women with multiple recurrent infections) raise concern for complicated urinary tract infection and require investigation.

- Most often from gram-negative bacteria or intestinal flora *(E. coli)*
- May be from gram-positive bacteria
- May be associated with—
  - Bladder stones
  - Urinary retention
  - Enlarged prostate in adult males
  - Urethral valves in children

Diagnosis

- Pain or burning with urination
- Frequency of urination
- In more severe cases, suprapubic pain or tenderness
  Note: Rule out pyelonephritis, pelvic inflammatory disease, or an abdominal source.
- In children, a nonspecific illness (e.g., diarrhea, upper respiratory symptoms)
- Turbid or bloody urine
  - Urine dipstick should be positive for leukocytes.
  - Urine dipstick may be positive for nitrates.
  - Urine microscopy should show leukocytes and may show bacteria.
- Differential diagnoses to consider—
  - Pelvic inflammatory disease or vaginitis in women
  - Prostatitis in men

Management

Nonpharmacologic

Encourage high fluid intake.

Pharmacologic

- Children
  - Amoxicillin for 5 days. Refer to table A3 in annex A for standard dosages.
    —OR—
  - Co-trimoxazole for 5 days. Refer to table A8 in annex A for standard dosages.
- Adults
  - Nitrofurantoin (tablet 100 mg)—100 mg every 8 hours for 5 days
    —OR—
  - Amoxicillin for 5 days. Refer to table A3 in annex A for standard dosages.
    —OR—
  - Co-trimoxazole for 5 days. Refer to table A8 in annex A for standard dosages.
    —OR—
  - Ciprofloxacin—500 mg every 12 hours for 5 days
    Caution: Ciprofloxacin is contraindicated in pregnant women.

Referral

- Failure to respond to treatment
- Recurrent infections

Prevention and Patient Instructions

- Practice good hygiene of the anal-genital area.
- Keep fluid intake high.

11.1. Urinary Tract Infection

URINARY AND RENAL

11.2. Acute Glomerulonephritis

11.2. Acute Glomerulonephritis

Description

Acute glomerulonephritis (AGN) is an immunologic syndrome in children and adults, usually secondary to untreated streptococcal infection (e.g., impetigo, tonsillitis, or pharyngitis), which results in acute glomerular inflammation. The resulting retention of sodium and fluids can be life threatening (i.e., from acute pulmonary edema or cerebral edema), but the outcome is usually favorable with clinical signs subsiding over days and proteinuria and hematuria subsiding over weeks to months.

Diagnosis

- The onset of retention of salt and fluids is rapid, with puffiness around the eyes and soft and painless pitting edema of the legs.
- Urine is characteristically cola-colored; dark urine is a sign of hematuria.
- Hypertension (HTN) is present when renal impairment is significant.
- Oliguria is present with concentrated urine. ***Caution:*** Do not give increased fluids to patients who have oliguria until AGN has been excluded as cause of the oliguria.
- AGN is most common in children 5–12 years and is uncommon in children younger than 3 years.
- The patient will often report a recent streptococcal throat infection or skin infection (pyoderma). Check for active streptococcal throat infection or skin infection.
- Other specific symptoms include malaise, lethargy, abdominal or flank pain, and fever.
- Urine examination shows presence of red blood cells (RBC), RBC casts, proteinuria, and polymorphonuclear leukocytes. RBC casts point toward glomerulonephritis.

Acute complications of AGN result primarily from HTN and the retention of sodium and fluids.

- HTN is seen in 60% of patients and may be associated with hypertensive encephalopathy in 10% of cases.
- Other potential complications include heart failure with pulmonary edema and seizures due to cerebral edema.

Management

Nonpharmacologic

Diet changes must be recommended. The intake of protein, sodium (salt), potassium (i.e., from bananas, tomatoes, and other food sources), and fluids should be restricted in the case of HTN.

Pharmacologic

- Treat any identified streptococcal infection of skin or throat with penicillin or alternative. (See section 4.5.2 “Bacterial Tonsillitis” and section 13.1 “Impetigo.”)
- Treat recognized HTN. (See section 6.1 “Systemic Hypertension.”)
- Treat AGN complications of pulmonary edema (see section 16.1 “Acute Pulmonary Edema”), heart failure (see section 6.2 “Cardiac Failure”), and seizure (see section 7.1 “Epilepsy”).

Referral

Refer all patients to hospital for further investigation and treatment.

Prevention

Early detection, appropriate treatment, and follow-up of streptococcal infections.

URINARY AND RENAL

CHAPTER 12. ENDOCRINE SYSTEM DISORDERS

12.1. Diabetes Mellitus

Description

Diabetes is a metabolic disorder characterized by persistently high blood glucose levels. Diabetes may be caused by a variety of environmental and genetic factors resulting in deficient secretion of insulin from the pancreas, resistance to insulin, or a combination of the two.

Diabetes may lead to the following acute (emergency) conditions with confusion, coma, and shock:

- Hyperglycemia (excess of sugar in the blood) with or without ketoacidosis (see section 12.2 "Hyperglycemia and Ketoacidosis")
- Hypoglycemia (abnormal decrease of sugar in the blood) (see section 16.8 "Hypoglycemia")

Diabetes may lead to the following chronic complications after many years:

- Heart, kidney, or vascular disease
- Decreased immune function
- Chronic wounds
- Blindness

Three common forms of diabetes are encountered.

- Type I diabetes
  - May occur at any age but is seen most commonly in children and young adults with a peak incidence before school age
  - Tends to present with the most severe initial symptoms (see "Diagnosis" below)
  - Is a catabolic disorder with circulating insulin virtually absent and plasma glucagon elevated
  - Often requires insulin treatment to reverse this catabolic state
- Type II diabetes
  - Typically presents in adults and adolescents (may rarely be seen in children)
  - Is often related to obesity, which may play a significant role in the severity of the disease
  - Tends to present with more gradual initial symptoms; often patients present with the chronic complications of diabetes before the disease is recognized
  - Is usually treated with diet changes, oral medication, or both
- Gestational diabetes—elevated blood glucose that is detected during pregnancy
  - Is often detected on antenatal exam (with check of glucose)
  - Requires careful management by a team of medical doctors and obstetricians, so patient must be referred
  - May persist after delivery or present again later in life

Medications to treat diabetes mellitus are limited to EPHS facilities.

- *All* patients require referral.
- BPHS facilities may need to—
  - Treat diabetic emergencies (see section 12.2 "Hyperglycemia and Ketoacidosis" and section 16.8 "Hypoglycemia")
  - Assist or support the patient with chronic and ongoing care initiated at EPHS facility

Diagnosis

- Type I diabetes tends to present with the most dramatic and severe findings, although the common

12.1. Diabetes Mellitus

ENDOCRINE SYSTEM

signs and symptoms may be present in all forms of diabetes:

- Polyuria—passing of frequent, large amounts of urine
- Thirst and excessive drinking of water
- Nocturnal enuresis
- Weakness and fatigue
- Unexplained weight loss or, in children, failure to gain weight or grow
- Blurred vision
- Recurrent infections such as skin abscesses, urinary tract infections, vulvovaginitis or pruritus, and other fungal infections
- Evidence of chronic complications
  - Peripheral neuropathy
  - Evidence of vascular disease
  - Ischemic heart disease
  - Strokes
  - Foot ulcers
- History of obstetric complications (gestational diabetes)
  - Infertility
  - Recurrent stillbirths
  - Large babies

- Laboratory
  - Blood glucose (when available by test strip or glucometer)
    - Fasting blood sugar (most reliable): If more than 126 mg/dl on more than one occasion, diabetes is confirmed
    - Random blood sugar: more than 200 mg/dl
  - Urine dipstick: glucose more than ++
- Emergency presentations associated with diabetes
  - Hyperglycemia
    - Patient who have undiagnosed or poorly controlled diabetes may present with dehydration, confusion, coma, or shock (see below)
    - Patients who have long-term diabetes may be prone to heart disease, stroke, infection, or blindness
  - Hypoglycemia
    - Patients who have hypoglycemia from too much insulin or oral medication may present with a change in mood, confusion, or coma (see section 16.8 "Hypoglycemia").

Management

Goals for BPHS staff are to—

- Identify the disease and refer
- Treat diabetic emergencies and refer
- Provide chronic care support

Nonpharmacologic

- Ensure the patient is correctly taking the medications from the referral facility.
- Assist with weight loss (for obese patients) and proper diet. Advise the patient to—
  - Avoid processed sugar
  - Eat regular (i.e., 3 times a day), balanced meals
  - Avoid alcohol use
  - Get regular physical exercise
  - Avoid smoking
- Prevent long-term complications.
  - Monitor for infections.
  - Control blood pressure.
  - Monitor for visual and eye problems.
  - Assist skin care and hygiene; treat wounds aggressively.
  - Avoid foot trauma.

12.1. Diabetes Mellitus

ENDOCRINE SYSTEM

Pharmacologic

- Type I diabetes—insulin as initiated by EPHS facility
- Type II diabetes—diet control with or without oral agents, as initiated by EPHS facility
- Diabetic emergencies: confusion, coma, and dehydration
  - Suspected hyperglycemia plus ketoacidosis, give fluid resuscitation, and refer. (See section 16.9 "Shock" for a discussion of fluid resuscitation.)
  - Suspected hypoglycemia, give oral or IV glucose, and refer. (See section 16.8 "Hypoglycemia" and section 16.9 "Shock.")
  - If patient presents in coma and glucose status is not known, treat for hypoglycemia (i.e., give glucose), and refer (see section 16.8 "Hypoglycemia").

Referral

- *All* patients suspected of having diabetes should be referred to EPHS facility for appropriate laboratory testing and appropriate treatment.
- Patients who have gestational diabetes may benefit from special antenatal services (e.g., ultrasound) when available.
- Treat medical emergencies prior to referral, and transport with medical staff, if possible (see below and see section 16.8 "Hypoglycemia").

Prevention

- Type II diabetes may be prevented or treated in some patients using—
  - Weight control (i.e., weight loss in obese patients)
  - Proper diet
  - Regular physical exercise
- Complications of diabetes can be reduced or prevented with—
  - Good blood sugar control
  - Prevention of infections
    - Good hygiene
    - Good skin, and especially foot, care
    - Proper-fitting shoes to avoid local trauma

Patient Instructions

- Review and observe patient taking medicine prescribed by the referral facility as instructed.
- Review and observe patient performing self-monitoring activities ordered by the referral facility as instructed, such as use of glucometer and recognition of symptoms of hypoglycemia and how to manage the symptoms.
- Review and support dietary and exercise recommendations.
- Ask the patient to carry his or her patient card with diagnosis, dose of insulin (if any), and name and telephone number of family doctor.
- Inform the patient that sometimes diabetes is seen in families. Monitor for symptoms in family members.

12.2. Hyperglycemia and Ketoacidosis

Description

Diabetes ketoacidosis is a life-threatening medical emergency. Diabetes ketoacidosis may be the initial manifestation of type I diabetes and may result from an increased insulin requirement in type I diabetes patients during the course of infection, trauma, myocardial infarction, or surgery. Patients with type II diabetes may develop ketoacidosis under severe stress such as infection or trauma.

Diagnosis

The diagnosis of ketoacidosis relies on mild symptoms before the emergency signs and symptoms appear.

- Mild symptoms

ENDOCRINE SYSTEM

- Polyuria (i.e., the passing of frequent, large amounts of urine)
- Thirst and excessive drinking of water
- Nausea, vomiting
- Leg cramps
- Weakness and fatigue
- Unexplained weight loss or, in children, the failure to gain weight or grow
- Blurred vision
- Abdominal pain

- Emergency signs and symptoms
  - Diabetic ketoacidosis—seen with type I diabetes, presenting with typical signs and symptoms of diabetes plus the following:
    - *Severe* dehydration with sunken eyes, dry skin, and reduced skin turgor
    - Hypotension (hypovolemia)
    - Deep and fast breathing with smell of acetone
    - Weak and rapid pulse
    - Hypothermia
    - Confusion
    - Drowsiness, coma, or both
    - Elevated blood glucose (hyperglycemia more than 11 mmol/L or more than 200 mg/dl)
    - Urine dipstick glucose: ++ or more
    - Urine dipstick ketones: ++ or more
    - Acidosis with blood pH less than 7.3
  - Hyperosmolar nonketotic diabetic state, which is seen with type II diabetes; same signs and symptoms as diabetic ketoacidosis *except* ketones are absent on urine dipstick.

Management

- The management of ketoacidosis is correction of dehydration (see section 16.9 "Shock" and table 16.9C), and refer patient for administration of insulin (available in provincial and regional hospitals).
  - Do *not* delay treatment while waiting for glucose result or referral.
  - If diagnosis between hyperglycemia and hypoglycemia is unclear, treat for hypoglycemia first (see section 16.8 "Hypoglycemia").
    Caution: Low blood sugar presents the most immediate danger to life.
- Hyperglycemia and hyperosmolar state (with or without ketoacidosis) is an emergency and requires fluid resuscitation and **URGENT REFERRAL.**

12.2. Hyperglycemia and Ketoacidosis

ENDOCRINE SYSTEM

CHAPTER 13. SKIN CONDITIONS

13.1. Impetigo

Description

Impetigo is a highly contagious, superficial infection of the skin mostly due to *Streptococci* and *Staphylococci*. It is common in children, but may occur in adults. It may complicate pre-existing pruritic dermatoses (e.g., eczema, lice, chickenpox, and herpes). Rare complications of impetigo are abscess, pyodermatitis, lymphangitis, septicemia, and post-streptococcal acute glomerulonephritis.

Diagnosis

- Small erosions (sores) with crust, often golden-yellow
- Possible vesicles with yellow or slightly turbid fluid
- Initial involvement on the face; spreading to neck, arms, and legs
- Itching (sometimes)
- Painful sores
- Lesions (may persist for days to weeks)

Management

Nonpharmacologic

- Keep any skin lesions clean.
- Wash and soak sores in water with soap. Gently remove crusts before applying topical treatment.
- Wash hands with soap regularly.

Pharmacologic

- For localized impetigo, apply topical treatment twice daily on lesions and nares:
  - Gentian violet 0.5%
    —OR—
  - Neomycin sulfate ointment
    —OR—
  - Neomycin and bacitracin ointment (available in DHs)
- Use systemic antimicrobial treatment for extensive impetigo (i.e., more than 3 lesions, multiple body areas affected, bullous disease, abscess, or fever):
  - First-line treatment is penicillin.
    - Give oral penicillin V (i.e., oral phenoxymethylpenicillin) for 7 days. Refer to table A16 in annex A for standard dosages for children and adults.
      —OR—
    - Penicillin benzyl procaine: deep IM injection daily for 7 days.
      - Children less than 30 kg: 600,000 U
      - Adults and children more than 30 kg: 1.2 million U

      —OR—
  - Second-line treatment is oral cloxacillin.
    - Children: 10–15 mg/kg/dose every 6 hours for 7 days
    - Adults: 250–500 mg every 6 hours for 7 days
      —OR—
  - For a penicillin-allergic patient, give oral erythromycin ethylsuccinate for 7 days.
    - Children: Refer to table A12 in annex A for standard dosages.
    - Adults: 800 mg (2 tablets of 400 mg) every 6 hours

Referral

- Blood in urine, protein in urine, or suspected glomerulonephritis (see section 11.2 “Acute Glomerulonephritis”)
- No improvement after 7 days of treatment

Prevention

- Clean any skin infection with clean water and soap.
- Keep fingernails short and clean, and resist scratching.
- Practice daily hygiene with clean water and soap.
- Wash hands after applying topical cream on lesions.

13.2. Fungal Skin Infection and Napkin (Diaper) Rash

Description

Fungal infection of the skin and scalp are most often caused by dermatophytes (tinea) and by *Candida albicans*. All areas of the body can be affected, but regions with prolonged exposure to moisture either because of local anatomy (e.g., skin folds, between toes, groin areas) or environmental factors (e.g., humid climate, occlusive covering) are most often affected.

Napkin, or diaper, rash is an irritated dermatitis of the diaper area in infants (children under 1 year age) that may be secondarily infected by fungus (most often *Candida*) or by bacteria. Types of fungal infection include the following:

- Tinea pedis: dermatophyte-type fungal infection of the feet, typically between the toes
- Tinea cruris: dermatophyte-type fungal infection of the groin
- Ringworm: dermatophyte (tinea)-type fungal infection of the skin
- Tinea capitis (scalp ringworm): dermatophyte-type fungal infection of the scalp, most commonly affecting children
- Candidiasis: fungal infection most often affecting areas of skin fold (e.g., groin, breast, trunk, mouth, and vagina)
- Fungal infection of the nails (occasionally)

13.2. Fungal Skin Infection and Napkin (Diaper) Rash

SKIN CONDITIONS

Diagnosis

Presentation is similar for all forms of fungal infection:

- Fungal infection of any region of the body typically presents with pale red or whitish scales that may be slightly raised and with itching or burning.
- Ringworm presents with the following:
  - Often round lesions with thickened borders
  - Scalp ringworm that may be associated with bald spots
- *Candida* infections typically are more erythematous (red) and may appear moist, raw, and shiny.
- Vesicles may appear in inflammatory cases.
- Secondary bacterial infection may be associated with drainage and pus.

Management

Nonpharmacologic

- Keeping the involved area clean and dry is the most essential treatment intervention (especially in napkin rashes).
- Tinea capitis (scalp ringworm) is assisted by shaving the hair from the involved area of the scalp.

Pharmacologic

- Apply gentian violet twice daily for 3 weeks. This treatment is often effective for all types of fungal skin infection—particularly if the areas are moist or oozing.
  —OR—
- Use benzoic acid **PLUS** salicylic acid (6% + 3%) topical cream. Apply twice daily for 3 weeks (effective for most fungal skin infections).
  Caution: Avoid benzoic acid **PLUS** salicylic acid (6% + 3%) ointment for infants who have napkin rash and for everyone in areas of skin flexure because it may irritate.
  —PLUS—

- Give nystatin for oral, esophageal, intestinal, vaginal, and cutaneous candidiasis.
  Note: Nystatin topical cream (100,000 IU) may be applied twice daily for 2 weeks for napkin rash that has not improved with gentian violet and nonpharmacologic treatment.
  - Nystatin presentations include lozenge (100,000 IU), pessary (100,000 IU), tablet (100,000 IU or 500,000 IU), and oral suspension (100,000 IU/ml).
  - Nystatin dosages:
    - For oral candidiasis, give children (more than 1 month old) and adults oral nystatin 100,000 IU after food every 6 hours usually for 7 days (or continue for 48 hours after lesions have resolved).
    - For vaginal candidiasis, give adults pessary nystatin. Instruct patient to insert 1–2 pessaries vaginally at night for at least 2 weeks.

    —OR—
- Advise zinc oxide topical cream for napkin rash (available in DHs).

Referral

- Condition worsening during treatment
- No improvement after 3 weeks of treatment
- Fever or frank pus
- Involvement of nails

Prevention

- The cornerstone for preventing fungal infection is to avoid prolonged moisture of the skin area. Advise patient to—
  - Clean and dry the at-risk areas twice daily
  - Dry at-risk areas when they become moist or exposed to water
  - Refrain from sharing clothes, towels, and toiletries such as combs and brushes
  - Wear open-toed shoes or sandals during hot summer months
- Avoid unnecessary use of antibiotics because their use may increase risk of fungal infections.

Patient Instructions

- Emphasize the need for keeping affected areas clean and *dry*.
- Change nappies (diapers) regularly, and expose area to air and sunlight if possible.
- Return in 3 weeks for follow-up (or sooner if condition worsens).

13.3. Furunculosis

Description

A furuncle, or boil, is a localized infection of the hair follicles and surrounding dermis, usually provoked by *Staphylococcus aureus*. A carbuncle is merely two or more confluent furuncles, with separate heads sometimes accompanied by fever and local adenopathy.

Diagnosis

- Patient has patches of round, red, and swollen skin that is tender around the hair.
- Sites of predilection are the nape, axillae, and buttocks, but furuncles may occur anywhere.
- Most boils evolve to small abscesses. They undergo central necrosis and rupture through the skin, discharging purulent, necrotic debris.
- Patient may exhibit general symptoms such as fever or swollen lymph nodes.

Management

Nonpharmacologic

- Promote washing with soapy water.
- Apply warm compresses locally 3 times daily on

inflamed sites to promote maturation. Continue until furuncle starts draining. Do *not* puncture or incise until the furuncle is mature (i.e., it has become an abscess).

- Incise and drain the furuncle (abscess) yourself *only* if it is mature. Use sterile gauze to pack and drain the abscess cavity. Refer to section 16.11 "Abscess," if necessary.

Pharmacologic

- When the lesions are incipient and acutely inflamed, avoid incision and employ moist heat.
- If generalized symptoms (i.e., fever, swollen lymph nodes) are present or if boils are localized on upper lip, ear channel, or nose, use antibiotics:
  - Give oral erythromycin (tablets). Refer to table A12 in annex A for standard dosages for children and adults.

    —OR—
  - Give oral cloxacillin (capsules).
    - Children: 10–15 mg/kg/dose every 6 hours for 7 days
    - Adults: 250–500 mg every 6 hours for 7 days

    —PLUS—
- For boils of the external auditory canal, upper lip, and nose, apply antibiotic ointment in addition to the systemic antibiotics. Apply warm saline-solution compresses liberally.

Referral

- Worsening symptoms
- Appearance of general symptoms during treatment

Prevention

- Good hand washing and skin hygiene
- Cleansing and care of wounds and breaks in the skin

Patient Instructions

- Never manipulate or apply pressure to a furuncle, especially on the face, because of the risk of spreading serious infection.
- Return for follow-up after 3 days or if condition worsens.
- When initially being treated, launder bedding and clothing daily.

13.4. Sycosis

Description

Sycosis vulgaris is a perifollicular, chronic, pustular staphylococcal infection of the bearded region characterized by the presence of inflammatory papules and pustules. It occurs primarily in men and is rare in women. The disease is stubborn and may take many weeks or months to resolve, and it has a tendency to recur.

Diagnosis

- Begins with erythema and mild burning or itching, usually on the upper lip near the nose. May involve bearded area of chin and, rarely, other hair regions.
- In a day or two, one or more pinhead-sized pustules, pierced by hairs, develop.
- These pustules rupture after shaving or washing and leave an erythematous spot, which is later the site of a fresh crop of pustules. In this manner, the infection persists and gradually spreads.
- At times, the infection may extend deep into the follicles. A hairless, atrophic scar bordered by pustules and crusts may result.
- Marginal blepharitis with conjunctivitis may be present in severe cases.

Management

Nonpharmacologic

- Advise the patient to—
  - Clean the affected areas thoroughly using antibacterial soap (e.g., Dettol) and clean water 3 times a day.
  - Allow superficial pustules to rupture and drain spontaneously.
- Surgically drain deep lesions of folliculitis and identified abscesses if necessary (rare).

Pharmacologic

- Treat topically using antiseptic cream, antibacterial cream, or both. Options depend on availability.
  - Prescribe silver sulfadiazine cream (available in DHs) to be applied to affected area 2 times daily.
    —OR—
  - Give gentian violet (0.5%) to be applied to affected area daily.
- If the patient has any accompanying soft tissue infection or cellulitis, prescribe a short course of systemic antibiotic therapy:
  - First-line treatment: cloxacillin—500 mg (if available) every 6 hours for 7 days
  - Second-line treatment:
    - Chloramphenicol—250 mg every 6 hours for 7 days
      —OR—
    - Ciprofloxacin—500 mg every 12 hours for 7 days
      Caution: Ciprofloxacin is contraindicated in pregnant women and should be avoided in children when possible.
- If the patient has eyelash or eyebrow involvement, prescribe tetracycline eye ointment (1%) to be applied 3 times daily for 7 days.

Referral

- Worsening condition despite treatment. Note: Sycosis is often resistant to treatment.
- Deep abscess formation. Refer for surgical consultation for drainage.
- Associated systemic disease or suspicion of compromised immune status

Prevention

- Ensure clean shaving instruments.
- Practice good skin hygiene.

Patient Instructions

- Return if the condition worsens.
- Do not share shaving instruments with anyone.

13.5. Urticaria

Description

Urticaria is a vascular reaction of the skin characterized by itchy swelling and papules of the skin. It may be caused by medicines, foods, plant pollen, insect bites, and other irritants (see "Management, nonpharmacologic").

Diagnosis

- Look for appearance of wheals, surrounded by a red halo or flare.
- Patient may report severe itching, stinging, or pricking sensations.
- Look for a clearing of the central region which may occur and lesions may coalesce, producing an annular or polycyclic pattern.
- Ask patient about provoking factors (see "Management, nonpharmacologic").
- Watch for anaphylaxis and hypotension (see section 16.9 "Shock").

Management

Nonpharmacologic

- Identify the cause carefully with patient, and advise avoidance of all possible causative factors:
  - *Medicines* are probably the most frequent cause of acute urticaria, most often penicillin and related antibiotics and aspirin.
  - *Foods* are a frequent cause of acute urticaria. The most allergenic foods are chocolate, shellfish, nuts, peanuts, tomatoes, strawberries, melons, cheese, garlic, onions, eggs, milk, and spices.
  - *Infections* may be linked to urticaria. Acute urticaria may be associated with upper respiratory infections. Helminths may also cause urticaria (e.g., ascaris, echinococcus).
  - *Emotional stress* can cause cholinergic urticaria.
  - *Inhalants* such as grass pollens, house dust mites, feathers, cotton seed, animal dander, cosmetics, or aerosols can also bring on urticaria
- Advise the patient to use cool compresses or tepid or cold tub baths or showers to relieve itching.

Pharmacologic

- To relieve itching, use—
  - Oral chlorphenamine maleate tablet. Refer to table A7 in annex A for standard dosages for children and adults.

    —PLUS—
  - Topical calamine lotion (available in DHs) for symptomatic relief
- To treat severe reactions including anaphylaxis, see section 16.9 "Shock."

Referral

- Failure to improve in 24–48 hours
- Chronic urticaria
- Generalized symptoms

Patient Instructions

- Avoid items and situation that provoke urticaria.
- Chlorpheniramine can cause dizziness, so avoid driving a vehicle, operating machinery, or working in the heat.

13.6. Pediculosis

Description

Pediculosis is an infestation with lice in the hairy parts of the body or the clothing. Head lice are common in children and are usually located on the scalp. Pubic lice are located in the pubic area. Body lice are found in the seams of clothing and come to the body to feed. Note: Body lice may carry typhus (fever).

Diagnosis

- Patient reports intense itching of involved area.
- Nits (eggs)—small, white specs—may be identified firmly attached to hair.
- Bite marks may be identified on the skin, particularly in the case of body lice.
- Excoriation (from scratching) and secondary infection may complicate bites (secondary impetigo, swollen lymph nodes found in the neck with head lice or in the groin with pubic lice).
- In the case of pubic lice, it is wise to rule out sexually transmitted infections and advise the patient's sexual contacts, if necessary, although transmission can happen simply by sharing a bed or other close contact.

Management

Nonpharmacologic

- Shaving the head or infected hairy area will cure head and pubic lice because doing so gets rid of living lice and the eggs.

- Using anti-lice shampoo produces a cure rate of about 40% when used alone.
  Note: Combing with a fine-toothed metal or plastic nit comb is an important adjunctive measure.
- Washing clothing and bedclothes in hot water (60°C), and ironing or drying in bright sunlight kills body lice living in seams, and prevents recurrence or spread to contacts.
- In the case of pubic lice, treating the patient's close contacts is necessary.

Pharmacologic

- Use an anti-lice shampoo.
  - First-line treatment: permethrin cream rinse 1%
  - Second-line treatment: Lindane topical lotion (United States Pharmacopeia [USP] 1%). Follow this procedure:
    - Shampoo the involved area (i.e., scalp or pubic area) with soap and water, and allow to fully dry.
    - Shampoo the same area with Lindane, and leave it in the hair area for 15 minutes.
    - Rinse hair area thoroughly.
    - Comb hair to remove dead lice.
      Caution: Lindane has been associated with seizure and other neurologic symptoms (rarely). Avoid using it in children younger than 2 years, pregnant women, and lactating women and people with weakened immune systems. Avoid contact with mucous membranes or open skin. Use Lindane *only* as directed. Do not repeat treatment within 6 months to avoid risk of neurologic complication.
- Treat secondary skin infections with antibiotics as needed (see section 13.3 "Furunculosis").

Referral

- Complicated cases
- Cases resistant to treatment

Prevention

- Advise patient to wash his or her clothes as well as the clothes of his or her contacts to prevent recurrence (see above).
- Advise simple public health measures when epidemics of louse infestation occur in schools:
  - Store hats, scarves, and jackets separately under each child's desk
  - Tell children not to share clothing.
  - Advise the school nurse to provide lice education and inspections to facilitate targeted treatment of infested individuals.

Patient Instructions

- For eyelash involvement, a thick coating of petrolatum can be applied twice daily for 8 days, followed by mechanical removal of any remaining nits.
- When using Lindane treatment, follow all procedures strictly, and use measures of prevention.

13.7. Scabies

Description

Scabies is caused by *Sarcoptes scabiei,* the itch mite. The fertilized female burrows into the upper layer of skin, usually in skin folds, and deposits her eggs. Scabies is easily transmitted by direct contact or contaminated linens and clothing and usually affects more than one person in the household.

Diagnosis

- Patient complains of persistent itching, more severe at night.

13.7. Scabies

- Close inspection shows small burrows in areas where the skin is folded. Sites of predilection include the finger webs, wrists, axillae, areolas, umbilicus, lower abdomen, genitals, and buttocks. In infants, lesions are commonly present over the entire cutaneous surface.
- The burrows appear as slightly elevated, grayish, tortuous lines in the skin. A vesicle or pustule containing the mite may be noted at the end of the burrow, especially in infants and children.
- Scratching may provoke excoriations and secondary infections.
- To identify burrows, apply a drop of gentian violet to the infested area, and then remove it with alcohol; thin, threadlike burrows retain the ink.
- Lichenification, impetigo, and furunculosis may be present.
- In women, itching of the nipples associated with a generalized pruritic papular eruption is characteristic.
- In men, itchy papules on the scrotum and penis are equally typical.

Management

Nonpharmacologic

- Treat all close contacts (e.g., household members) simultaneously.
- Advise patient to—
  - Keep his or her fingernails trimmed and clean
  - Wash bed linen and underclothes with very hot (60°C) water, if possible
  - Expose bedding to direct sunlight
  - Wash his or her whole body with mild soap and water
  - Scrub the affected areas with brush or cloth, and dry with a clean cloth
  - Put on washed clean and dry clothes after applying treatment

Pharmacologic

- Prescribe a scabicide—
  - Lindane 1% topical lotion
    —OR—
  - Permethrin 5% cream, which is safe for children younger than 2 years and pregnant and lactating women
- Advise patient to follow this procedure to apply the scabicide:
  - Wash body with mild soap and water; allow to dry completely.
  - Thoroughly rub the scabicide into the skin from below the neck to the feet (including soles), with particular attention given to the creases, perianal areas, umbilicus, and free nail edge and folds.
  - Apply in the evening and wash off after 8 to 10 hours (i.e., the next morning).
    Cautions: Ensure that the scabicide is washed off within 12 hours to avoid toxicity. Do *not* apply to neck and face. Avoid using Lindane in children younger than 2 years, women who are pregnant or nursing, or people with weakened immune systems.
    Note: Itching may persist for 2–3 weeks after treatment with scabicides.

Referral

Severe secondary infection

Prevention

- Isolate patients.
- Wash the patient's clothes in *hot* water and iron them.
- Put the bed clothes in direct sunlight.
- Treat all individuals who are in close contact with the patient. Delays in treating close contacts may result in large numbers requiring treatment.
- Screen for sexually transmitted infections.

Patient Instructions

- Advise patients to—
  - Wash and iron their clothes and bedclothes
  - Avoid contact with eyes
- Advise patients *not* to apply scabicides to—
  - Sores or broken skin
  - The neck or face
- Tell patients that affected family members need to be treated at the same time to prevent recurrence.
- Warn patients that scabicides are toxic if swallowed.

CHAPTER 14. MUSCULOSKELETAL CONDITIONS

14.1. Arthritis and Arthralgia

Description

Arthritis and arthralgia are joint disorders.

- *Arthralgia* refers to joint pain that may be related to minor trauma (i.e., simple strains or sprains) or overuse. It is not associated with swelling, redness, heat, or fever.
- *Arthritis* refers to inflammation and eventual destruction of the joint, which often begins with pain alone ("arthralgia") but develops more signs over time.
  - *Osteoarthritis* refers to arthritis that develops from gradual destruction of joint surfaces many years following trauma or from chronic wear and tear.
    - It typically affects older patients.
    - It often begins with simple pain in a single joint, but may progress to include loss of motion, swelling, deformity, and additional joint involvement over time.
    - Large joints (e.g., knees, hips) are often affected, as well as distal finger joints.
    - Osteoarthritis limits movement and causes morning stiffness that lasts usually for less than 30 minutes.
  - *Rheumatoid (autoimmune) arthritis* is a chronic systemic inflammatory disease of fluctuating course that may involve many organs, but particularly joints.
    - It often involves multiple joints, particularly the feet, elbows, wrists, and proximal finger joints.
    - The disease begins with pain but often progresses

to include loss of motion, swelling, and deformity over time (wrist deviation and ulnar deviation of fingers is classic).
  - It may include extra-articular features or other components of autoimmune syndromes such as muscle wasting, neuropathy, keratoconjunctivitis or scleritis, pericarditis, pleural effusion, or rheumatoid nodules.
  - Morning stiffness lasts for longer than 30 minutes.
  - Although the disease affects both sexes and all age groups, it is most common in women by a ratio of 3 to 1.
  - It may run in families.
- *Septic arthritis* refers to an infection of the joint by bacteria or TB. Typically (i.e., in 90% of cases), septic arthritis involves only one joint.
  - Sudden onset of pain, which increases with motion, is associated with swelling, redness, and warmth.
  - Up to 50% of cases are associated with history of minor trauma.
  - Often patients do not have fever.
  - TB infection tends to develop more slowly and with less dramatic physical findings.
  - Septic arthritis may affect any age group.
  - It may be associated with acute osteomyelitis, particularly in children (see section 14.2 "Osteomyelitis").

    Caution: Septic arthritis is a surgical emergency. Suspicion of septic arthritis requires immediate referral.
- *Gout* or *pseudo-gout* is a precipitation of crystals within the joint causing acute onset of swelling, pain, and often redness or heat in the involved joint. Usually the first metatarsal-phalangeal joint is involved.

  Caution: Urgent referral is required to differentiate gout or pseudo-gout from septic arthritis.

Rare other causes of diffuse joint pain include systemic infection or inflammation (see section 15.7 "Brucellosis").

Diagnosis

The goal of diagnosis is to establish whether the pain is mild and chronic in nature so that treatment can be initiated at the health center, or whether it is acute and severe in nature requiring referral.

- Establish history of recent or distant trauma (including penetrating trauma to the joint space); speed of onset; and evidence of swelling, redness, heat.
- Consider rheumatic fever in children who have a history of pharyngitis, pain, or both that progresses to involve multiple joints (see section 6.1 "Rheumatic Fever").
- Look for additional joint or extra-articular features as seen in rheumatoid and autoimmune arthritis as described above.
- Establish whether signs and symptoms are suspicious for septic arthritis (see above); if so, begin emergency treatment (see referral section) and initiate transfer to surgical facility.

  Note: Be suspicious of septic arthritis or acute osteomyelitis in any child presenting with acute onset of joint pain or limping.

Management

The primary goal is to use the correct management for the type of arthritis (see "Diagnosis"):

- In the case of patients presenting with signs and symptoms of septic arthritis or gout (or pseudo-gout), **REFER URGENTLY.** (See "Referral" below.)

- In the case of patients presenting with signs and symptoms of mild osteoarthritis or rheumatoid arthritis, initiate comfort therapies at the clinic level. The focus of care for these patients is to—
  - Lessen pain
  - Reduce inflammation
  - Improve or maintain function
  - Prevent long-term joint damage
  - Control systemic involvement

Nonpharmacologic

- Apply local heat for comfort.
- Suggest gentle range-of-motion and low-impact exercises to maintain mobility, except in osteoarthritis.
- Advise the patient to avoid heavy stress to the joints.

Pharmacologic

- Give an analgesia or anti-inflammatory medicine.
  - First-line treatment: oral paracetamol (tablet). Refer to table A15 in annex A for standard dosages.
  - Second-line treatment: oral ibuprofen
    - Children: 5–10 mg/kg/dose every 8 hours
    - Adults: 200 mg to 400 mg every 8 hours

      Note: Limit dosage period to 1–2 weeks, when possible.

      Caution: Avoid ibuprofen if the patient has a history of gastrointestinal bleeding, other gastrointestinal problems, kidney disease, or bleeding disorders.

Referral

- Refer *all* patients for whom you suspect a diagnosis of septic arthritis or gout (or pseudo-gout) for immediate diagnosis and surgical management.
  - Before transfer, give first dose of antibiotics.
    - First-line treatment: ampicillin **PLUS** gentamicin
      - Ampicillin (see also table A4 in annex A). In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
        - Children: 50 mg/kg IM injection
        - Adults: 1 g IM injection

        —PLUS—
      - Gentamicin
        - Children: 5–7.5 mg/kg IM injection
        - Adults: 320 mg IM injection

        —OR—
    - Second-line treatment (available in DHs): ceftriaxone vial
      - Children: 80 mg/kg IM injection
      - Adults: 2 g IM injection
- Refer patients for whom you suspect exposure to or a diagnosis of TB arthritis.
- Refer patients for whom you suspect rheumatoid (autoimmune) arthritis for specialist care.

  Caution: Some patients who have rheumatoid arthritis may have cervical spine involvement and instability. Use care in transport.
- Refer for further investigation and treatment options patients who have new onset of disease, severe deformities, or recurrent or incapacitating pain, or if you are doubtful about a diagnosis.
- Refer patients who have multiple organ system involvement (see above).
- Refer anyone who has chronic pain (i.e., lasting more than 1 week in children and more than 2 weeks in adults).

Prevention

- Advise weight reduction for obese patients who have involvement of or pain in any weight-bearing joint.

14.1. Arthritis and Arthralgia

MUSCULOSKELETAL

- Ensure proper treatment of fractures and dislocations to reduce the incidence of posttraumatic arthritis.

Patient Instructions

- Advise the patient to rely on nonpharmacologic treatment options to avoid chronic use of medications and their side effects. Instruct him or her to use pain relief only when necessary.
- Review with the patient the proper way to take medications (e.g., take ibuprofen with meals to reduce gastritis).
- Instruct the patient to return in 1 week after initiating therapy for review. Refer if the patient's symptoms increase rapidly over time or involve new joints.

14.2. Osteomyelitis

Description

Osteomyelitis, which is difficult to diagnose at the primary level, is a serious infection of the bone caused by bacteria and requires referral to hospital. Often the bacteria are carried by the blood stream from an infection site. Sometimes the bone is infected through injury of the overlying skin. The disease starts with an acute phase, which if left untreated, will become chronic. Responsible agents are commonly *Staphylococcus aureus* and *Streptococcus haemolyticus*. TB may be the cause with less rapid and severe signs and symptoms. The bones of the thigh and leg are most often affected.

Diagnosis

- Think of acute osteomyelitis if a patient presents the following signs:
  - High fever with chills; can be absent, however, if the infection is due to injury of the overlying skin
  - Localized pain and tenderness of a bone, often located at the metaphysis
  - An injury visible on the skin overlying the affected bone (sometimes)
  - Previous infection, often of the throat, or skin injury
  - Active movement of neighboring joints usually limited by pain; some passive painless movement usually possible
- Think of chronic osteomyelitis if a patient presents the following:
  - Past history of pain and tenderness in the same bone accompanied by fever
  - Absence of high fever
  - Swelling, pain, and tenderness of the bone affected
  - Abscess or draining pus; will often diminish swelling and pain
- Differential diagnoses include septic arthritis (infected joint), cellulitis (infected skin), pyomyositis (infected muscle), and local trauma.

Management

Nonpharmacologic

- Immobilize the affected limb.
- **REFER** all suspected cases of osteomyelitis to a nearby hospital as soon as possible.

Pharmacologic

Before referral, give the first dose of ampicillin **PLUS** gentamicin IM injection.

- Ampicillin (refer also to table A4 in annex A):
  - Children: 50 mg per kg per dose. Add 4.5 ml sterile water to a vial containing 500 mg powder (100 mg/ml) and inject in the front thigh muscle. Dose according to age or weight.
  - Adults: 1 g IV or IM every 6 hours (but refer after first dose)

—OR—

In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

—PLUS—

- Gentamicin (refer also to table A13 in annex A):
  - Children: 5–7.5 mg/kg IV or IM once daily
  - Adults: 320 mg in IV or IM once daily

Referral

Refer *all* cases to the nearest hospital, for further investigation (e.g., X-ray and laboratory tests, if available), IV therapy in the acute phase, surgical care of chronic phase (e.g., drainage, debridement), and necessary orthopedic treatment.

Prevention

- Treat all bacterial infections (see section 4.2.2 "Bacterial Tonsillitis") with the appropriate antibiotic.
- Clean and disinfect all skin wounds.
- Open fractures require urgent surgical irrigation and debridement; refer immediately.

Patient Instructions

- Convince the patient to go to the nearest hospital as soon as possible.
- Advise the patient that failure to treat osteomyelitis appropriately may result in serious complications and permanent disability.

CHAPTER 15. INFECTIOUS DISEASES, PARASITIC DISEASES, AND HELMINTHIC INFESTATIONS

15.1. Pertussis (Whooping Cough)

Description

Pertussis is an extremely contagious childhood illness caused by the bacteria *Bordetella pertussis* and spread by airborne droplets. The hallmark of the infection is severe coughing bouts. Pertussis can be prevented by vaccination. Pertussis may be complicated by secondary infections (e.g., pneumonia, otitis, activation of latent TB), seizures, malnutrition, or death.

Diagnosis

Pertussis is commonly misdiagnosed as another respiratory infection, so consider the diagnosis, especially in unimmunized children. Following an incubation period of 6–12 days, pertussis is typically divided into three phases:

- Catarrhal phase: 1–2 weeks in duration
  - Nasal discharge (catarrh)
  - Fever
  - Nonspecific cough
- Whooping phase: 3–4 weeks in duration
  - Typical, paroxysmal coughing bouts (whooping cough)
  - Characteristic cough may lead to vomiting, poor feeding, and malnutrition.
  - Characteristic cough may also lead to bouts of cyanosis, hypoxia, and apnea (especially in young infants).
- Convalescent phase: 1–4 weeks

- Sometimes the coughing phase is prolonged for many weeks.

Management

Nonpharmacologic

- Prevent malnutrition. Feed frequently between coughing spasms even though the child may not want to eat. Continue to breastfeed infants.
- Give extra fluids. Monitor for dehydration.

Pharmacologic

- Give oxygen for cyanosis (if needed and if available).
- Give antibiotic: erythromycin (ethylsuccinate) for 2–4 weeks. Refer to table A12 in annex A for standard dosages.
- Give paracetamol for fever 38.5°C or higher. Refer to table A15 in annex A for standard dosages.
- If needed, give salbutamol nebulizer solution for 24–48 hours. Refer to table A17 in annex A for standard dosages.

Referral

- Children younger than 1 year. Young infants are at high risk of apnea and need constant monitoring.
- Malnourished children or children with other significant medical problems
- Patients who have periods of cyanosis or apnea

Prevention

- DPT immunization for *all* children (see chapter 19 "Immunization"). Continue DPT immunization schedule after recovery to prevent diphtheria and tetanus.
- Isolate patients who have pertussis from unimmunized people for 4 weeks after coughing begins (i.e., the period of communicability), if the patient has not received antibiotic treatment. Otherwise, the patient who received antibiotic treatment should be isolated during the first 5 days of treatment.

Patient Instructions

- Stress the importance of feeding supplements and prevention of malnutrition. Advise frequent, small quantities of food and a high protein diet.
- Stress the importance of continuing all immunizations, including DPT.
- Monitor for malnutrition during illness and for 1 month following resolution of symptoms.

15.2. Diphtheria

Description

Diphtheria is a serious and acute infection of the pharynx and respiratory tract caused by the toxin-producing bacteria, *Corynebacterium diphtheria.* Transmission is by airborne droplets from infected individuals. Diphtheria has a high mortality rate but can be prevented by vaccination.

Diagnosis

Look for the following:

- Fever
- Headache, malaise
- Tonsillitis, pharyngitis—may be mild or may be severe and associated with characteristic grayish-white sticky patch on the throat
- Rhinitis (often unilateral)
- May be associated with signs of serious illness
  - Cervical edema and stridor
  - Bleeding (purpura, gingival bleeding, epistaxis)
  - Skin lesions
  - Myocarditis—may be associated with arrhythmia
  - Rarely—pneumonia, oliguria, neuropathies

INFECTIOUS DISEASES

Management

Nonpharmacologic

- Monitor airway for signs of stridor or obstruction.
- Ensure adequate nutrition and hydration. Occasionally patient may require nasogastric tube feeding because of difficulties swallowing (dysphagia).
- Isolate patients from those who have not been immunized.

Pharmacologic

- Administer diphtheria antitoxin (available in provincial and regional hospitals).
- Give antibiotic therapy.
  - Penicillin V (phenoxymethylpenicillin) for 7–10 days
    - Children: Refer to table A16 in annex A for standard dosages.
    - Adults: 500 mg every 6 hours

  —OR—
  - Erythromycin ethylsuccinate (for penicillin allergic patient) for 7–10 days
    - Children: Refer to table A12 in annex A for standard dosages.
    - Adults: 400–800 mg every 6 hours
    - Give paracetamol for pain or fever. Refer to table A15 in annex A for standard dosages.

Referral

All serious and complicated cases should be referred, especially children younger than 15 years who have pneumonia and myocarditis.

Prevention and Patient Instructions

- Ensure proper immunization of all children.
- Verify vaccination status of contacts. Complete 3 vaccinations or give booster if more than 1 year since last injection.
- Isolate patient for 1–7 days.
- Monitor, and treat if necessary, contacts of the household for development of diphtheria.
- Complete DPT vaccination after illness because the disease does not always induce antitoxin formation to protect patient from re-infection.

15.3. Tetanus

Description

Tetanus is caused by a neurotoxin tetanospasmin, produced by *Clostridium tetani*. In unvaccinated individuals, any injury of the skin or mucous membranes (e.g., accidents, cuts, stings, surgery, childbirth, circumcision, ulcers) carries the risk of infection if contaminated by *C. tetani*. *C. tetani* is found in soil and feces, and spores are resistant to many disinfectants. The disease is completely preventable through vaccination and is included in the standard EPI protocol and antenatal vaccinations.

Diagnosis

- A history of a skin defect in unclean circumstances may be present, but the patient has often forgotten the incident.
- The disease progression is as follows:
  - The first sign of tetanus is stiffness of the jaw muscles, starting with difficulty in chewing followed by locked jaw (i.e., unable to open).
  - Next, other facial muscles cramp, followed by throat and neck muscles, which provokes difficulty swallowing.
  - Progression of the disease is from 2 days to 3 weeks. The patient experiences prolonged and painful muscle spasms: stiff arched back, flexed arms, and extended legs. Very slight sensory stimuli provoke

INFECTIOUS DISEASES

recurrent paroxysmal spasms while the patient is fully conscious. The patient remains in this condition for several weeks (3 on average).

- In infants, the baby cannot suck and umbilicus is infected. The baby has a stiff body, irritability, spasms, constipation, and cyanotic episodes. Neonatal tetanus may enter the body via the umbilicus from unclean instruments or dressings used on the cord.
- Death is provoked by complications: asphyxia due to spasms in larynx or thorax or inhalation of vomit with aspiration pneumonia. Neonates die of the inability to feed.

Management

Refer *all* patients for injection of antitetanus immunoglobulin (available in DHs) and support as early as possible. Refer to table 15.3 for specific treatment measures to prevent tetanus in high- and low-risk wounds.

Nonpharmacologic

- Maintain a clear airway.
- Provide adequate fluids and nutrition because tetanus spasms result in high metabolic demands and a catabolic state. Nutritional support will enhance chances of survival.
- Assess the wound.
  - Low-risk wounds include most superficial wounds that have limited tissue loss and that are not more than 6 hours old.
  - High-risk wounds include war wounds, deep puncture wounds, wounds with substantial tissue loss, extensive burns, foreign bodies, and necrosis that are more than 6 hours old
- Promote proper wound care and tetanus prophylaxis.
  - Remove any foreign body from the wound.
  - Clean, disinfect, and dress the wound.

Pharmacologic

- Give first dose of antibiotic IV then refer to hospital:
  - Penicillin G (penicillin benzyl)
    - Children: 50,000 units/kg/dose every 6 hours for 10 days
    - Adults: 2–4 million units/dose IV every 6 hours for 10 days

    —OR—
  - If in a penicillin-allergic patient, metronidazole:
    - Children: 7.5 mg/kg/dose every 8 hours for 10 days
    - Adults: 500 mg IV every 8 hours for 10 days
- Give diazepam for sedation of spasms, if needed, during the transfer
  - Children: 0.5 mg/kg rectally; repeat every 6 hours if needed
  - Adults: 5 mg orally or rectally; repeat every 6 hours if needed

  Caution: Monitor for respiratory distress.

Prevention

Tetanus is *completely* preventable by active immunization and is part of the routine childhood immunizations of EPI:

- Encourage the complete immunization of all children, including sick or weak ones:
  - Three vaccinations before the age of 1
  - A booster 1 year after the third dose
  - A second booster 5 years after the first booster
  - A booster every 10 years
- Check the immunization status of *all* children presenting for *any* reason at the facility and vaccinate as appropriate (see chapter 19 “Immunization”).
- Check the immunization status of *all* pregnant women and vaccinate as appropriate (see chapter 19 “Immunization”).
- Ensure that all women of childbearing age have received at least 5 doses of tetanus vaccine.

- Promote delivery by skilled birth attendants at facilities. If not possible, promote clean deliveries, in particular sanitary umbilical cord care.
- Promote proper wound care and tetanus prophylaxis. (See table 15.3.)

TABLE 15.3

Specific Measures to Prevent Tetanus Following a Wound

	Wound Risk Assessment	
Patient's Vaccination Status	**Low**	**High**
Patient has been completely vaccinated (3 doses or more) and last dose was given—		
▪ <5 years ago	None	Antibiotics[a]
▪ >5 but <10 years ago	None	Antibiotics[a] Booster TT[b]
▪ >10 years ago	Booster[b]	Antibioticsa Booster TT[b] Tetanus immunoglobulin[c] *Refer.*
Patient has not been vaccinated, has been incompletely vaccinated, or has an unknown vaccination status	Begin or complete vaccination	Antibiotics[a] Begin or complete vaccination Tetanus immunoglobulin[c] *Refer.*

[a] Antibiotic treatment is phenoxymethylpenicillin (penicillin V) oral. Refer to table A16 in annex A for specific dosages. In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

[b] Booster TT: Give 1 dose 0.5 ml of TT IM, in another site than the serum (see below). Urge the patient to return to complete the vaccination and get boosters as indicated.

[c] Serotherapy: Give tetanus immunoglobulin, 500 IU IM. Refer the patient because the serum is available only in DHs.

15.4. Poliomyelitis

Description

Poliomyelitis is an acute viral infection due to *poliovirus*. It is most often recognized by weakness or flaccid paralysis especially in the legs of children.

- Humans are the only reservoir of the virus, so direct and indirect transmission is via humans.
  - Direct: fecal-oral route. The virus is excreted in the stool of infected people for 2 weeks before until 8 weeks after onset of illness.
  - Indirect: ingestion of contaminated food or water
- The incubation period is 7–14 days.
- The disease is preventable by proper immunization (see chapter 19 "Immunization").

Diagnosis

Most poliomyelitis infections are asymptomatic or have mild symptoms. Diagnosis is most often recognized by asymmetric flaccid paralysis, which occurs in fewer than 1% of patients who are infected. Symptoms of the two types of the infection include the following:

- Nonparalytic form of poliomyelitis
  - Fever
  - Headache
  - Neck stiffness
  - Muscle pain
- Paralytic form of poliomyelitis
  - Paralysis (occurring in a small proportion of patients), which may affect any skeletal muscle group, including respiratory muscles. Paralysis is asymmetric, most commonly affecting lower limbs with ascending progression.
  - Progression of the paralysis
    - Muscles softened
    - Reflexes diminished

- Sensation remaining intact
  Caution: Paralysis is life threatening if respiratory muscles are involved.

Management

No specific treatment is available for poliomyelitis since it is a virus. Immediately register any patient suspected of having polio, inform the focal point person, and refer the patient to the nearest polio center.

Prevention and Patient Instructions

- Immunization with 4 doses of OPV almost certainly prevents infection.
  - Ensure proper vaccine schedule for *all* children according to EPI (see chapter 19 "Immunization").
  - Report any suspect case. Initiate vaccination campaign following the national protocol.
- Ensure proper disposal of excreta.
- Ensure safe drinking water and food sources.
- Review the health status of family members and close contacts for all suspect cases.
- Instruct all patients to return promptly to the health facility if they begin exhibiting flulike symptoms and then develop weakness or paralysis.

15.5. Measles

See also IMCI flipchart for children younger than 5 years.

Description

Measles is a highly contagious viral disease with possible serious complications and high mortality in malnourished children or children who have other diseases. It is rare in infants younger than 3 months. The disease occurs most often in children between 6 months and 3 years of age who have not been completely or successfully vaccinated.

Diagnosis

- Check the patient's history for contact with a measles case 1–2 weeks before the onset of symptoms.
- First symptoms may be like a common cold or flu: mild to moderate fever, often accompanied by a persistent cough, runny nose, inflamed eyes (i.e., conjunctivitis), and sore throat.
- In the early stage, 2–3 days after first general symptoms, tiny white spots on erythematous base can be seen on the inner lining of the cheek (Koplik's spots).
- The typical rash, which appears 3–10 days after first symptoms, consists of small red spots, often slightly raised that tend to cluster giving the skin a blotchy red appearance. The rash starts at the hairline and moves to the face, neck, thorax, abdomen, and then the arms and legs. With the appearance of the rash, the patient has high fever (38.5°C or higher), which disappears once rash reached the feet.
- Check all children younger than 5 years suspected of measles for general danger signs:
  - Ask if the child—
    - Is unable to drink or breastfeed
    - Vomits everything
    - Has had convulsions
  - Assess whether the child is lethargic or unconscious or is convulsing now.

Caution: Measles can complicate to pneumonia, eye infection, otitis media, mouth ulcers, diarrhea or dehydration, or severe malnutrition particularly in children with poor nutrition or other concomitant conditions.

15.5. Measles

INFECTIOUS DISEASES

Management

Nonpharmacologic

- Ensure continued feeding and drinking. Diet is an essential part of the management because children with measles can quickly become malnourished. Weigh the child and record regularly. Track weight changes.
- Gently clean the eyes with clean (i.e., boiled and cooled) water or with normal saline solution (0.9%) 3 times daily.

Pharmacologic

- Give a capsule of vitamin A if child has not received vitamin A within 3 months (see table 10.4C). Give first dose at the clinic, and give doses for day 2 and day 14 to the caregiver.
- If the child has fever, pain, discomfort, or a history of febrile convulsions, give oral paracetamol up to 4 times daily until fever subsides. Refer to table A15 in annex A for standard dosages.
- If mouth ulcers develop, instruct the patient or caregiver to rinse the mouth 4 times daily with solution of 1 cup clean water plus ½ teaspoon (2–3 cc) salt. For severe ulceration, apply gentian violet (0.5%) 2 times daily until resolved.
- Advise the mother to continue feeding and hydrating the child.
- Instruct the mother or caregiver to bring the child back for a follow-up in 2 days.
- Treat possible complications according to IMCI flipchart before referral.
  - Treat eye infection with tetracycline eye ointment (see section 5.1 "Conjunctivitis [Red Eye]").
  - Treat and prevent dehydration (see section 2.1 "Diarrhea and Dehydration").
  - Treat pneumonia (see section 3.3 "Pneumonia in Children and Adults") and otitis media (see section 4.2 "Acute Otitis Media").
  - Treat convulsions (see section 17.1 "Febrile Convulsion").
- Give first dose of treatment before referral in case of severe complicated measles (clouded cornea and deep mouth ulcers):
  - Give one dose of vitamin A
  - And give first dose of ampicillin **PLUS** gentamicin (refer also to table A4 and A13 in annex A)
  - Apply tetracycline eye ointment if clouding of the cornea or pus draining from the eye
  - Advise the mother to continue feeding the child and refer.

Referral

- Children who have danger signs and severe complications
- Severe pneumonia (stridor, chest in-drawing)
- Severe dehydration
- Known asthma patients
- Malnutrition or compromised immune status and associated diseases (e.g., human immunodeficiency virus [HIV], TB)

Prevention and Patient Instructions

- Keep children who have measles isolated from others (i.e., from kindergarten, school)
- Present all children for measles vaccination (first injection at 9 months and second injection at 18 months).
- Focus on mouth and eye hygiene.
- Return to the clinic in 2 days for follow-up.
- Advise the mother or caregiver that good nutritional status of children limits complications of measles.

Note: Measles is a reportable disease.

15.5. Measles

INFECTIOUS DISEASES

15.6. Sepsis

15.6. Sepsis

Description

Sepsis is an invasion of microbes or their toxins into the blood, organs, or other normally sterile parts of the body. Causative agents are most commonly gram-negative bacteria. Sepsis encompasses a spectrum of illnesses ranging from minor flulike symptoms to life-threatening shock and organ failure.

Diagnosis

- History or evidence of recent or current infection
- History of recent invasive medical procedure (e.g., dental and obstetric procedures)
- Spectrum of signs and symptoms from mild to severe
  - Increased (38.3°C or higher) *or* decreased (less than 35.5°C) temperature
  - Malaise
  - Chills
  - Increased respiration (more than 20/minute in an adult)
  - Increased heart rate (more than 90/minute in an adult)
  - Decreased blood pressure
  - Shock
- Organ dysfunction and failure

Caution: Systemic inflammatory response syndrome is a physiologic condition that mimics sepsis but may be caused by a serious medical condition other than infection such as pancreatitis, severe burn, trauma, or malignancy.

Management

Nonpharmacologic

Identify and remove any focal source of infection.

Pharmacologic

- Initiate broad-spectrum antibiotics prior to referral. Give ampicillin, gentamicin, and—if you suspect a gastrointestinal or anaerobic source—metronidazole.
  - Ampicillin
    - Children: Refer to table A4 in annex A for standard dosages.
    - Adults: 1 g IV every 6 hours

    —OR—

    In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

    —PLUS—
  - Gentamicin
    - Children: Refer to table A13 in annex A for standard dosages.
    - Adults: 80 mg IV every 8 hours

    —PLUS—
  - Metronidazole, if you suspect a gastrointestinal or anaerobic source, IV injection
    - Children: 7.5 mg/kg/ IV every 8 hours
    - Adults: 500 mg IV every 8 hours

Referral

- Refer *all* severe cases of sepsis.
- In the case of septic shock, treat shock before referral (see section 16.9 “Shock” for a discussion of septic shock).

Prevention

- Treat the focus of infections early and appropriately to avoid progression to sepsis.
- Sepsis may be prevented by reducing the number of invasive procedures undertaken and by limiting the use (and duration of use) of indwelling vascular and bladder catheters.

INFECTIOUS DISEASES

15.7. Malaria

See also IMCI flipchart for children younger than 5 years.

Description

Malaria is a parasitic disease caused by *plasmodium*. Malaria infection is transmitted by the bite of an infected mosquito. *Plasmodium vivax* (PV) and *Plasmodium falciparum* (PF) are the two most common species in Afghanistan.

- PV accounts for more than 90% of cases of malaria in Afghanistan and does not usually cause severe (i.e., life-threatening) cases. Even after treatment, PV parasites may remain in the liver and provoke new attacks even without a new mosquito bite.
- PF is not common in Afghanistan but is much more likely to provoke severe attacks.
- In Afghanistan, only some regions have significant risk of malaria (see table 15.7). Always suspect malaria in a patient with fever who lives in, or has traveled within the last 4 weeks to, a malaria-prone area.

TABLE 15.7. Risk of Malaria in Afghanistan, by Province

Stratum	Risk Level	Provinces
First	Medium to high risk for transmission	Badakhshan, Badghis, Balkh, Faryab, Herat, Helmand, Kandahar, Khost, Kunar, Kunduz, Laghman, Nangarhar, and Takhar
Second	Low risk for transmission	Daikundi, Farah, Jawzjan, Kabul, Kapisa, Logar, Nimruz, Oruzgan, Paktia, Paktika, Parwan, Samangan, Sar-e Pul, Wardak, and Zabul
Third	Very low risk for transmission	Central highlands of Baghlan, Bamyan, Ghazni, and Ghor.

Diagnosis

- The classic picture of episodic fever, chills, and sweating with symptom-free periods in between is not reliable. If the patient lives in a malaria-prone area, or has travelled through a malaria-prone area, always suspect malaria in a patient complaining of or showing the following signs:
  - Fever
  - Chills
  - Sweating
  - Headache
  - Muscular ache
  - Nausea
- Consider malaria in *any* patient who presents with fever that has no obvious other cause.
- If the patient is younger than 5 years, use the IMCI flipchart "Child with Fever" to exclude danger signs and other illnesses.
- Always check for signs of possible severe (i.e., life-threatening) malaria:
  - Dehydration
  - Impaired consciousness, drowsiness, delirium, or unconsciousness
  - Prostration (i.e., generalized weakness so that the patient is unable to walk or sit up without assistance)
  - Deep breathing, respiratory distress
  - Seizures
  - Circulatory collapse or shock; systolic blood pressure less than 70 mmHg in adults and less than 50 mmHg in children
  - Jaundice
  - "Coca-cola color" (dark) urine, which may indicate blood or hemoglobin in the urine
  - Abnormal spontaneous bleeding

- Get laboratory confirmation. Whenever possible, *all* suspected cases of malaria must be verified by rapid dipstick test, blood smear microscopy, or both before treatment.
  - Microscopy of blood smear remains the standard for laboratory confirmation and can potentially detect all forms of malaria; accuracy depends on technician's experience.
  - Rapid dipstick test strips for malaria are available in Afghanistan.
    - Most rapid dipstick test strips identify *only* PF malaria, so a patient with PV malaria will have negative result by this kind of testing strip.
    - Some rapid dipstick test strips can identify PF malaria as well as other forms. Make sure the health worker knows which test is being used in their laboratory.
- If no laboratory confirmation is feasible, treat the patient based on clinical suspicion.

Management

Nonpharmacologic

- Avoid dehydration. Encourage intake of liquids in adults and children and breastfeeding for infants.
- Reduce fever (if higher than 38.5°C) by removing patient's clothing and applying cool compresses.

Pharmacologic

- Whenever possible, try to confirm diagnosis of malaria with laboratory verification (blood smear microscopy, rapid dipstick test strip, or both).
- Remember: PV accounts for 90% of malaria cases in Afghanistan.
- For fever, give paracetamol. Refer to tables A15A and A15B in annex A for standard dosages.

15.7. Malaria

15.7.1. First-Line Therapies

Confirmed (Laboratory) Cases of Malaria

- ***PV.*** If laboratory confirmation is positive for PV and the patient does *not* have life-threatening signs, treat as "Uncomplicated, Confirmed *Plasmodium vivax*" according to the National Guidelines (see table 15.7.1A for children and table 15.7.1B for adults). For children over 4 years and adults, give chloroquine (total dose of 25 mg/kg, maximum 1500 mg divided over 3 days) in 1 dose daily over 3 days **PLUS** primaquine (0.25 mg/kg/day, maximum 15 mg) in 1 dose daily for 14 days (tablet of 15 mg are available in comprehensive health centers and district hospitals).

Caution: Primaquine should *not* be given to the following patients:

- Pregnant women
- Lactating mothers, except under medical supervision
- Children younger than 4 years (see IMCI flipchart for malaria treatment)
- Those suspected of having G6PD (glucose-6-phosphate dehydrogenase) deficiency

- ***PF.*** If laboratory confirmation is positive for PF and the patient does *not* have life-threatening signs, treat as "Uncomplicated, Confirmed *Plasmodium falciparum*" according to the National Guidelines (see table 15.7.1C for children). For adults, give sulfadoxine-pyrimethamine (Fansidar®) 25 mg/kg sulfa component, maximum of 3 tablets per day in a single dose **PLUS** artesunate (4 mg/kg, maximum 200 mg/day) once daily for 3 days.
- ***Mixed PF and PV.*** Treat as for patient with PF according to National Guidelines (see table 15.7.1C for children). For adults, give sulfadoxine-pyrimethamine

INFECTIOUS DISEASES

TABLE 15.7.1A. **Treatment of Children with Chloroquine According to Age and Body Weight**

Dosage Form and Dosage	3 to <6 kg (Neonate to <3 months)	6 to <10 kg (3 months to <1 year)	10 to <15 kg (1 to <3 years)	15 to <20 kg (3 to <5 years)	20–29 kg (5–10 years)
Oral: Once a day ▪ Form: 150 mg tablet ▪ Duration: 3 days ▪ Dosage: 10 mg/kg on day 1 and day 2, and 5 mg/kg on day 3	— — —	Day 1: ½ Day 2: ½ Day 3: ½	Day 1: 1 Day 2: 1 Day 3: ½	Day 1: 1½ Day 2: 1½ Day 3: 1	Day 1: 1½ Day 2: 1½ Day 3: 1
Form: 50 mg base/5 ml syrup	Day 1: 5.0 ml Day 2: 5.0 ml Day 3: 2.5 ml	Day 1: 7.5 ml Day 2: 7.5 ml Day 3: 5.0 ml	Day 1: 15 ml Day 2: 15 ml Day 3: 10 ml	— — —	— — —

TABLE 15.7.1.B. **Treatment of Adults with Chloroquine**

Day 1	Day 2	Day 3
10 mg/kg initial dose **—PLUS—** 5 mg/kg 6–8 hours later	5 mg/kg	5 mg/kg
—OR—		
10 mg/kg = 4 tablets of 150 mg	10 mg/kg = 4 tablets of 150 mg	5 mg/kg = 2 tablets of 150 mg

TABLE 15.7.1C. **Treatment Sulfadoxine-Pyrimethamine Plus Artesunate in Children**

Age in Years	Weight in kg	Sulfadoxine-Pyrimethamine (500 mg + 25 mg tablet) 1 Day Only	Artesunate (50 mg tablet)		
			Day 1	Day 2	Day 3
<1	<10	½	1	1	1
1 to <3	10 to <14	1	1	1	1
3 to <5	17–19	1	2	2	2
5–11	20–35	2	3	3	3
12+	36+	3	4	4	4

(25 mg/kg sulfa component, maximum of 3 tablets in a single dose) **PLUS** artesunate (4 mg/kg, maximum 200 mg/day) once daily for 3 days.

Unconfirmed Malaria

If laboratory confirmation not possible, if clinical suspicion is high for malaria, or if both are the case, treat as "Unconfirmed Malaria" according to the National Guidelines.

- Give chloroquine (total dose of 25 mg/kg, maximum 1500 mg divided over 3 days) daily for 3 days (see table 15.7.1A for children and table 15.7.1B for adults).

- Do *not* use primaquine for unconfirmed cases. Do not treat with primaquine unless PV has been *confirmed* by laboratory test. If you suspect PV, refer the patient for diagnostic confirmation and follow-up care.

Severe Malaria

Severe, or life-threatening, malaria, whether it has been confirmed or is merely suspected, should be referred when possible. If not possible or safe to refer, treat according to the National Guidelines.

- Give artemether (3.2 mg/kg, maximum 160 mg/day) by 1 IM injection on day 1, then 1.6 mg/kg (maximum 80 mg/day) in 1 IM injection daily for 5 days.
  —OR—
- Once patient can tolerate oral treatment, or after at least 2 days of artemether, give a complete treatment oral course of artesunate **PLUS** sulfadoxine-pyrimethamine.
- All pregnant women with severe malaria should be referred to hospital as soon as possible.

Malaria in Pregnancy

- For confirmed PV or suspected, *uncomplicated* malaria, treat according to the National Guidelines, and refer for laboratory confirmation whenever possible.
  - Give chloroquine (total dose of 25 mg/kg, maximum 1500 mg divided over 3 days) over 3 (see table 15.7.1B for adults).days
    Caution: Do *not* give primaquine to pregnant women, lactating mothers, or children under 4 years, and those suspected of having G6PD (glucose-6-phosphate dehydrogenase) deficiency.
- For confirmed PF malaria in pregnancy, treat according to the National Guidelines.
  - First trimester: Give quinine (600 mg) every 8 hours for 7 days **PLUS** clindamycin (100 mg) every 12 hours for 7 days. ***Note:*** Clindamycin is not part of BPHS/EDL, so the patient may require referral.
  - First trimester with severe (life-threatening) malaria: May need to receive quinine as an IV dose according to National Guidelines.
  - Second and third trimester: Give sulfadoxine-pyrimethamine **PLUS** artesunate, the same as for nonpregnant patients.
    Caution: *Refer* all pregnant women with malaria when possible.

Malaria in Children Younger than 5 Years

Refer to IMCI flipchart.

15.7.2. Second-Line Therapies

Use second-line therapies only when parasitology has confirmed cases of PV or PF. Consider use of a second-line therapy in the following cases:

- Patients who show no improvement after 2 days on first-line therapy
- Patients who have persistent or recurrent symptoms 3–28 days after treatment
- Women in first trimester of pregnancy with PF
- Children younger than 2 months (see IMCI flipchart treatment of malaria)
- Patients who have worsening symptoms at any time during treatment
- Patients who have a known allergy to sulfadoxine-pyrimethamine

Management

Pharmacologic

Give the following for 7 days:

- Quinine (oral) 10 mg salt/kg (maximum 600 mg) every 8 hours

  —PLUS—

- Doxycycline (3.5 mg/kg) daily

  Caution: Do not use doxycycline in pregnant women or children younger than 8 years.

  —OR—

- Clindamycin (10 mg/kg) every 12 hours

Referral

- Severe (i.e., life-threatening) cases of malaria, whenever possible
  - Transport with health worker when possible.
  - Give first dose of malaria treatment prior to transport.
  - Give supportive care as needed before and during transport (e.g., oxygen, IV fluid).
- Pregnant women with malaria whenever possible
- Patient requiring second-line therapy
- Treatment failures
- Patients not improving after 2 days of treatment
- Patients who have worsening condition during treatment
- Patients who have serious complications from malaria

Prevention

Chemical

- Use long-lasting insecticide treated nets or insecticide treated nets.
- Use indoor residual spraying.
- Use repellents, aerosol sprays, and mosquito coils as forms of personal protection.

Physical

Prevent or eliminate breeding sites and, thus, the risk of mosquito bites:

- Wear protective clothing to avoid mosquito bites, especially during early evening when the malaria biting mosquito is most common.
- Remove or destroy breeding sites such as stagnant waters, cans, or drainage water. The aim is to remove water and to fill breeding sites with stone and soil.

Patient Instructions

- Clearly instruct the patient or caregiver how much medicine to take daily according to the age or weight as listed in the tables above. Have the patient or caregiver repeat the instructions so you can check his or her understanding.
- Witness or supervise the first dose of medicine. Monitor the patient for 30 minutes, and if the patient vomits the medicine, repeat the first dose.
- Recommend to take primaquine tablets (if it has been prescribed) with food as it can provide abdominal discomfort on an empty stomach.
- Treat fever higher than 38.5°C with paracetamol (10–15 mg/kg/dose every 6 hours until fever subsides) and cool compresses.
- *Avoid* dehydration. Encourage intake of liquids in adults and children; continue breastfeeding infants.
- Instruct the family about danger signs of severe malaria, and advise them to return immediately if any occur.
- Instruct the family that the patient must return in 2 days if he or she shows no improvement.

15.7. Malaria

INFECTIOUS DISEASES

15.8. Hepatitis

Description

Hepatitis refers to inflammation or infection of the liver from a variety of causes:

- Viral (most common)
  - Hepatitis A, B, C, D, E specific (hepatotropic) viruses have been identified. These viruses are transmitted by the fecal-oral route or by the parenteral or body-fluid route (see table 15.8).
  - Other viruses may cause hepatic inflammation (e.g., herpes, cytomegalovirus, Epstein-Barr virus [responsible for mononucleosis], varicella, adenovirus, enterovirus, parvovirus).
- Substances
- Antimalarials (chloroquine), paracetamol (overdose), anesthetic agents
  - Alcohol
  - Autoimmune disease

Hepatitis may be complicated by fulminant disease, as well as hepatocellular damage linked to cirrhosis, liver failure, and hepatocellular carcinoma.

Diagnosis

Although the severity of illness and complication rate of the various causes of viral hepatitis may differ, general signs and symptoms of hepatitis are similar for all forms. Infection may be not be apparent (i.e., asymptomatic, normal liver enzymes), subclinical (i.e., asymptomatic, elevated liver enzymes), anicteric (i.e., symptomatic, no jaundice), and icteric (i.e., jaundiced or appearing to be jaundiced). Common symptoms are the following:

- Fatigue, fever, and flulike symptoms for 1 week to 1 month before jaundice, if any, appears
- Anorexia, nausea, vomiting

TABLE 15.8. **Characteristics of Hepatotropic Viral Causes of Hepatitis**

Virology		Hepatitis A Virus RNA	Hepatitis B Virus DNA	Hepatitis C Virus RNA	Hepatitis D Virus RNA	Hepatitis E Virus RNA
Incubation (days)		15–40	60–180	14–160	21–42	21–63
Transmission	Parenteral	Rare	Yes	Yes	Yes	No
	Fecal-oral	Yes	No	No	No	Yes
	Sexual	No	Yes	Yes	Yes	No
	Perinatal	No	Yes	Rare	Yes	No
	Chronic infection	No	Yes	Yes	Yes	No
	Fulminant disease	Rare	Yes	Rare	Yes	Yes

INFECTIOUS DISEASES

- Right upper quadrant tenderness with or without palpable liver
- Itching
- Jaundice *may* appear as disease progresses
- Rapid screening test for hepatitis B and C (for centers with blood banks) may indicate previous exposure to those forms (i.e., identify presence of antibodies), but it does not confirm current or active disease.
- Severe complications such as the following may indicate fulminant disease, cirrhosis, or liver failure: encephalopathy, ascites, coma, bleeding, or hypoglycemia.

Management

Nonpharmacologic

- There is no specific treatment for hepatitis A. Give supportive care.
- Supportive treatment consists of the following:
  - IV hydration is given as needed.
  - Rest in bed is recommended until the transaminase level is high.
  - Good nutrition with a diet rich in carbohydrates and with adequate protein should be given.
  - Fat may be restricted but not necessarily eliminated.

Pharmacologic

Avoid medication, if possible, during the acute phase because the absorption rates for medicines may be altered or the medicines may aggravate the severity of liver disease.

Referral

- All patients who have complications such as severe jaundice, encephalopathy, coma, bleeding, and hypoglycemia
- Pregnant women who have known hepatitis B *active disease,* for consideration of newborn immunoglobulin therapy immediately postdelivery
- All patients who have positive rapid screening tests for HBV and HCV, for investigation

Prevention and Patient Instructions

- Ensure vaccination as indicated per EPI (hepatitis B as part of pentavalent vaccine) (see chapter 19 "Immunization").
- Advise frequent and thorough hand washing for all contacts.
- Advise condom use for suspected hepatitis carriers.
- Use single-use sterile syringes for injections and sterilized instruments for any surgical interventions or endoscopies. (Chlorine solution should be used for sterilization.)
- Instruct patient to return if his or her symptoms worsen.
- Instruct patient to return every 2 weeks until his or her condition has improved.
- Lactating women may continue to breastfeed.

15.9. Typhoid (Enteric) Fever

Description

Typhoid, or enteric, fever is caused by consumption (via the fecal-oral route) of food or water contaminated by the bacteria *Salmonella typhi.* The bacteria invades the intestinal wall and can spread through the bloodstream to all organs. Typhoid often begins as nonspecific illness and fever that can evolve to serious disease complicated by peritonitis, encephalitis, or death. Consider typhoid in patients who have a fever persisting for more than 7 days and for whom malaria has been excluded.

Diagnosis

- High, recurring fever which may start insidiously and persist for weeks
- Pulse rate may be lower than expected
- Lethargy

INFECTIOUS DISEASES

- Poor feeding
- Constipation in early stage, diarrhea in later stage, vomiting
- Cough (mostly dry)
- Abdominal pain and distention
- Headache
- Stiff neck may occur
- Confusion and psychosis; convulsions may occur in children
- Rose spots on the abdominal wall in light-skinned children
- Hepatosplenomegaly

Complications include intestinal hemorrhage manifested by the dark or fresh blood in stool, intestinal perforation, cholecystitis, nephritis, meningitis, myocarditis, arthritis, and osteomyelitis.

Management

Nonpharmacologic

- Isolate the patient.
- Hydrate to prevent dehydration (see section 2.1 "Diarrhea and Dehydration").
- Continue adequate oral intake (i.e., simple, soft diet).
- Monitor for bleeding, anemia, peritonitis, convulsions, shock, or other known complications of typhoid fever.

Pharmacologic

- Give an antipyretic daily until the fever subsides: paracetamol. Refer to table A15 in annex A for standard dosages.
- Give an antibiotic.
  - First line: chloramphenicol for 14 days
    - Children: Refer to table A5 in annex A for standard dosages.
      Caution: Avoid chloramphenicol in premature infants, and refer.
    - Adults: 2 capsules 250 mg every 8 hours

    —OR—
  - Second line: amoxicillin for 14 days
    - Children: Refer to table A3 in annex A for standard dosages.
    - Adults: 500 mg every 8 hours
      Note: Amoxicillin is preferred for pregnant and lactating women

    —OR—
  - Third line (for suspected resistance; may require referral because it is available in CHCs and DHs): ciprofloxacin for 14 days
    - Children: 15 mg/kg/dose every 12 hours
    - Adults: 500 mg every 12 hours
      Caution: Ciprofloxacin is contraindicated in pregnant women and should be avoided in children when possible.

Referral

- All seriously ill patients
- All patients who are at the extremes of age (i.e., very young and very old) or pregnant
- Complicated cases with suspicion of bowel perforation or peritonitis
  - Refer early to surgical center where appropriate monitoring and treatment is available.
  - Start IV line, hydrate, and give IV antibiotics prior to transfer.

Prevention and Patient Instructions

- Good hygiene and hand washing
- Community hygiene and sanitation measures

15.9. Typhoid (Enteric) Fever

INFECTIOUS DISEASES

15.10. Tuberculosis

Description

TB is a bacterial infection caused by *Mycobacterium tuberculosis*. Most people infected as a primary infection with the bacteria that causes TB never develop active TB. In a small percentage of people, the primary infection spreads and remains active in the lung causing illness and capable of spreading the disease to others. Infection is usually spread by the airborne route from a coughing patient who has active pulmonary disease.

Most cases of TB involve infection of the lung (i.e., pulmonary TB). Other much less common forms of the disease include infections of the bone (the spine is the most common site), lymph nodes, joints, meninges, or abdomen or a disseminated infection (i.e., miliary TB).

Patients who have weak immune systems because of extremes of age, poor nutrition, or underlying medical problems, including human immunodeficiency virus (HIV), are more likely to develop active TB. Sometimes these patients will have activation of previously inactive disease.

Active TB infection is classified as follows:

- SS+ is sputum (stain) positive for TB. It indicates pulmonary TB and is very infectious until therapy has been given for at least 2 weeks.
- SS– is sputum (stain) negative for TB. It indicates patients diagnosed with pulmonary TB by a physician because of symptoms, despite having negative sputum stain 3 times. These patients may be less contagious, but can still spread the disease until therapy has been given for at least 2 weeks.
- Extrapulmonary TB is diagnosed by a physician and indicates a patient who has active TB in a site outside of the lung.

15.10. Tuberculosis

The keys to decreasing TB in Afghanistan are early diagnosis and treatment of those with active disease. All health care workers should consider TB in *any* patient who has had cough of more than 2 weeks. All patients in Afghanistan who have active TB should be treated under the DOTS program, which aims to ensure the continuous and regular uptake of the anti-TB medicines during the length of treatment and to prevent anti-TB medicine resistance by avoiding interruptions in treatments.

Diagnosis

Diagnosis of TB should be established by a qualified physician using the following criteria:

- Clinical features (signs and symptoms)
- Sputum smear microscopy (first priority)
- Culture (if available)

When diagnosing extrapulmonary TB, the judgment of physician is an important supplement to the clinical features.

Look for the following to diagnose and categorize TB.

- Pulmonary TB should be suspected in *any* patient who has had cough for more than 2 weeks.
- Other signs and symptoms of pulmonary TB *may* include the following:
  - Weight loss
  - Fever (typically low-grade)
  - Night sweats
  - Coughing up blood (hemoptysis)
  - Fatigue, loss of appetite
  - Chest pain
  - Shortness of breath
- Pulmonary TB in young children may be particularly difficult to diagnose because they may not demonstrate classical symptoms (especially malnourished children). Pulmonary TB should be suspected in *all*

INFECTIOUS DISEASES

young children who have the following:

- Cough for more than 2 weeks
- Exposure to a household or close community contact who has active TB
- History of malnutrition not improving with dietary supplement
- History of poor growth or poor weight gain
- Chronic fever (rarely higher than 38°C), lassitude, anorexia

  Note: Vaccination with BCG may limit the chance and severity of TB in children, but it does *not* guarantee its prevention.

- Physical examination is often normal in patients who have TB; however, some findings *may* be present depending on the involved organ.
  - Pulmonary TB—decreased breath sounds, tubular breath sounds, crackles
  - Extra pulmonary TB—see table 15.10A
- Laboratory tests can confirm a diagnosis.
  - Sputum for TB (acid fast bacilli) stain—3 specimens for *all* pulmonary TB suspects who are able to provide sputum
  - Chest X-ray—when ordered by physician looking for SS– TB
  - Other X-rays—when ordered by physician looking for extrapulmonary TB
  - Tissue biopsy—when ordered by physician looking for extrapulmonary TB

Management

Nonpharmacologic

- All TB suspects should be entered in facility register and TB monitoring records (i.e., facility and laboratory).
- All patients who have positive sputum for TB should be referred for DOTS program.

TABLE 15.10A. Clinical Features of the Types of Extrapulmonary TB

Clinical Features	Possible Extrapulmonary TB Diagnosis
Enlarged or draining lymph nodes, especially in the neck; sometimes fistulae (i.e., drainage of fluid from swollen lymph nodes out through the skin)	TB lymphadenitis
Pleuritic chest pain, fever, dyspnea	Pleural TB
Backache, frequent urination, dysuria, or painless hematuria	Renal TB
Kyphosis (i.e., collapse of vertebral bodies forming an outward angle in the vertebral spine), back pain, swelling adjacent to the spine, tenderness over a vertebral body, or a para-vertebral "cold" abscess	Vertebral TB, also called Pott's disease
Weakness or paralysis of the lower extremities	TB of the spine
Swollen joint(s)	TB of the joint
Local swelling or draining sinus from the long bones	TB osteomyelitis
Abdominal swelling or mild pain, fever, night sweats, weight loss, diarrhea, abdominal mass, anal fistulae, ascites	Gastro-abdominal TB, the most common form is TB peritonitis
Headache and neck stiffness, mental changes and confusion, fever, somnolence or lethargy	TB meningitis or abscess

- All patients suspected of possible TB without positive sputum should be referred for evaluation of negative sputum TB by a physician.
- All patients suspected of possible extrapulmonary TB should be referred to a physician for evaluation.
- All patients should be encouraged to get adequate rest, eat a high protein diet, stay in a well-ventilated environment, and increase their exposure to sunlight.
- Screen for TB among *all* household and close community contacts of the TB patient, especially high-risk patients such as young children, the very old, the malnourished, or those who have chronic disease (including HIV) because these patients are high risk for acquiring active TB.

Pharmacologic

- All patients diagnosed with TB should be treated under the DOTS program.
- Anti-TB medicines
  - The most important medicines used to treat TB are isoniazid (H), rifampicin (R), pyrazinamide (Z), streptomycin (S), and ethambutol (E).
  - Some medicines are available in fixed-dose combinations such as RH (rifampicin and isoniazid), RHZE (rifampicin, isoniazid, pyrazinamide, and ethambutol), and RHE (rifampicin, isoniazid, and ethambutol).
- Principally, there are two types of TB treatment.
  - Category I: 2RHZE/4RH (see table 15.10B)
    - This category applies to all new TB cases including children (i.e., pulmonary, extrapulmonary, SS +, and SS –) who have not received any TB treatment within at least the previous month.
    - DOTS is mandatory for both phases of treatment.
    - The duration of treatment is 6 months: 2 months initial phase with RHZE daily (56 doses), followed by continuation phase of 4 months of RH daily (112 doses).
  - Category II: 2SRHZE/1RHZE/5RHE (see table 15.10C)
    - Category II is applied to all *re*-treatment cases (i.e., relapses, treatment after interruption with bacteriological positive, failure of treatment category I, and others).
    - The DOTS is mandatory for both phases of treatment.
    - The duration of treatment is 8 months: initial phase of 3 months of RHZE daily supplemented in the first 2 months with streptomycin (S) daily, followed by continuation phase of 5 months of RHE daily.

TABLE 15.10B. Category I: Adults and Children Older Than 10 Years, Daily Dose of Fixed-Dose Combination (FDC) per kg of Body Weight

Patient Body Weight (kg)	Initial Phase (2 months or 56 doses)	Continuation Phase (4 months or 112 doses)
	Daily under DOTS (except Fridays and holidays)	**Daily under DOTS** (except Fridays and holidays)
	Dose FDC RHZE (150 mg + 75 mg + 400 mg + 275 mg)	**Dose FDC RH** (150 mg + 75 mg)
30–39	2	2
40–54	3	3
55–70	4	4
≥71	5	5

15.10. Tuberculosis

INFECTIOUS DISEASES

15.10. Tuberculosis

TABLE 15.10C. Category II: Adults and Children Older Than 10 Years, Daily Dose of Fixed-Dose Combination (FDC) per kg of Body Weight

Patient Body Weight (kg)	Initial Phase (3 months or 84 doses) RHZES + 56 doses of Streptomycin		Continuation Phase (140 doses)
	Months 1, 2, and 3	Months 1 and 2	5 Months
	Daily under DOTS (except Fridays and holidays	Daily under DOTS (except Fridays and holidays)	Daily under DOTS (except Fridays and holidays)
	Dose FDC RHZE (150 mg + 75 mg + 400 mg + 275 mg)	Dose Streptomycin injection (mg)	Dose FDC RHE (150 mg + 75 mg + 275 mg)
30–39	2	500	2
40–54	3	500	3
55–70	4	1 g[a]	4
≥71	5	1 g[a]	5

[a] 750 mg for patient over age 60

Tables 15.10D and 15.10E are given below for your own information as all TB treatments must be given and followed by a DOTS center.

Referral

Refer *all* patients who—

- Have smear positive for DOTS therapy
- Are suspected of having smear negative TB for evaluation by a physician, who may order special tests such as X-ray and other laboratory tests
- Have extrapulmonary TB, including miliary TB or meningitis TB, or have complicated TB (e.g., multisystem TB or respiratory insufficiency)
- Are suspected of having relapse of TB or treatment failure
- Are being considered for chemoprophylaxis against TB because of risk due to underlying medical condition (e.g., HIV, malnutrition, or late-stage diabetes)
- Have a high risk of disease following exposure to a person with active TB (e.g., young children, the elderly, the malnourished, and those with chronic disease)
- Have serious adverse effects to anti-TB medicines

TABLE 15.10D. Daily Dose per kg of Body Weight of First-Line Anti-TB Medicines for Children and Adults

Medicine	Recommended Dose Daily	
	Dose and Range (mg/kg Body Weight)	Maximum (mg)
Isoniazid	5 (4–6)	300
Rifampicin	10 (8–12)	600
Pyrazinamide	25 (20–30)	—
Ethambutol[a]	20 (15–25)	—
Streptomycin	15 (12–18)	

a Ethambutol is safe in children at a dose of 20 mg/kg (range 15–25 mg/kg) daily.

Prevention

- For the individual—
  - BCG immunization of newborn or first contact may decrease the rate and severity of TB, but it does not guarantee prevention.
  - Chemoprophylaxis (INH) therapy for high-risk exposures
  - Early detection, diagnosis, and treatment
- For the community—
  - Suspicion, early detection, and early treatment are the keys to decreasing TB in Afghanistan.

INFECTIOUS DISEASES

TABLE 15.10E. **Daily Dose per kg of Body Weight of Anti-TB Medicine for Children**

Body Weight (kg)	Initial Phase			Continuation Phase	
	RHZ (60/30/150 mg)	E (100 mg)	S (1000 mg)	RH (60/30 mg)	E (100 mg)
<4	½	½	50 mg (0.25 ml)	½	½
4–6	1	1	100 mg (0.5 ml)	1	1
7–9	1½	2	150 mg (0.75 ml)	1½	2
10–12	2	2½	200 mg (1 ml)	2	2½
13–18	3	3½	275 mg (1.4 ml)	3	3½
19–24	4	5	350 mg (1.75 ml)	4	5
25–29	5	6	450 mg (2.3 ml)	5	6

- Increase awareness about TB within communities.
- Increase awareness of cough etiquette among patients and the community.
- Examine and screen close contacts of active TB patients.
- Encourage good nutrition and hygiene.
- Try to keep TB suspects or newly diagnosed patients who have TB from exposing their household or community members, especially young children or those at high risk for acquiring TB.
- Early treatment of TB patients—airborne spread is normally eliminated after 2 weeks of treatment

Patient Instructions

- Remind patients that TB is a *curable* disease when medicine is taken correctly and for the full course.
- Enroll in DOTS and fully comply with taking all medicines for the full duration.
- Notify patients that the diagnosis and treatment of TB is free of charge.
- Instruct patients to—
  - Cover the mouth and nose when they cough or sneeze to avoid spreading the disease to others
  - Never spit on the ground, but rather use a disposable pot with a lid
  - Maintain good nutrition
  - Get adequate sleep
  - Refrain from smoking
- Advise patients that TB treatment sometimes produces side effects. Instruct them to inform the health center where they receive treatment immediately if they develop any of the following:
  - Jaundice
  - Skin disease
  - Hearing disturbances
  - Vision impairment

15.11. Chickenpox

Description

Chickenpox is a common childhood communicable disease caused by the *Varicella zoster* virus. The infection is self-limiting with a duration of about 1 week. The infection presents 2–3 weeks after exposure.

Diagnosis

Ask about possible exposure, and look for the following:

- Mild fever, headache, and malaise preceding the rash; afebrile by the end of the first week
- Characteristic rash and vesicles beginning on the trunk and face, later spreading to the arms and legs
  - Groups of macules, papules, and vesicles
  - Variety of blisters to crusting scabs in various stages of development; the spectrum of lesions may all exist at the same time
- Itching

Chickenpox is most severe in young infants, adults, and the immune-compromised patients. Rare complications—more commonly in adults—are pneumonia, meningitis, or encephalitis.

Management

Nonpharmacologic

Ensure adequate hydration and nutrition

Pharmacologic

- Fever is usually low grade and can be treated with paracetamol until fever subsides. Refer to table A15 in annex A for standard dosages.
  Caution: Do *not* give aspirin to children younger than 5 years because of the risk of Reye's syndrome.
- Calamine lotion may be applied on skin to relieve severe pruritus.
- Give chlorphenamine maleate tablet for severe itching. Refer to table A7 in annex A for standard dosages.
  Caution: Do *not* give to premature infants and infants younger than 1 month
- Give antibiotics *only* for secondary skin infection (cellulitis or pus).
  - Cloxacillin for 7 days (available in CHCs and DHs)
    - Children: 15 mg/kg/dose every 6 hours
    - Adults: 500 mg every 6 hours

    —OR—
  - For penicillin-allergic patients, erythromycin ethylsuccinate for 7 days. Refer to table A12 in annex A for standard dosages.

Referral

- Immunocompromised patient who has severe disease
- Failure to improve in 7 days
- Severely ill patient
- Complication of pneumonia, encephalitis, or meningitis
- Babies younger than 6 months
- Pregnant women
- Recurrent chickenpox

Prevention

Isolate the patient from others during infective phase, which occurs 6 days after the lesions have appeared, or until all of the lesions have crusted over.

Patient Instructions

- Review medication instructions and have patient or caregiver repeat them.
- Advise the patient or caregiver to—
  - Keep the skin clean. Bathe often with soap and water.
  - Cut the fingernails and avoid scratching the lesions, which can become infected.
  - Maintain general good hygiene measures.

15.11. Chickenpox

INFECTIOUS DISEASES

15.12. Rabies

15.12. Rabies

Description

Rabies is a viral (*rhabdovirus*) encephalitis transmitted by saliva of infected animals. Transmission can occur through bites or if an infected animal licks a person's abraded skin or mucous membranes. Infected animals are infectious to humans up to 14 days before the animal shows signs of infection. Unless treated immediately after infection, rabies is uniformly fatal.

Diagnosis

In Afghanistan, a bite from any animal (e.g., dog, cat, or wild animal) should be treated as possible until it is proven that the animal does not have rabies. If a suspect animal (e.g., dog, cat, cow, sheep, goat) licks a person's mucosa or skin in an area where its integrity is compromised, the contact should be treated as possible until proven that the animal does not have rabies. If possible, catch and keep the animal under surveillance for 15 days.

- The patient usually has a history of an animal bite, but the bite may not be recognized or remembered since incubation is usually 3–12 weeks.
- The prodromal syndrome consists of pain and paresthesia at the site of the bite in association with fever, malaise, headache, nausea, and vomiting. This phase lasts for a few days.
- In the acute phase, the patient can show the following:
  - Agitation
  - Hyperexcitability (e.g., skin is sensitive to air currents)
  - Painful laryngeal spasms upon drinking (i.e., hydrophobia)
  - Hypersalivation
  - Ascending paralysis and seizures

Management

- There is no treatment for clinical rabies: the patient will die. Postexposure treatment prevents rabies from developing and is vitally important.
  Caution: For a high-risk case, infiltrate the wound with rabies immunoglobulin.
- Observe the animal to assess for signs of rabies. Hold the animal for observation for 14 days, when possible.
- Care for the wound.
  - Wash the site of the contact bite with soap and clean water.
  - Wash the site of the contact with antiseptic (chlorhexidine plus cetrimide solution) for *at least* 15 minutes.
  - For benign bites, refer for vaccination immediately.
  - For serious bites, refer for rabies immunoglobulin immediately.
- Update tetanus immunization: 0.5 ml TT IM injection (see chapter 19 "Immunization").
- Use postexposure rabies prophylaxis, which is essential to prevent fatal results of active rabies infection. **REFER** to EPHS facility for vaccine with or without rabies immunoglobulin.

Referral

Refer all suspected bites and contacts to a center with vaccine with or without immunoglobulin available.

Prevention

- Ensure adequate referral for postexposure treatment.
- Encourage community control of suspicious animals.

Patient Instructions

- Make sure patients understand that untreated rabies is lethal and that strict adherence to full postexposure course of treatment is the only prevention.
- Encourage community control of suspicious animals.

INFECTIOUS DISEASES

15.13. Leishmaniasis

Description

Leishmaniasis is a group of diseases caused by parasites called *Leishmania*. The infection is transmitted by bites from sand flies. Leishmaniasis has three main clinical presentations and forms:

- Cutaneous leishmaniasis (common in Afghanistan) consists of single or multiple lesions on the uncovered parts of the body; often starts as a papule and then forms a scabbed ulcer.
- Visceral leishmaniasis or kala-azar (occasionally seen in Afghanistan) may have systemic signs such as fever, splenomegaly, weight loss, or lymphadenopathy.
- Mucocutaneous leishmaniasis (not typically seen in Afghanistan) occurs when lesions spread to mucosa and cause destruction and disfigurement.

Diagnosis

- Cutaneous leishmaniasis—
  - Suspect if a patient shows any of having had the following for more than 14 days:
    - A red papule (i.e., a small round bump on the skin) usually on an uncovered part of the body. It is painless but sometimes itches. The papule becomes larger and also deeper, and a reddish circle spreads to a larger area, with thickening of the skin.
    - A dry sore, with a hard crust on a red swelling, up to 2–3 cm in size, with an irregular boundary
    - A wet sore, with exudates, often larger and leaving deeper scars
  - Typically patient has no pain; sometimes there is itching. The sore will heal spontaneously over several months, but will leave a shallow scar, with normal skin color.
- Visceral leishmaniasis—
  - Can be deadly if untreated
  - Suspect visceral leishmaniasis in patients who have fever, enlarged spleen, weight loss, or lymphadenopathy
  - May exhibit other signs: bleeding, hepatomegaly, anemia, and diarrhea

Management

Nonpharmacologic

Keep the ulcer clean.

Pharmacologic

Refer the patient to a leishmaniasis center for treatment.

Referral

Refer all patients suspected of cutaneous leishmaniasis to a leishmaniasis center for evaluation and treatment. Insist that the patient go to the center, and inform the patient that treatment will take time.

Prevention

Prevention of cutaneous leishmaniasis is mainly through limiting the exposure to sand fly bites, which tend to bite from sunset to the first hours of the night. Advise patients to—

- Wear clothing that leaves little skin exposed when sun starts setting.
- Use fly screens in windows.
- Use insecticide-impregnated curtains, bed nets, and sheets.
- Sleep under long-lasting insecticidal treated nets or insecticidal treated nets, which reduce exposure to sand fly bites.
- Ensure vector control and elimination of animal reservoir hosts.

15.13. Leishmaniasis

INFECTIOUS DISEASES

Early diagnosis and treatment of infected patients reduces cross-contamination.

Patient Instructions

- Convince all patients who have had a painless skin lesion for more than 14 days to go for a checkup to a leishmaniasis diagnostic center.
- Insist that prompt diagnosis and treatment will prevent extensive scarring and infection of family members.

15.14. Ascariasis (Roundworm)

Description

Ascariasis is very common parasitic disease which is often asymptomatic. Transmission is by the fecal-oral route. Ascariasis may cause nutritional deficiency, abdominal distension, or bowel obstruction.

Diagnosis

- Gastrointestinal phase—from the presence of adult worms in the intestine
  - Pain, discomfort, irritability
  - Distension
  - Diarrhea
  - Poor growth in children; nutritional deficiencies
  - Visible worm, in part or whole, in stool
  - Rarely, visible worm from mouth or nose or in vomit
  - Rarely, vomiting and frank bowel or biliary tract obstruction (with ascariasis) due to worm mass
  - Diagnosis is established by evidence of characteristic eggs or worm noted on stool microscopy (where available).
    - Stool eosinophilia may be prominent during the early migration phase (i.e., pulmonary ascariasis).
    - Ultrasound may identify adult worms in bowel or pancreatic-biliary duct lumen.
- Migration phase—as larva migrate from site of exposure through the lungs
  - Initial phase after exposure; rare to see symptoms
  - Allergic signs
    - Skin: pruritis, erythema, urticaria
    - Pulmonary:
      - Dry cough, wheeze, asthma-like symptoms (Loeffler's syndrome)
      - Pulmonary infiltrates

Management

Nonpharmacologic

Look for evidence of anemia or malnutrition.

Pharmacologic

- Give oral mebendazole (100 mg tablet) for 3 days:
  - Children 1–2 years: 50 mg/dose every 12 hours
  - Adults and children older than 2 years: 100 mg/dose every 12 hours
- Alternative treatment albendazole (available in DHs)
  - Children 1–2 years: 200 mg as single dose
  - Adults and children older than 2 years: 400 mg as single dose

    Caution: Mebendazole and albendazole are *not* advised during first trimester of pregnancy or while breastfeeding

    Caution: Do *not* treat ascariasis with medicine if patient has evidence of bowel obstruction. Refer.
- Treat anemia, if needed, with oral ferrous sulfate (60 mg iron tablet) for 30 days:
  - Children younger than 12 years: 1.5 mg/kg/dose every 12 hours (not to exceed 60 mg daily)
  - Adults: 1 (60 mg) tablet every 12 hours

Referral

- Failure to respond to therapy for further diagnostic evaluation

15.14. Ascariasis (Roundworm)

INFECTIOUS DISEASES

- Evidence of severe abdominal tenderness, intestinal obstruction, or biliary obstruction

Prevention and Patient Instructions

Instruct patients to—

- Practice good hand washing hygiene (i.e., with soap and water before eating and after toilet use)
- Teach children good hand washing hygiene.
- Improve sewage facilities (e.g., latrines).
- Practice good food preparation hygiene (i.e., wash and cook food thoroughly).
- Keep fingernails short.

15.15. *Taenia Saginata* and *Hymenolepis Nana* (Tapeworm)

Description

Humans are infected with *Taenia saginata* by eating raw or undercooked infected beef. *Hymenolepis nana* is transmitted between humans through fecal-oral contact.

Diagnosis

Most infected individuals are asymptomatic, but vague abdominal pain, diarrhea, and weight loss may be present. Children may develop nonspecific complaints such as nausea, pain in abdomen, and diarrhea. Diagnosis is usually made based on the identification of characteristic eggs or proglottids in the stool, which requires direct observation of the stools or microscopic observation.

Management

Nonpharmacologic

If patient has diarrhea, treat it first (see section 2.1 "Diarrhea and Dehydration"). Treat malnutrition. Avoid dehydration.

15.15. *Taenia Saginata* and *Hymenolepis Nana*

Pharmacologic

Based on confirmed diagnosis, prescribe niclosamide (if available on the market, not presently in EDL):

- If *T. saginata*
  - Children weighing 11–34 kg: 1 g chewed in 1 dose (treatment may be repeated once after 7 days if needed)
  - Children weighing more than 34 kg: 1.5 g chewed in 1 dose (treatment may be repeated once after 7 days if needed)
  - Adults: 2 g chewed in 1 dose (treatment may be repeated once after 7 days if needed)
- If *H. nana*
  - Children weighing 11–34 kg: 1 g chewed on the first day, then 500 mg once a day for the next 6 days. Treatment may be repeated in 7–14 days, if needed.
  - Children weighing more than 34 kg: 1.5 g chewed on the first day, then 1 g chewed once a day for the next 6 days. Treatment may be repeated in 7–14 days, if needed.
  - Adults: 1 g chewed twice a day for 7 days. Treatment may be repeated in 7–14 days, if needed.

Prevention

- Ensure adequate cooking of beef.
- Practice general preventive measures—
  - Inspect beef.
  - Dispose of human feces properly.
  - Do not use fresh human waste as fertilizer.

INFECTIOUS DISEASES

15.16. Anthrax

Description

Anthrax is a toxic infection by *Bacillus anthracis* of herbivores (e.g., sheep, cows, goats, swine). It is transmitted to humans by contact with skin (cutaneous anthrax), inhalation (pulmonary anthrax), or ingestion (intestinal anthrax). Cutaneous anthrax is common in Afghanistan. Transmission is via spores, so even dead animals or their hides can transmit the disease.

Diagnosis

- The initial lesion is an erythematous papule, which becomes an itching vesicle, and then starts ulcerating giving a black eschar.
- The eschar is painless, but surrounded by edema, lymphangitis, and swollen lymph nodes.
- Lesions are usually on exposed areas: hands, arms, neck, head, feet, or legs.
- Generalized signs (i.e., fever, malaise, lymphangitis, and swollen lymph nodes) appear.
- If not treated promptly, extensive edema and septicemia may develop.

Management

To treat simple cutaneous anthrax—

- Do not peel or excise the eschar. Clean and apply dry dressings daily.
- Give oral doxycycline for 10 days. Refer to table A10 in annex A for standard dosages.
  Caution: Do *not* give doxycycline to children younger than 8 years or to pregnant or lactating women.
  —OR—
- Give amoxicillin, oral. Refer to table A3 in annex A for standard dosages.
  —OR—
- For children younger than 8, pregnant or lactating women, and patients with a penicillin allergy or sensitivity, give oral erythromycin. Refer to table A12 in annex A for standard dosages.

Referral

- All patients who have lesions on head or neck
- All patients who have generalized signs
- Any patient you suspect has pulmonary or intestinal anthrax

Prevention

Bury or burn the carcasses of all animals that die of anthrax.

Patient Instructions

- Ensure that the patient understands that anthrax is potentially lethal and that it is important to take the complete antibiotic treatment.
- Evaluate livestock to identify disease and control its spread.

15.17. Brucellosis

Description

Brucellosis is a systemic bacterial, gram-negative infection that may become chronic. Transmission to humans occurs by contact with infected meat (e.g., among slaughterhouse workers); ingestion of raw meat, milk, or cheese; or contact with infected material and animals through skin abrasions.

Diagnosis

- Diagnosis is difficult because clinical signs are nonspecific and fluctuating.
- Consider brucellosis under the following conditions:
  - The patient has undulating fever (i.e., up and down) for more than 10 days, with night sweats, chills, or

INFECTIOUS DISEASES

general asthenia with or without joint and muscle pain. A flulike syndrome that lasts for more than 1 week should make you think of brucellosis.
  - In malaria-prone areas, think of brucellosis if a patient's high fever persists in spite of correct antimalaria treatment.
- Look for complications of brucellosis:
  - If not treated, bone and joint pains become more prominent and meningo-encephalitis may occur. Refer these patients.
  - Brucellosis may become chronic with slowly developing bone and joint pain and involvement or neuro-meningeal signs.
- Perform laboratory tests, if available. The diagnosis often is made by serologic testing. Rising serologic titers or an absolute agglutination titer of more than 1:160 supports the diagnosis.
- Differential diagnoses include the following, and may be difficult to determine without a serologic laboratory test:
  - Typhoid fever
  - TB
  - Human immunodeficiency virus (HIV) infection
  - Malaria

Management

Pharmacological

- For patients older than 8 years, give
  - Oral doxycycline (100 mg) every 12 hours for 6 weeks
    Caution: Do *not* give doxycycline to children younger than 8 years or to pregnant or lactating women.
    —PLUS—
  - Oral rifampicin (10 mg/kg) up to 600 mg once daily for 6 weeks
- For children younger than 8 years, give
  - Co-trimoxazole for 6 weeks. Refer to table A8 in annex A for standard dosages.
    —PLUS—
  - Gentamicin injection once daily (7.5 mg/kg) for 2 weeks.
    Note: Combination regimens of two or three medicines are most effective.

Referral

- Because the diagnosis of brucellosis is difficult and the treatment is prolonged, refer all patients for serologic confirmation whenever possible.
- In addition, refer the following:
  - All complicated cases such as myocarditis, arthritis, osteomyelitis, and meningitis
  - All pregnant women

Prevention

- Avoid eating unpasteurized cheese, unboiled milk, or undercooked ("red") meat.
- Wash hands with soap after contact with animals or animal products.

15.18. Mumps

Description

Mumps is an acute, contagious viral disease characterized by painful enlargement of the salivary glands especially the parotid gland located below the ear, at the angle of the jaw. It may rarely involve the testes (orchitis) and lead to sterility.

Diagnosis

- Incubation period is 14–24 days.
- Most patients exhibit few symptoms except swelling of one of the salivary glands.

- Swelling is often quite painful.
- Edema of soft palate and pharynx may be seen.
- The patient may have no or only low-grade fever.
- Within 3–7 days, the swelling gradually subsides.

Management

- Treatment is generally supportive.
- No specific antiviral treatment is available.
- Encourage fluids. Avoid dehydration.
- A semi-solid or liquid diet may help avoid pain on chewing.
- Bed rest may be needed.
- Local support (elevation) is also given in the case of orchitis.
- Give paracetamol until fever or pain subsides. Refer to table A15 in annex A for standard dosages.

Referral

- High fever
- Severe headache
- Abdominal pain
- Painful testes or orchitis
- Suspected pancreatitis, encephalitis
- Failure to improve within 10 days

Prevention and Patient Instructions

- Isolate patient from others during infectious period (i.e., 3 days before parotid swelling until 7 days after it has started).
- Advise bed rest during the febrile episodes.
- Children may return to school 1 week after initial swelling.

15.19. Sexually Transmitted Infections

Description

Sexually transmitted infections (STIs) are caused by a broad range of pathogens and have a high physical and psychosocial morbidity. Bacterial and viral STIs such as gonorrhea, syphilis, human papilloma virus (HPV), human immunodeficiency virus (HIV), and herpes simplex virus-2 are the most common infections.

Diagnosis

- HPV and external genital warts
  - Usually asymptomatic except for cosmetic appearance
  - Itching, burning, bleeding, vaginal or urethral discharge, dyspareunia
  - Skin-colored, pink, red, brown
  - Sites of predilection—
    - Male: frenulum, corona, glans penis, prepuce, shaft, scrotum
    - Female: labia, clitoris, periurethral, anal canal, rectal area, urethral meatus, urethra, bladder, oropharynx.
- Herpes simplex virus and genital herpes
  - Primary genital herpes
    - Most individuals with primary infection are asymptomatic.
    - Those who have symptoms report fever, headache, malaise, myalgia, peaking within the first 3–4 days after onset of lesions, resolving during the subsequent 3–4 days.
    - Depending on location, pain, itching, dysuria, lumbar radiculitis, vaginal or urethral discharge are common symptoms.
    - Tender inguinal lymphadenopathy occurs during second and third weeks.

- Mucocutaneous lesions appear: an erythematous plaque, followed soon by grouped vesicles, erosion, and ulceration.
- Sites of predilection—
  - Male: glans, scrotum, thighs, buttocks
  - Female: labia, perineum, inner thighs

- Syphilis
  - Primary syphilis
    - Dark red nodule develops to ulceration (chancre).
    - Base is salmon-colored while periphery is more red.
    - Sites of predilection—
      - Men: prepuce, glans; in homosexuals: perianal region, rectum
      - Women: vagina or cervix, labia, clitoris, perianal region, rectum
      - Both genders: Extra genital lesions: lips, tongue, palate, finger
  - Secondary syphilis
    - An incredible number of exanthemas and enanthems are associated with secondary syphilis. The rashes of secondary syphilis usually do not itch.
    - Systemic changes can include lymphadenopathy, glomerulonephritis, or meningitis.
  - Tertiary syphilis
    - Tuberous syphilis: grouped red-brown papules and nodules occurring more often on the upper arms, back, or face.
    - Complications include—
      - Musculoskeletal disease
      - Cardiovascular disease
      - Central nervous system disease

15.19. Sexually Transmitted Infections

- Congenital syphilis
  - Early congenital syphilis: lesions occur during the first 2 years of life.
    - Present at birth: low birth weight, abnormally large placenta, hepatosplenomegaly, blisters and erosions mainly on palms and soles
    - Developing in first months in untreated infants: chronic runny nose, often bloody; central nervous system disease; glomerulonephritis, with nephrotic syndrome
  - Late congenital syphilis: lesions occur after 2 years of life.
    - Interstitial keratitis
    - Sensory deafness
    - Neurosyphilis
    - Saddle nose
    - Saber shins
    - Effusion into large joints
    - Gothic palate
    - Hutchinson teeth

- Chancroid
  - Acute STI with painful genital ulcers and lymphadenopathy caused by *Haemophilus ducreyi*.
  - Sites of predilection—
    - Men: glans penis, inner aspects of foreskin, frenulum
    - Women: labia, perianal region, cervix
  - Lymphadenopathy: acute painful, usually unilateral; develops in 50% after 1–2 weeks. typically forms abscesses that rupture forming fistulas
  - Painful soft ulcer
- Gonorrhea
  - Males
    - Urethral discharge ranging from scanty and clear to purulent and copious

INFECTIOUS DISEASES

15.19. Sexually Transmitted Infections

- Edema: meatus, prepuce, or penis
- Deeper structures: prostatitis, epididymitis, cystitis

- Females
  - Periurethral edema, urethritis
  - Purulent discharge from cervix but no vaginitis
  - In prepubescent females, vulvovaginitis, Bartholin's abscess
  - Deeper structures: pelvic inflammatory disease, endometritis
- Anorectum: proctitis with pain and purulent discharge
- Pharynx: pharyngitis with erythema

■ Granuloma inguinal (granuloma venereum)
- Painless, progressive, ulcerative lesions of the genital and perianal areas; lesions bleed easily on contract.
- Sites of predilection—
  - Males: prepuce or glans, penile shaft, scrotum
  - Females: labia minora, mons veneris, fourchette
  - Both genders: extra genital lesions: mouth, lips, throat, face, gastrointestinal tract, and bone

■ Lymphogranuloma venereum
- Primary lesion is 5–8 mm painless erosion, which heals over days.
- Lymphadenopathy is prominent, bilateral, and both above and below inguinal ligament. Often rupture with fistula formation. Without treatment, healing occurs in 2–3 months.
- Rectal infection is more common in women and homosexual men. Bloody discharge with pain.
- Oral infection involves enlarged cervical nodes. Later, axillary and thoracic nodes are involved. Differential diagnosis is lymphoma.
- Systemic symptoms during acute phase include fever, headache, myalgia. Skin findings include erythema nodosum, enanthems, and photosensitivity.

Management

■ For HPV and herpes simplex virus, refer.

■ For syphilis—
- Early syphilis, give—
  - Benzathine penicillin injection (2.4 MU) IM single dose

    —OR—

    In the case of penicillin allergy or sensitivity, use erythromycin for 2 weeks. Refer to table A12 in annex A for standard dosages.

    —OR—
  - Doxycycline tablet (100 mg) every 12 hours for 2 weeks

    Caution: Do *not* give doxycycline to children younger than 8 years or to pregnant or lactating women.
- Late syphilis, give—
  - Benzathine penicillin injection (2.4 MU) IM on day 1, day 8, and day 15

    —OR—
  - Doxycycline tablet (100 mg) every 12 hours for 28 days. In the case of neurosyphilis, give doxycycline tablet (200 mg) every 12 hours for 28 days.

    —OR—
  - During pregnancy, give erythromycin (500 mg) every 6 hours for 2 weeks.
- Congenital syphilis, refer.

■ For chancroid, give—
- Ceftriaxone (250 mg) IM single dose injection

  —OR—

INFECTIOUS DISEASES

- Erythromycin (oral) for 1 week. Refer to table A12 in annex A for standard dosages.

- For gonorrhea, give—
  - Ceftriaxone (250 mg) IM in a single dose injection
    —OR—
  - Ciprofloxacin tablet (500 mg) in a single dose (available only in CHCs and DHs; may need to refer)
- For granuloma inguinal and lymphogranuloma venereum, give—
  - Co-trimoxazole adult (480 mg), 2 tablets every 12 hours for 3 weeks
    —OR—
  - For pregnant women, erythromycin (500 mg) tablet every 6 hours for 3 weeks

Referral

- Patient with a new diagnosis of human immunodeficiency virus (HIV) (see chapter 20, "HIV Infection and AIDS")
- Patient with persistent, refractory, or recurrent STIs particularly when medicine resistance is suspected

Prevention and Patient Instructions

- Report all cases to the local health authority.
- Isolate all newborn infants and pre-pubertal children who have gonococcal infection until effective parenteral antimicrobial therapy has been administered for 24 hours.
- Immunize or vaccinate.
- Investigate contacts and source of infection, and treat the contacts.
- Avoid nonessential blood transfusions.
- Carefully screen donors when recruiting to ensure a safe blood donor pool.
- Wash hands with soap and water, especially after contact with body fluids or wounds
- Use protective gloves and clothing when there is risk of contact with blood or other potentially infected body fluids.
- Employ safe handling methods, and dispose of waste materials, needles, and other sharp instruments properly.
- Ensure access to voluntary counseling and testing for all health care workers.
- Use of condoms for men protects against all STIs, including HIV

15.19. Sexually Transmitted Infections

INFECTIOUS DISEASES

CHAPTER 16. EMERGENCIES AND TRAUMA

16.1. Acute Pulmonary Edema

Description

Acute pulmonary edema is a life-threatening emergency characterized by extreme breathlessness due to abnormal accumulation of fluid in the lungs. Acute myocardial infarction is a common cause (see section 6.5 "Acute Myocardial Infarction").

Diagnosis

The patient presents with the following:

- Difficulty breathing, usually with sudden onset and not stress related
- Rapid breathing
- Rapid pulse
- Signs of cyanosis
- Usually, agitation and perspiring
- Distended neck veins or other signs of heart disease or failure
- Often, hypertension

Auscultation often reveals rales (i.e., crackles) and wheezing in both lungs.

Note: Verify the patient's history to exclude an acute asthma attack (see section 3.1 "Asthma").

Management

Treat immediately to relieve acute symptoms, and then treat underlying cause. *Refer.*

- Ease the patient's breathing by placing him or her in sitting upright position.
- If possible, administer oxygen by mask to achieve PaO2 760 mmHg.
- Give furosemide IV injection immediately.
  - Children: 1 mg/kg/dose
    Note: If there is no diuresis after 30 minutes and blood pressure is stable, give a repeat dose of furosemide IV of 2 mg/kg.
  - Adults: 40 mg/dose, and then monitor diuresis, which should follow in 15–20 minutes
    Note: If there is no diuresis after 30 minutes and blood pressure is stable, inject 80 mg furosemide IV.
- If patient shows no improvement, give morphine *slow* IV injection of 2 mg (i.e., 1 mg in 1 minute). Morphine is available in DHs.
  Caution: Do *not* give morphine to patients who have asthma or hypotension.
- If you suspect acute myocardial infarction (see section 6.5 "Acute Myocardial Infarction"), give 1 aspirin (325 mg) tablet and refer *urgently* to EPHS hospital where following medicines are available.
  - For adults, give sublingual nitroglycerine (0.5 mg) tablet: 2–3 tablets every 4 hours (available in regional hospitals).
  - If patients have hypertensive crisis, captopril (25 mg) tablet (available in regional hospitals)

Referral

Refer all patients to hospital for exploration and treatment of underlying cause. If possible, keep oxygen running during transfer.

16.2. Acute Abdominal Pain

Description

Abdominal pain is common, often self-limiting, and not serious. *Acute* abdominal pain, or *acute abdomen*, however, refers to sudden (less than 24 hours) severe abdominal pain, and many of its causes require urgent surgical

EMERGENCIES

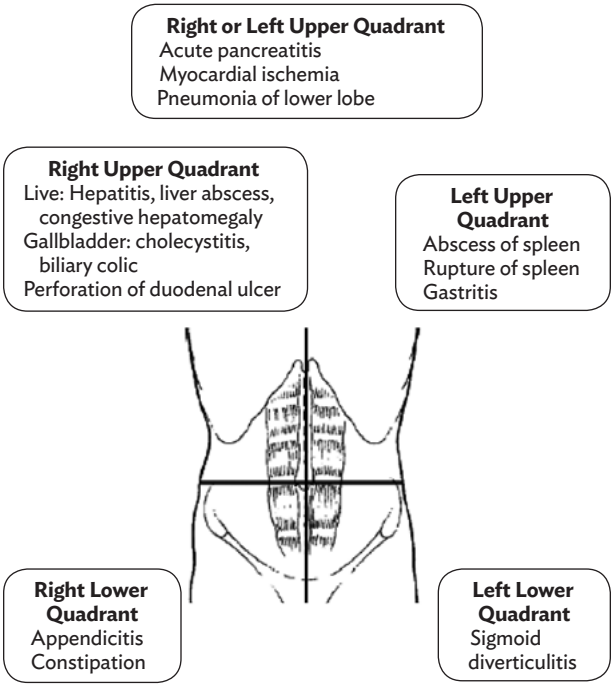
16.2. Acute Abdominal Pain

intervention. Acute abdominal pain in young children and older patients is always an alarming symptom. Many diseases produce abdominal pain, so careful evaluation is necessary to decide which cases to refer urgently. When in doubt, refer the patient to the hospital for surgical evaluation. Common surgical conditions that cause acute abdominal pain are addressed in sections 16.2.1 through 16.2.7 below.

Diagnosis

- Look for signs of emergency.
  - Focus on life-threatening-emergencies *first.*
  - Rule out pregnancy in women of childbearing age.
  - Look for severe pain.
  - Watch for signs of shock (e.g., tachycardia, hypotension, excessive sweating, and confusion). (See section 16.9 "Shock.")
  - Look for signs of peritonitis (e.g., sharp, constant pain, worsened by movement).
- Examine for abdominal distention. Take a careful history. Ask the following questions
  - Where is the pain located? (See figure 16.2.) ***Caution:*** Children often cannot indicate the location precisely.
  - What is the pain like? (Possible causes are in parentheses.)
    - Acute waves of sharp constricting pain that "takes the breath away" (renal or biliary colic)
    - Waves of dull pain with vomiting (intestinal obstruction)
    - Colicky pain that becomes steady (appendicitis, strangulating intestinal obstruction, mesenteric ischemia)
    - Sharp, constant pain, worsened by movement (peritonitis)
    - Tearing pain (dissecting aneurysm)

FIGURE 16.2 Location of abdominal pain and possible causes



EMERGENCIES

- Dull ache (appendicitis, diverticulitis, pyelonephritis)

- Have you had similar pain before?
  - If yes, that suggests recurrent problems such as ulcer disease, gallstone colic, diverticulitis, or mittelschmerz (ovulatory or mid-cycle pain).
- Was the onset sudden?
  - If yes—sudden, "like a light switching on"—that suggests perforated ulcer, renal stone, ruptured ectopic pregnancy, torsion of ovary or testis, or sometimes a ruptured aneurysm.
  - If no, consider most other causes.
- How severe is the pain?
  - Severe pain (perforated viscus, kidney stone, peritonitis, pancreatitis)
  - Pain out of proportion to physical findings (mesenteric ischemia)
- What pain relief medicine did you take?
  - Strong pain relief medicine may interfere with the evaluation of the severity of the pain, but not with signs of severe peritonitis.
- Does the pain travel to any other part of the body?
  - Right scapula (gallbladder pain)
  - Left shoulder region (ruptured spleen, pancreatitis)
  - Pubis or vagina (renal pain)
  - Back (ruptured aortic aneurysm)
- What relieves the pain?
  - Antacids (peptic ulcer disease)
  - Lying as still as possible with bent knees (peritonitis)
- What other symptoms occur with the pain?
  - Vomiting precedes pain and is followed by diarrhea (gastroenteritis)
  - Delayed vomiting, absent bowel movement, and no flatus (acute intestinal obstruction; the time period of delay increases with a more distal site of obstruction)
  - Severe vomiting precedes intense epigastric, left chest, or shoulder pain (emetic perforation of the intra-abdominal esophagus)

- Perform a physical exam and look for the following.
  - Determine the vital signs.
    - Rapid respiration may indicate pneumonia.
    - Tachycardia and hypotension indicate shock.
    - Temperature is elevated in gastrointestinal perforation and often normal in bowel obstruction.
  - In women, assume pregnancy until proven otherwise. Perform a pregnancy test, when available.
  - Listen to the bowel sounds.
    - Absence of bowel sounds is a sign of peritonitis or ileus.
    - A high-pitched tinkling indicates obstruction.
  - Palpate the abdomen.
    - Start away from the site of tenderness.
    - Check for masses and tumor.
    - Determine the site of maximum tenderness.
    - Check for abdominal rigidity.
  - Always examine the following:
    - Groin for incarcerated hernia
    - Rectum for signs of trauma, abscess, ectopic pregnancy, or distended pouch of Douglas
    - Pelvis in women who have lower abdominal pain (when attendant is present)
    - Any other system that might be relevant (e.g., respiratory and cardiovascular)
  - Look for abdominal distension: percuss to differentiate gas from liquid.
- Order laboratory examinations, when available.

16.2. Acute Abdominal Pain

EMERGENCIES

- Blood count—raised in intra-abdominal inflammation
- Urine analysis—for glucose, ketones, and white blood count
- Pregnancy test in *all* women of childbearing age

Management

Nonpharmacologic

- Keep patient nil by mouth.
- Consider passing a nasogastric tube if patient has severe vomiting or signs of intestinal obstruction or if he or she is extremely unwell and in danger of aspiration.

Pharmacologic

- Apply oxygen as appropriate.
- Start IV fluid in the case of shock (see section 16.9, "Shock"); cross-match blood and perform other tests.
- Give antibiotics if you suspect systemic sepsis, peritonitis, severe urinary tract infection, or pyelonephritis. Give first-line treatment: ampicillin **PLUS** gentamicin. *Refer* after giving the first dose.
  - Children:
    - Ampicillin: Refer to table A4 in annex A for standard dosages.

      —OR—

      In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

      —PLUS—
    - Gentamicin: 5 mg/kg/dose in one injection daily
  - Adults:
    - Ampicillin: 1 g IV every 6 hours

      —OR—

      In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.

      —PLUS—
    - Gentamicin: 320 mg in one IV injection daily
- Avoid analgesia when possible because it may mask progressive symptoms.

Referral

- Stabilize general condition of the patient
- Refer for more investigation or eventual need for surgery.

Prevention

Refer patients who have a suspected acute abdomen to surgical facility *early* for evaluation and monitoring.

Patient Instructions

- Avoid the use of an analgesic before diagnosis of acute abdomen or without advice of doctor.
- Avoid the use of traditional medicine in all cases of abdominal pain.

16.2.1. Acute Peritonitis

Description

Peritonitis is an acute, life-threatening condition, caused by chemical or bacterial contamination of the peritoneal cavity. The treatment of peritonitis is treatment of the underlying cause. Major causes of peritonitis are appendicitis, perforated peptic ulcer, strangulation of bowel, pancreatitis, cholecystitis, intra-abdominal abscess, typhoid perforation of bowel, salpingitis, or postpartum infection.

Diagnosis

- Sharp abdominal pain, worsens on movement or coughing
- Abdominal distension
- Abdominal tenderness and muscle guarding
- Diminished or absent bowel sounds

16.2. Acute Abdominal Pain

EMERGENCIES

- Tenderness on rectal or vaginal examination (pelvic peritonitis)

Management

Nonpharmacologic

- Withhold oral feeding or oral treatment.
- Insert a nasogastric tube.

Pharmacologic

- Start IV hydration with Ringer's lactate solution or normal saline (0.9%) solution.
- Start IV antibiotics:
  - Ampicillin (2 g)
    —PLUS—
  - Gentamicin (5 mg/kg)
    —PLUS—
  - Metronidazole (500 mg) (available in CHCs and DHs)
- Refer.

Referral

Refer all patients after stabilizing general conditions and giving first dose of antibiotics. Referral will allow for diagnosis of the underlying cause and surgical treatment.

16.2.2. Acute Appendicitis

Description

Acute appendicitis is the most common general surgical emergency. Early surgical intervention improves outcome.

Diagnosis

- Pain that starts around the umbilicus and shifts to the right lower quadrant after few hours
- Nausea and anorexia
- Looks ill and lies still on the bed
- The site of maximal pain and tenderness is most commonly at McBurney's point (located one third of the distance along the line drawn from anterior superior iliac spine to the umbilicus).
- Any movement including coughing and extending the right leg may increase pain.
- Most patients' laboratory blood examination reveals high white blood cell count with increased neutrophils (more than 75%).

Management

Treatment is surgery.

16.2.3. Acute Cholecystitis

Description

Acute cholecystitis is most commonly associated with gallbladder stone and caused by obstruction of the cystic duct by gallstone.

Diagnosis

- An acute attack is often precipitated by a large or fatty meal.
- An attack is characterized by the sudden appearance of steady pain localized to the epigastrium or right hypochondrium that radiates to the right upper quadrant.
- Fever, nausea, and vomiting are present.
- Right upper quadrant tenderness is almost always present and is usually associated with muscle guarding and rebound tenderness.

Management

Treatment of choice is either early surgical removal of gallbladder (within 72 hours) or conservative treatment plus late surgical removal of gallbladder (after 6–10 weeks).

Conservative treatment:

- Withhold oral feeding.

16.2. Acute Abdominal Pain

EMERGENCIES

- Start IV fluid alimentation.
- Give IV antibiotic.
  - Ampicillin: 1–2 g every 6 hours for 10–14 days
  —PLUS—
  - Metronidazole: 500 mg every 6 hours for 10–14 days
- Give morphine for pain (when available).

16.2.4. Perforated Peptic Ulcer

Description

A perforated ulcer is a serious condition in which digestive juices and food leech into the abdominal cavity.

Diagnosis

- Sudden onset of severe abdominal pain
- Intense burning pain in the upper abdomen after acute episode
- Extreme pain with any movement
- Extremely tender, rigid abdomen
- Absent or reduced bowel sounds
- Free gas in the abdominal cavity on X-ray
- Septic shock developing later

Management

Treatment is emergency surgery.

16.2.5. Bowel Obstruction

Description

Bowel obstruction can be mechanical or nonmechanical (paralytic ileus).

- Mechanical obstruction can be caused by adhesion bands, strangulated hernia, volvulus, cancer, intussusception (especially in children), or bowel ischemia.
- Nonmechanical obstruction is caused by peritonitis, spinal injury, drugs or medicines, or hypokalemia.

Diagnosis

- Abdominal pain that may be colicky
- In small bowel obstruction—mid-abdominal pain
- In large bowel obstruction—pain below the umbilicus
- Vomiting—the more severe the bowel obstruction, the more frequent the vomiting
- Constipation and obstipation (i.e., absence of bowel movement and flatus)
- Abdominal distension—the more distal the bowel obstruction, the more distended the abdomen

Bowel obstruction is a clinical diagnosis, but it is greatly aided by plain erect X-ray. Distended loops of small bowel with air fluid level indicate a small bowel obstruction; distended bowel and haustral marking indicate a large bowel obstruction.

Management

- Stop any oral feeding or treatment (i.e., give nothing by mouth).
- Start IV fluid.
- Insert a nasogastric tube.
- Refer for more investigation or surgery.

16.2.6. Ruptured Ectopic Gestation

Description

Refer to section 9.6 “Ectopic Pregnancy” for a description.

The major risk of ectopic pregnancy is rupture, which can lead to intra-abdominal bleeding, shock, and death. Ruptured ectopic pregnancy is a **SURGICAL EMERGENCY.**

Diagnosis

- History of amenorrhea
- Hypogastrium: sudden sharp and stabbing pain
- Fainting, collapse with vomiting in childbearing women

- Pain in the shoulder when lying down.
- Blood pressure falls gradually if bleeding is not stopped.
- Pregnancy test is positive.
- Ultrasound may show fluid in abdomen.

Management

Treatment is emergency surgery.

16.2.7. Ureteric Colic

Description

Ureteric colic is a pain associated with the passage of a stone. It can be quite severe and requires prompt treatment.

Diagnosis

- Loin pain radiates to groin and testes or labium or inner side of the thigh.
- Pain is excruciating, and the patient moves about to try to obtain relief rather than lying still.
- Renal angle tenderness is present.
- Coughing does not cause pain.
- Frequency of urination may be present.
- Patient may give previous history of passing calculus in the urine.
- Urine microscopic picture shows red blood cells and pus cells.
- KUB (X-ray of Kidney, Ureter and Bladder) shows hydronephrotic changes (or stone).
- Ultrasound is helpful.

Management

In suspected acute abdomen:

- Give patient nil by mouth.
- Start IV fluid.
- Give antibiotics if you suspect systemic sepsis or severe urinary tract infection. IV antibiotics are commonly used (see conditions). (See section 11.1.1 "Acute Pyelonephritis.")
- Give an antispasmodic medicine.

Referral

- Complicated cases (e.g., sepsis, not relieved with medications)
- Need for more investigation
- Need for surgery

Patient Instructions

Never use an analgesic before diagnosis of acute abdomen or without advice of doctor.

16.3. Animal and Human Bites

Description

Animal bites may be inflicted by domestic animals such as dogs, cats, or horses; or by wild animals. Most animal bites are provoked. Animals that bite without provocation *may* have a greater risk of carrying rabies. Human bites are most often inflicted during fighting, including closed fist injuries against an open mouth, which present a high risk for finger joint injury.

Animal or human bites may result in the following:

- Infection, especially bites to the hand or foot, which are often mixed with aerobic and anaerobic infections
- Injury to a vital structure, such as a tendon, nerve, blood vessel, or joint; or to the cranium
- Tetanus (see section 15.3 "Tetanus")
- Rabies (see section 15.12 "Rabies")

Diagnosis

- Look for puncture wounds, crush injuries, lacerations, injuries to vital structures, and the presence of foreign body.
- Assess the amount of contamination and any signs of early infection such as redness, warmth, or pus.

EMERGENCIES

- Assess the patient for risk of tetanus, depending on his or her immunization status (see section 15.3 "Tetanus" and chapter 19 "Immunization").
- Assess the patient for risk of rabies, depending on type and history of bite (see section 15.12 "Rabies").

Management

Nonpharmacologic

- The highest priority of early management is irrigation and cleansing of the wound to prevent infection. Do a generous, gentle wash and irrigation of the wound and surrounding skin with clean water or normal saline and iodine solution.
- Remove any foreign bodies.
- Generally speaking, do *not* suture bites because suturing increases the likelihood of infection.
  - Consider suturing only for large, relatively clean lacerations in highly cosmetic areas such as the face.
  - Bites more than 8 hours old should be treated with delayed primary closure (i.e., sutured at day 3 if sutured at all).
  - Consideration for suturing is best left to experienced clinician or referral center.
    Caution: *Never* suture lacerations over joints of the hand because penetration of the bite into the joint space is likely.
- Apply a clean dressing.

Pharmacologic

- Give paracetamol for pain. Refer to table A15 in annex A for standard dosages.
- Give tetanus immunization if patient is not up to date (see section 15.3 "Tetanus" and chapter 19 "Immunization").
  - Give prophylaxis with a booster TT (0.5 ml) IM injection, if needed..
  - For an unimmunized or not fully immunized patient, give 500 IU human tetanus immunoglobulin (or tetanus antiserum) IM, if needed (requires referral to DH).
- Give prophylactic antibiotics for 3–5 days (see table 16.3A) for—
  - Cat bites—in any location
  - Human or animal bites to the hand
    Note: Patients seen more than 24 hours after a bite without any signs of infection usually do not need prophylactic antibiotic treatment.
- Give therapeutic antibiotics for signs of cellulitis or abscess; for wounds that are infected, antibiotics are clearly indicated and should be continued for at least 2–3 weeks. (See tables 16.3A and 16.3B.)

Referral

- Possibility of bite by animal with rabies (for vaccination)
- Patient with high fever, sepsis, and spreading cellulitis
- Suspicion of joint penetration, the risk of which is high in a closed fist injury; tendon laceration; bone fracture; presence of foreign body; and severe hand or foot injuries.

Prevention

- Observe domestic animals or captured wild animals for 14 days for signs of rabies.
- Clean and irrigate all bite injuries as soon as possible after the accident.

Patient Instructions

- Return for wound check and dressing change in 48 hours or sooner if any signs of infection (e.g., redness, increasing pain, warmth, fever, pus) appear.

16.3. Animal and Human Bites

EMERGENCIES

TABLE 16.3A. Management of Wound Infections in Adults Following Animal or Human Bite

Note: Treatment is required for 2–3 weeks.

Biting Species	Preferred Antibiotic(s)	Alternative in Penicillin-Allergic Patient
Dog	Amoxicillin/clavulanate: 250–500 mg orally every 8 hours	▪ Clindamycin: 150–300 mg orally every 6 hours **—PLUS—** ▪ Either co-trimoxazole: 2 tablets (480 mg) every 12 hours **—OR—** ▪ Ciprofloxacin: 500 mg orally every 12 hours[a]
Cat	Amoxicillin/clavulanate: 250–500 mg orally every 8 hours	▪ Clindamycin: 150–300 mg orally every 6 hours **—PLUS—** ▪ Either co-trimoxazole: 2 tablets (480 mg) every 12 hours **—OR—** ▪ Ciprofloxacin: 500 mg orally every 12 hours[a]
Human, occlusional	Amoxicillin/clavulanate: 250–500 mg orally every 8 hours	▪ Erythromycin: 500 mg orally every 6 hours **—OR—** ▪ Ciprofloxacin: 500 mg orally every 12 hours[a]
Human, clenched-fist	Refer these cases.	

[a] Ciprofloxacin is contraindicated in pregnant women and should be avoided in children when possible.

TABLE 16.3B. Management of Wound Infections in Children Following Animal or Human Bite

Note: Treatment is required for 2–3 weeks.

Biting Species	Antibiotic	Dose
Dog	Amoxicillin/clavulanic acid ▪ Suspension: 156 mg/5 ml (125 mg amoxicillin/31.25 mg clavulanic acid) **—OR—** ▪ Tablet: 625 mg (500 mg amoxicillin/125 mg clavulanic acid)	▪ Infants and children ≤1 year: 0.8 ml/kg every 8 hours ▪ Children 1–6 years: 1 teaspoon[a] every 8 hours ▪ Children 6–12 years: 2 teaspoons[a] every 8 hours **—OR—** ▪ Half of a 625 mg tablet every 8 hours
Cat	Erythromycin ▪ 10–15 mg/kg/dose every 6 hours ▪ Suspension: 200 mg per 5 ml	▪ Infants and children ≤5 months: ½ teaspoon[a] every 12 hours ▪ Children 6 months to 1 year: 1 teaspoon[a] every 12 hours ▪ Children 1–6 years: 1 teaspoon[a] every 8 hours ▪ Children 6–12 years: 2 teaspoon[a] every 8 hours
Human, occlusional	Co-trimoxazole (sulfamethoxazole + trimethoprim) ▪ Suspension: 240 mg per 5 ml ▪ Tablet: 480 mg	▪ Children 2–6 months: ½ teaspoon[a] every 12 hours ▪ Children 6 months to 5 years: 1 teaspoon[a] every 12 hours ▪ Children 6–12 years: 2 teaspoon[a] every 12 hours **—OR—** ▪ One 480 mg tablet every 12 hours
Human, clenched-fist	Refer these cases.	

[a] One teaspoon = 5 ml

- Take antibiotics as instructed for as long as instructed.
- Limit your risk of provoking animal attacks and fighting.
- Do not put any type of herbal or traditional medicine on the wounds.

16.4. Insect Bites and Stings

16.4.1. Wasp and Bee Stings

Description

Injury is caused by local reaction, envenomation, and anaphylaxis. Anaphylactic reaction to a bite or sting is a more common cause of death than direct effects of envenomation.

Diagnosis

- In nonallergic individuals, single stings usually produce only localized effects of pain, warmth, redness, and swelling. Local effects are dangerous only if the airway is obstructed by the swelling (e.g., following stings on the tongue). Fatal systemic toxicity can result if the patient has been stung many times (typically, more than 10). Clinical features of massive envenomation are hypotension, vomiting, diarrhea, headache, and coma.
- In allergic individuals, systemic symptoms include tingling scalp, flushing, dizziness, visual disturbances, syncope, urticaria, wheezing, abdominal colic, diarrhea, and tachycardia, which may develop within a few minutes of the sting. After 15–20 minutes anaphylactic shock may appear (see table 16.9C).

Management

Nonpharmacologic

- Remove the embedded stinger using clean forceps.
- Clean the site with soap, water, and a gentle disinfectant.

Pharmacologic

- Give an analgesic: paracetamol. Refer to table A15 in annex A for standard dosages.
- In the case of severe itching, give—
  - Calamine lotion (topical)
    Note: Do not use calamine lotion for multiple stings.
  - Oral antihistamine: chlorpheniramine. Refer to table A7 in annex A for standard dosages.
- Large local reactions may require a short course of therapy with glucocorticoids systemic corticosteroids (hydrocortisone vial of 100 mg), by slow IV injection
  - Children—Adjust according to response after initial dose.
    - Infant younger than 1 year: initially 25 mg every 8 hours
    - Child 1–5 years: initially 50 mg every 8 hours
    - Child 6–12 years: initially 100 mg every 8 hours
    - Child 12–18 years: initially 200 mg every 8 hours
  - Adults: 250 mg/dose every 6 hours followed by 2–4 doses if needed
- Anaphylaxis is treated with subcutaneous or IM injection of epinephrine (adrenaline hydrochloride epinephrine 0.1% in 1 ml ampoule). For dosages, see table 16.9C.
  Caution: Patients should be observed for 24 hours for recurrent anaphylaxis.

Referral

- All patients who have a history of hypersensitivity and anaphylactic reactions
- Cases with signs of systemic envenomation
- All patients who have multiple stings (more than 10)
- All complicated cases

16.4. Insect Bites and Stings

EMERGENCIES

Patient Instructions

- Return to health facility if you develop any systemic signs or symptoms.
- Do not apply any herbal or traditional medicine to the sting.
- Do not provoke insects, especially the nests.

16.4.2. Scorpion Stings

Description

Afghanistan has many scorpion species, and they often reside in dark, covered places. A scorpion has a stinger in its tail.

Diagnosis

Local

- Stings leave a single mark
- May be excruciating painful
- Local swelling, redness, blister, and necrosis may occur

Systemic

- Initial systemic signs and symptoms may include abdominal pain, hypersalivation, abnormal eye movements, profuse sweating, hyperthermia, vomiting, and diarrhea
- Late manifestations may include hypertension, cardiac arrhythmia, muscle twitching and spasm, seizure, respiratory problems, and rarely, shock

Management

Nonpharmacologic

- Gently clean the wound with soap, water, and a disinfectant.
- Reassure the patient.
- Apply cold packs to the sting site to decrease the absorption of venom.
- Send home patients who have single stings and no systemic signs of envenomation.

Pharmacologic

- Give paracetamol for mild pain. Refer to table A15 in annex A for standard dosages.
- Give a local injection of lidocaine 1% anesthetic without epinephrine (i.e., without adrenaline) around the bite for severe pain.
- If hypertension is present, manage with amlodipine or hydralazine, when available (see section 6.1 "Systemic Hypertension").

Referral

- Any patient who has severe local or any generalized symptoms
- Patient who has any signs of anaphylaxis—must be monitored by health staff and accompanied with epinephrine (adrenaline) injectable
- Patient who has Brady arrhythmia

Prevention

- Avoid contact with scorpions.
- Do not walk barefoot outside the house at night.
- Do not put your hand in holes and spaces where you cannot see.

Patient Instructions

- Return to the health facility if your condition worsens or if you develop any systemic symptoms.
- Do not use traditional therapies on the sting site.

16.4.3. Spider Bites

Description

Most spiders are nonvenomous or mildly venomous. Two main clinical syndromes are neurotoxic and necrotic.

- Neurotoxic: muscle pain, hypertension, nausea, vomiting, headache, sweating

16.4. Insect Bites and Stings

EMERGENCIES

- Necrotic (brown recluse spider): tissue necrosis and ulceration, fever, malaise, and rarely, hemolysis

Diagnosis

- Skin lesions, varying in severity from mild localized erythema and blistering to quite extensive tissue necrosis may be present.
- Systemic signs and symptoms may include weakness, headache, nausea, vomiting, muscle pain, or rash.

Management

Nonpharmacologic

- Clean the bite with soap, water, and a disinfectant. Apply a sterile dressing if needed.
- Elevate and loosely immobilize the affected limb for comfort, as needed.

Pharmacologic

- Give an analgesic for pain: paracetamol. Refer to table A15 in annex A for standard dosages.
- Give an antihistamine: chlorpheniramine maleate. Refer to table A7 in annex A for standard dosages.
- Administer tetanus prophylaxis if the patient not up to date on immunization: TT (0.5 ml) IM injection.

Referral

- Patients who have signs of systemic effects: heart rate, elevated blood pressure, muscle weakness or spasm, breathing problems, seizures should be referred.
- Patients who have severe tissue necrosis may need late surgical excision.
  Caution: Immediate surgical excision is not indicated and may be harmful.
- Pregnant patients should be evaluated to ensure the baby does not have any problems.

Patient Instructions

- Avoid spider bites by monitoring for spiders at home, at work, and in toilet areas.
- Return to the health facility if you develop—
  - Signs or symptoms of systemic effects
  - Signs of local infection (e.g., increasing pain, redness, warmth, or pus)
- Use insecticide sprays.

16.5. Snake Bites

Description

Venomous snakes, such as the viper, cobra, and krait, and nonvenomous snakes, such as the python and rat snake, live in Afghanistan. Snake bites can damage soft tissue, and injection of venom may cause two major types of syndromes:

- Neurologic disorders (cobra) with possible coma, muscle weakness, respiratory compromise
- Bleeding or coagulation disorders (viper) with bleeding of gums, nose, and intestines

Diagnosis

- Take a rapid, detailed history of the incident and the type and description of the snake. This information is important for the management of the patient.
- Ask when the snake bite occurred. Lack of symptoms at 6–12 hours indicates nonpoisonous snake, or a bite without injection of venom.
- Look for puncture wounds or teeth marks. Poisonous snake bites are usually indicated by one or two fang marks on the skin; multiple teeth marks suggest that the snake is not poisonous.
- Look signs that venom has been injected:
  - Soft tissue swelling, local pain, and perhaps blisters all indicate injection of venom.
  - Bleeding from gums, nose, and intestine, which also indicate venom injection. If there is bleeding,

EMERGENCIES

16.5. Snake Bites

check the coagulation by collecting 2–5 ml of blood, waiting 30 minutes, then examining:
  - Complete coagulation means no hemorrhagic syndrome.
  - Incomplete coagulation or no coagulation means hemorrhagic syndrome.
- Weakness, difficulty breathing, difficulty swallowing, ptosis, or double vision (i.e., neurologic disorder) also indicates venom has been injected.

- Check for the effects of venom. If venom was injected, the severity of injury depends on species of snake, quantity of venom injected, location of injury (i.e., head and neck bites are more dangerous), size of the snake, and age of the patient (i.e., bites are more serious in children).
- Assess the patient's mental status. Confusion or restlessness may indicate a poisonous bite.
- Examine the snake, if the patient or caregiver has killed it and brought to the health facility, to determine what type it is.
  Caution: Be careful when handling any snake brought in with the patient for identification. Even dead snakes and severed heads can have a bite reflex for up to an hour.

Management

Nonpharmacologic

- Clean the wound with a nonalcoholic solution (i.e., clean water) and mild soap.
- Avoid traditional treatments.
- Immobilize the patient and the bitten part in a neutral position. Use anything stiff as a splint to immobilize the area (e.g., cardboard or wood).
- Avoid manipulation of the bitten area.
- Support respiration and circulation if necessary.
- If coagulation is abnormal, continue to monitor daily until return to normal.
  Caution: Do *not* do any of the following:
  - Do *not* give the patient alcoholic beverages or stimulants.
  - Do *not* apply ice.
  - Do *not* apply a tourniquet.
  - Do *not* suction the bitten area. The trauma to underlying structures resulting from incision and suction performed by unskilled people is not justified in view of the small amount of venom that can be recovered.

Pharmacologic

- Give TT (0.5 ml) IM if patient has not been fully immunized.
- Give paracetamol. Refer to table A15 in annex A for standard dosages.
- Refer if antivenom is needed.

Referral

- Refer all venomous or suspected venomous snake bite patients as soon as possible to nearest hospital for specific antidote (antivenom), if available, and for supportive care for shock, bleeding, tissue necrosis, weakness, or respiratory compromise.
- Summarize the detailed history of the incident indicating the type of snake (and description) on the written referral note and send it with the patient.

Prevention

Caution family members and the community about avoiding contact with snakes.

Patient Instructions

- Typically, if the snake bite is 6–12 hours old, and the patient does not have symptoms, either the snake was nonpoisonous or no venom was injected.

EMERGENCIES

- Nonvenomous snake bites can still become infected, so the patient should return if he or she develops signs of swelling, redness, increased pain, or fever.

16.6. Burns

Description

Burns are thermal injuries caused by tissue contact with hot substances, flame, caustic chemicals, electricity, or radiation. Thermal injury may compromise the ability of skin to serve as a barrier to injury and infection, and as a temperature and fluid regulator.

The *depth* of burn wound is classified by degree and by partial versus full thickness burn.

- First degree—superficial, partial thickness
  - The affected area is red, painful, and without blisters.
  - The burn heals rapidly, in 5–7 days, by epithelialization without scarring.
- Second degree—deep, partial thickness
  - The affected area is mottled, red, painful, and with blisters.
  - The burn heals by epithelialization in 14–21 days causing pigmentation changes and some scarring.
- Third degree—full thickness
  - The affected area is charred, parchment-like, painless and insensitive, with thrombosis of superficial vessels.
  - A charred, denatured, insensitive, contracted full-thickness burn is called "eschar."
  - These wounds must heal by re-epithelialization from wound edges or by skin grafting.
- Fourth degree—complex, full thickness
  - The affected area involves injury to the underlying tissues, muscles, bones, or brain.

The *severity* of burns is evaluated on the basis of surface, depth, and location of the burn, and associated injuries, the patient's pre-existing medical condition or health status, and the age of the patient.

- Mild (minor)
  - Partial thickness: less than 15% in adults
  - Partial thickness: less than 10% in children
  - Full thickness: less than 2%
- Moderate
  - Partial thickness: 15–25% burns in adults
  - Partial thickness: 10–20% in children
  - Full thickness: 2–10%
- Major
  - Partial thickness: more than 25% in adults
  - Partial thickness: more than 20% in children
  - Full thickness: more than 10%
  - Burns involving face, eyes, ears, feet, hands, perineum
  - All inhalation and electrical burns
  - Burns associated with other major injury or pre-existing medical conditions

Diagnosis

- Take a careful history paying attention to the time and nature of the accident. Take note of—
  - Whether smoke was present
  - Whether the accident occurred in an enclosed space
  - What kind of clothes were worn by the patient
  - What first aid was given
- Examine the patient, looking for signs of an inhalation burn:
  - Soot or carbon around mouth or nose
  - Swelling of oral or pharyngeal tissues
  - Respiratory difficulty or dyspnea
- Record the extent and distribution of superficial and full-thickness burns. The best guide to the depth of

16.6. Burns

TABLE 16.6. Rule of Nines (Wallace's Rule of Nines)

Body Part	Adult		Children		Infants	
Head and neck		9%		18%		20%
Front of chest and abdominal wall	9 × 2 =	18%		18%	10 × 2 =	20%
Back of chest and abdominal wall	9 × 2 =	18%		18%	10 × 2 =	20%
Lower limb	18 × 2 =	36%	13.5 × 2	27%	10 × 2 =	20%
Upper limb	9 × 2 =	18%		18%	10 × 2 =	20%
Perineum		1%		1%		
Total body surface area		100%		100%		100%

the burn is found by taking of accurate history of the mechanism of the burn.

- Thermal burns with gases usually cause superficial burns.
- Thermal burns with liquid usually cause deep dermal burns. Boiling water and fat can cause full-thickness burns (especially in infants).
- Contact with hot solids and flames usually cause full-thickness burns
- Electrical burns usually cause full-thickness skin loss.
- Radiation burns are usually superficial
- Chemical burns may be superficial or deep

- Estimate the total body surface area of the burn using the "rule of nines" as outlined in table 16.6. The information given in the table about the percentage of body surface burned will guide the health care worker in the management of the burn (see below). For scattered burns, the palm of the hand represents approximately 1% of body surface.
- Examine the patient to exclude other injuries or pre-existing medical conditions.

Management

The goals of management are to—

- Assess the severity of the burn, provide emergency treatment, and refer *all* but minor burn injuries (i.e., involving less than 5% of body surface that do not include sensitive areas of hands, feet, face, perineum).
- Minimize the risk of infection of minor burns during healing process.

Nonpharmacologic

- Take the patient away from the accident place.
- Check the patient's airway, breathing, circulation, disability, and extremities—the A-B-C-D-E protocol.
- Remove all the patient's clothing, and check him or her from head to toe.
- Remove all the patient's jewelry, particularly rings.
- If the extent of the burn is less than 20% of total body surface and the injuries are less than 1 hour, pour clean, cool water on the burn injury for 20 minutes to diminish extent of injury.
- Cover the patient in a clean and dry cloth. Monitor for hypothermia.
- *After* giving medication for pain control (see "Pharmacologic" below), gently clean the burn with soap and clean (i.e., boiled and cooled) water or saline solution.
- Keep small blisters. Remove large blisters that are likely to rupture.
- Apply a thin layer of silver sulfadiazine 1% cream, with daily dressing.
- Give oxygen if an inhalation burn is suspected. ***Caution:*** *Refer* patients who have suspect inhalation burns.

EMERGENCIES

16.6. Burns

- For major burn injuries (i.e., more than 20% second or third degree), begin fluid resuscitation (as associated with severe fluid loss) before referral:
  - Set-up a reliable IV line and start IV fluid (i.e., Ringer's lactate with 5% glucose, normal saline with 5% glucose, or half normal saline with 5% glucose).
  - Calculate fluid requirements by adding maintenance fluid requirements (100 ml/kg for the first 10 kg, then 50 ml/kg for the next 10 kg, thereafter 25 ml/kg for each subsequent kg) **PLUS** additional resuscitation fluid requirements (volume equal to 4 ml/kg for every 1% of surface burned). Sample calculations are as follows:
    - A child of 20 kg with a 25% burn, for example, needs maintenance fluid (100 ml × 10 kg + 50 ml × 10 kg = 1,500 ml) **PLUS** resuscitation fluid (4 ml × 20 kg multiplied by 25% of burn injury body surface = 2,000 ml) = 3,500 ml to be given during the first 24 hours; half of this volume (1,750 ml) in the first 8 hours and the rest in the next 16 hours following severe burn injury.
    - An adult of 70 kg, for example, with a total body surface area burned of 20% needs maintenance fluid (100 ml × 10 kg + 50 ml ×10 kg + 25 ml × 50 kg = 2,750 ml) **PLUS** resuscitation fluid (4 ml × 70 kg multiplied by 20 = 5,600 ml) = 8,350 ml in first 24 hours; half of this volume (4,175 ml) must be given in the first 8 hours and the rest in the next 16 hours.
    - During the second 24 hours, give half to three-quarters of the fluid required during the first day, and monitor pulse, respiratory rate, blood pressure, and urine output.
- Insert a Foley catheter and monitor urine output to assess adequacy of fluid resuscitation.
- Apply clean dressing daily for those patients who have small burn injuries that are being treated at the primary health facility.

Pharmacologic

- Prescribe appropriate medication including—
  - Adequate analgesia
    - Give oral paracetamol. Refer to table A15 in annex A for standard dosages.
      —OR—
    - Ibuprofen tablet
      - Children: 5–10 mg/kg/dose orally every 8 hours as needed
      - Adults: 200–400 mg orally every 8 hours as needed

      Caution: Burn injury may increase the risk of gastritis or stress ulcer. Give H2 receptor antagonist (e.g., ranitidine 150 mg every 12 hours), which is available in CHCs and DHs.
  - If tetanus prophylaxis is needed or if the patient's vaccination status is not current, give TT vaccine IM injection (0.5 ml).
- Pruritus is a common complaint in patients who have healing burn wounds, and severe pruritis is extremely difficult to treat.
  - Chlorpheniramine may prove helpful for itching. Refer to table A7 in annex A for standard dosages.

    Caution: Do *not* give chlorpheniramine to premature and infants younger than 1 month.
  - Using a moisturizing cream may also help to alleviate itching.
- Do *not* give antibiotics for the burn prophylactically, but reserve them for use later after referral.

  Note: Systemic antibiotics are rarely indicated for the treatment of small burns and may predispose the

EMERGENCIES

wound to later opportunistic infection with bacteria, fungi, or viruses.

Referral

- Moderate and major burns (see classification)
- *All* second or third degree burns involving more than 5% body surface or involving sensitive areas of hands, feet, face, perineum, or joints. Give analgesia and fluid resuscitation during transfer.
- All cases with inhalation
- Complications of small burns such as infection or loss of motion.

Prevention

- More than 90% of all burns are preventable by using common sense and taking ordinary precautions.
- All caustics (e.g., gas balloons, fuel equipment, Sandalies [coal stoves], electrical equipment, and chemical) should be carefully handled and kept out of the reach of the children. Avoid bare feet in winter.
- Take care with children around fires, boiling water, and Bukhari.

Patient Instructions

- Advise the patient to follow the basic principles of keeping the burn wound clean and protected while it heals.
- Follow-up care includes daily—
  - Washing of the wound with bland soap and clean (i.e., boiled and cooled) water
  - Patting the wound dry with a clean towel
  - Applying a thin layer of silver sulfadiazine (1%) cream when available
- Instruct the patient *not* to apply powerful topical chemotherapeutic agents such as mafenide acetate (Sulfamylon®) or povidone-iodine (Betadine®) to minor burn wounds, since they have been shown to delay wound healing.
- Normally, follow-up is performed in the clinic every week until the burn is fully healed and the patient shows no evidence of complication. If there is some question regarding the extent or depth of the wound, or the reliability of the patient or his or her family, follow-up may be performed daily.
- At follow-up visit and as the burn heals, evaluate whether the patient will require skin grafting or physical therapy.

16.7. Eye Injuries (Trauma, Foreign Bodies, and Burns)

Description

Injuries to the eye and surrounding structures can lead to loss of vision, loss of movement, or total blindness. Injuries have multiple causes:

- Blunt trauma—most often from a road traffic accident or an assault with an object or by a fist
- Penetrating trauma (with or without foreign body)
  - Superficial—limited to coverings of globe (i.e., the conjunctiva, sclera, and cornea)
  - Deep—penetrating the globe
- Burn injury
  - Direct thermal injury (e.g., from boiling water or flame)
  - Chemical exposure
    - Alkali agent—a common agent in cleaning materials. Alkali may continue to damage tissue for a long period after the initial exposure.
    - Acid—contained, for example, inside car batteries and used for industrial purposes

EMERGENCIES

Diagnosis

Trauma to the eye may present with pain, tearing, redness, photophobia, blurred vision, or sense of a foreign body in or an irritation of the eye. The priority for evaluating eye injuries is to try to minimize long-term damage. Examine all structures of the eye and surrounding tissue as follows:

- Globe and coverings
  - *Always* check for visual acuity. Loss of vision or blindness requires *urgent* referral.
    - Use the Snellen (eye) chart, or have patient read or identify numbers; compare results in each eye.
    - Check for diplopia (i.e., double vision).
  - Inspect the globe and anterior structures for signs of injury.
    - Clouding of the cornea may indicate severe injury or burn and requires *urgent* referral.
    - Corneal ulceration indicates severe injury and requires *urgent* referral.
  - *Gently* palpate each globe and compare one to the other.
    - If the globe of one eye seems flaccid (i.e., soft), suspect a penetrating injury to the globe with loss of vitreous fluid, and refer *urgently*.
    - If the globe of one eye seems tense, suspect acute glaucoma or bleeding inside of globe, and refer *urgently*.
  - Inspect for evidence of a foreign body (e.g., wood, metal, dirt, or liquid or powder chemical).
    - Ask the patient about recent incidents.
    - Examine the conjunctiva, including on the eyelid surfaces, for injury or a foreign body.
  - Examine for evidence of blood
    - A patch of blood on the white of the eye may be subconjunctival hemorrhage and is often associated with fracture of the orbit.
    - Blood in the front of the eye may be in the anterior chamber (i.e., a hyphema) and can lead to loss of vision; refer *urgently*.
- Examine the surrounding soft tissue:
  - Check the eye lids for laceration, swelling, or a foreign body.
  - Check the ocular muscles for normal eye movement. Loss of normal eye movement may indicate muscle injury or a fracture of the orbit with possible muscle entrapment.
- Gently palpate the bony orbit—orbital rims and cheek—to check for fracture.

Management

The goal of treatment is to preserve vision and eye movement.

Nonpharmacologic

Use irrigation to remove a chemical or foreign body from the eye.

- Chemical injury of the eye, from either a liquid or powder, may continue to cause damage long after exposure, so immediate removal of the chemical is most urgent. If you see evidence of chemical powder or liquid inside or around the eye, use this procedure to remove it.
  - *Gently* wipe away any chemical around the eye with a clean cloth before beginning irrigation.
  - Use gentle irrigation of the eye with saline solution or clean, sterile water for all cases of suspected foreign body or chemical burn.
    Caution: Chemical burn requires irrigation for *at least* 20 minutes; irrigate for *at least* 40 minutes if you suspect an alkali burn. Alkali burns (i.e., from cleaning products) continue to cause injury for long after initial exposure and require prolonged irrigation to minimize long-term damage.

16.7. Eye Injuries (Trauma, Foreign Bodies, and Burns)

EMERGENCIES

- Gently hold the patient's eyelids open, and irrigate all areas of the eye.
- Instruct the patient to move the eye into different positions.
- Be sure to irrigate under the eyelids.
- Be careful to keep the run-off out of the other eye.

- If a foreign body is identified and was not removed by irrigation, try *gently* to remove it with a swab stick.
  - Be careful not to irritate the eye or cause abrasion with the swab.
  - If you are unable to remove the foreign body easily, refer.

Pharmacologic

- Patients who have a suspected superficial irritation or injury to the eye may benefit from antibiotic ointment. Give tetracycline 1% eye ointment. Apply every 8 hours for 7 days. Show patient's family member how to apply, using this technique:
  - Ask the patient to look upward.
  - Gently retract lower eyelid with your fingers.
  - Apply one strip of ointment into the lower fornix.
  - Instruct the patient to move the eye to spread the ointment.
- Some patients may feel more comfortable (i.e., because of photophobia) with gentle eye patching for several days. Apply as follows:
  - Ask the patient to close the eye gently.
  - Apply the patch over the closed eye with enough gentle pressure to keep the eye closed, but not enough to put increased pressure on the eye.
- Give paracetamol for pain as needed. Refer to table A15 in annex A for standard dosages.

Referral

- *All* patients who exhibit a decrease in visual acuity
- *All* patients you suspect of having a deep injury or acute glaucoma
- **REFER IMMEDIATELY** if you—
  - Cannot easily remove a foreign body (e.g., deep foreign body)
  - Find acute change in vision in either eye (6/12 or less on the Snellen chart)
  - Diagnose double vision (diplopia)
  - See lid laceration or edema
  - Encounter extreme swelling that prevents adequate examination
  - See scleral or corneal laceration or perforation
  - Find blood in the anterior chamber or intraocular hemorrhage
  - See evidence of continuing subconjunctival bleeding
  - Find posttraumatic dilatation or a deformed and slowly reactive pupil
  - Note a corneal defect or corneal opacity
  - Encounter limitation of eye movement
  - Diagnose enophthalmos (i.e., eyeball appears sunken or depressed), which may indicate orbital floor fracture

Prevention

Practice safety measures to prevent eye injury:

- Wear seat belts in vehicles.
- Keep all chemical in a safe, secure place—*away* from children—and label them properly.
- Use protective eye wear when using machinery.

Patient Instructions

Advise the patient to—

- Apply eye ointment as instructed. Demonstrate proper use to the health worker.
- Return for follow-up in 2 days
- Return *immediately* if he or she experiences increased pain, swelling, or loss of vision.

16.7. Eye Injuries (Trauma, Foreign Bodies, and Burns)

EMERGENCIES

- Always use a clean cloth and clean hands when examining or applying medicine around the eye.

16.8. Hypoglycemia

Description

Blood glucose below normal range (60 mg/dl) can present with mild, moderate, or severe features of hypoglycemia that can rapidly lead to altered consciousness and irreversible brain damage. Risk factors for hypoglycemia include the following:

- Diabetic patients on treatment who have—
  - Decreased food intake
  - Increased exercise
  - Faulty medication or insulin administration because of—
    - Deficient glucose counter regulation
    - Impaired awareness of hypoglycemia

    Note: Impaired awareness may lead to nocturnal hypoglycemia.
  - Neonates or premature infants
  - Malnourished or sick children or those with hyper-parasitemia (e.g., malaria)
  - Septic patients
  - The elderly
  - Patients who have kidney or liver disease (hepatic failure)
  - Convulsing patients, unconscious patients, or patients in shock
  - Patients who consume excessive amounts of alcohol
  - Patients who have an unrecognized endocrine disorder (e.g., Addison's disease) or a tumor (insulinoma)

Diagnosis

Signs and symptoms correlate with severity of hypoglycemia. Mild symptoms appear when blood glucose levels fall below 60 mg/dl. Clinical features include the following:

- Hunger, pallor, anxiety, nausea, and blurred vision
- Impaired concentration, headache, irritability, abnormal behavior, confusion, and decreased coordination
- Sweating, trembling, tachycardia, and abdominal pain
- Seizures
- Coma

Symptoms may be diminished in—

- Elderly, malnourished, or very ill patients
- Patients who have long-standing diabetes
- Patients taking beta blockers or other medicines that impair autonomic nervous system response

Management

Obtaining blood glucose level with glucometer or dextrostix may be useful to document the event and improvement, but treatment should *never* be delayed while waiting for a blood glucose test result. Successful treatment results in a prompt response with full recovery in 10–15 minutes and serves to confirm the diagnosis—even without knowing the blood glucose level.

Nonpharmacologic

Conscious patients who have mild, recognized symptoms may respond to food intake, particularly starch and sugars.

- Breast feeding infants: breast milk
- Adults and children: milk, cheese, crackers, rice, sweet tea

16.8. Hypoglycemia

EMERGENCIES

Pharmacologic

Conscious patients who have significant symptoms should receive concentrated glucose source. Those with altered consciousness require IV glucose.

- Conscious patients
  - Children: 2 teaspoons granulated sugar or honey by mouth. Repeat in 10 minutes if there is no improvement.
  - Adults: 3 teaspoons of granulated sugar or honey by mouth. Repeat in 10 minutes if there is no improvement.
- Unconscious patients
  - Children: dextrose 10%, 5 ml/kg IV rapidly (see table 16.8), then dextrose 10%, 3 ml/kg/hour until the patient able to eat normally
  - Adults: dextrose 50% (or glucose 50%), 50 ml over 3 minutes IV, then dextrose 10% (or glucose 10%) solution, 500 ml IV every 4 hours until patient able to eat normally

    Note: Alcoholic patients should receive thiamine 100 mg (if available) IV along with the 50% dextrose infusion.

TABLE 16.8. Volume of Glucose 10% Solution per Age and Weight in Children with Hypoglycemia

Age (Weight)	Volume of 10% Glucose Solution to Give as Bolus (5 ml/kg)
<2 months (<4 kg)	15 ml
2 to <4 months (4 to <6 kg)	25 ml
4 to <12 months (6 to <10 kg)	40 ml
1 to <3 years (10 to <14 kg)	60 ml
3 to <5 years (14 to <19 kg)	80 ml

Note: In patients without IV access or if dextrose (or glucose) solution is not available, you may need to attempt to administer glucose by—

- Nasogastric tube: dissolve 4 level teaspoons of sugar (20 g) in a 200 ml cup of clean water or milk
- Placing small amount of sugar in buccal sulcus
- Giving sugar syrup or honey (30 ml) rectally; this method has been reported to be successful

Referral

- All cases with new onset or unexplained hypoglycemia
- Patients who have continued impaired consciousness,
- Patients who have other neurologic deficits
- Patients who have serious medical conditions
- Patients requiring adjustment or reevaluation of diabetic regimen or medicines

Prevention and Patient Instructions

Ensure proper adjustment of antidiabetic agents.

- Advise diabetic patients who are on medication always to carry a source of glucose (e.g., sugar tablets or sweet juice) with them to allow for prompt treatment of hypoglycemia when symptoms *first* appear.
- Counsel diabetic patients regarding the disease, medication use, proper diet, and an exercise regimen.
- Ensure proper monitoring of glucose in patients who are at risk.

16.9. Shock

Description

Shock is a life-threatening condition caused by circulatory failure with inadequate supply of blood flow to bring required oxygen and nutrients to the tissues and to remove toxic metabolites. If not diagnosed and treated early, inadequate perfusion (shock) leads to vital organ failure and death.

16.9. Shock

Major categories and etiologies of shock:

- Hypovolemic shock
  - Decreased blood volume: trauma, gastrointestinal bleeding
  - Severe dehydration: diarrhea, hyperglycemic ketoacidosis, severe burns
- Cardiogenic or obstructive shock
  - Inadequate myocardial function: myocardial infarction, valve disease, heart failure, cardiac contusion, toxins, pulmonary embolism, pericardial tamponade, tension pneumothorax
- Septic shock
  - An initial infectious insult that overwhelms the immune system (i.e., biochemical messengers may cause vessel dilatation and circulatory collapse)
- Neurogenic shock
  - Spinal cord insults that disrupt sympathetic stimulation to vessels and cause vasodilatation and circulatory collapse
- Anaphylactic shock
  - An antigen that stimulates the allergic reaction; may result in decreased systemic vascular resistance and circulatory collapse
  - May also be associated with airway obstruction from tracheal edema

Diagnosis

- Generalized shock has the following signs and symptoms:
  - Hypotension (systolic blood pressure less than 80 mmHg)
  - Decreased peripheral pulses
  - Pale extremities, often cyanotic with poor capillary refill (i.e., refill time is longer than 3 seconds)
  - Tachycardia
  - Tachypnea
  - Decreased urine output
  - Excessive sweating
  - Obtundation, confusion, lethargy
- Other signs and symptoms are specific according to the type of shock (see table 16.9A).

Management

The goal of shock management is to restore peripheral tissue perfusion and oxygenation. In the essential workup, identify type and the underlying cause of shock.

- Perform the following tasks for initial stabilization and rapid fluid resuscitation: Ensure the airway and ventilation are adequate, then—
  - Establish a large-bore IV access.
    Note: Start *at least* 2 large bore (16–18 gauge needles) IV lines.
  - Perform fluid resuscitation for hypovolemia or hypotension in noncardiogenic shock patients after first excluding a cardiac cause of the shock.
    - Dosages
      - Children: Give bolus 20 ml/kg (see table 16.9B) of normal saline (0.9%) **OR** Ringer's lactate as rapidly as possible and reexamine. Look for signs of improvement: pulse slows, systolic blood pressure increases, and urine output normalizes. If there is no improvement, repeat up to 3 times and reexamine after each bolus.
        Caution: Correct the dose to 15 ml/kg in a malnourished child (see section 10.3 "Malnutrition").
        - If the child improves with fluid resuscitation, give the treatment for severe dehydration with Ringer's lactate solution or normal saline (0.9%): 70 ml/kg over 5 hours for infants younger than 12 months and over 2½ hours for children 1–5 years.

EMERGENCIES

TABLE 16.9A. Specific Signs and Symptoms According to Type of Shock

Type of Shock	Skin and Extremities	Neck Veins	Pulse	Respiration and Chest Exam	Other Signs
Hypovolemic shock	Pale, cold, clammy	Flattened	Narrow		
Cardiogenic shock	Cold, clammy, sweaty	Distended		Dyspnea, orthopnea or chest pain, pressure, rales, wheezes, dull lung bases, S3 gallops	
Septic shock	Warm, flushed, hyperthermia, hypothermia, purpura, or petechial rashes		Strong		
Anaphylactic shock	Warm, flushed, rash, urticaria		Tachycardia	Throat tightness, hoarseness, wheezing	
Neurogenic	Flaccid paralysis		Hypotension with possible bradycardia		Loss of rectal tone

TABLE 16.9B. Volume IV Fluids by Age and Body Weight in Fluid Resuscitation of Children without Severe Malnutrition

Age (Weight)	Volume of Ringer's Lactate or Normal Saline Solution (20 ml/kg)
2 months (<4 kg)	75 ml
2 to <4 months (4 to <6 kg)	100 ml
4 to <12 months (6 to <10 kg)	150 ml
1 to <3 years (10 to <14 kg)	250 ml
3 to <5 years (14–19 kg)	350 ml

—PLUS—

- Give ORS solution (about 5 ml/kg/hour) as soon as the child can drink. Reassess after 6 hours and reclassify dehydration and choose plan A, B, or C to continue treatment (see section 2.1 "Diarrhea and Dehydration").

– Adults: Give bolus 1 liter normal saline (0.9%) **OR** Ringer's lactate rapidly and reexamine. Look for signs of improvement: pulse slows, systolic blood pressure increases above 100 mmHg, and urine output normalizes. If there is no improvement, repeat up to 3 times and reexamine after each bolus.

◆ If the patient shows no sign of improvement after 4 boluses with crystalloid, give blood if available (20 ml/kg over 30 minutes).

- Control bleeding with direct pressure over the wound or finger pressure to a proximal vessel or pulse.
- Provide oxygen therapy.
- Insert a Foley catheter to assess urine output.
- Elevate the patient's legs.

- Keep the patient warm.
- Immobilize a fracture, if needed.
  - Use a splint for a long bone.
  - Use a pillow and sheet wrap for pelvic fracture.
  - Use a firm, padded board with cervical collar, pillows, or sand bag for spinal fracture.

▪ Refer to table 16.9C for management of the specific types of shock.

Referral

All patients who are in shock should be referred to a higher level facility after emergency care and stabilization to follow up the shock treatment and treat the underlying cause of the shock. Before transfer, do the following:

- Control hemorrhage.
- Give fluids.
  Caution: Do *not* give fluids if patient is in cardiogenic shock.
- Initiate antibiotics in septic shock.
- Stabilize fractures.

▪ Patients in cardiogenic shock require medications available only at a referral center.

Prevention

▪ Minimize morbidity of shock by recognizing hypovolemia early.
Note: A decrease in blood pressure does not occur until *at least* 20% volume depletion in most patients.

▪ Treat shock early and aggressively.

Patient Instructions

Instruct the patient's family to assist in the monitoring and safe transport of the patient.

TABLE 16.9C. **Management of the Specific Types of Shock**

Type of Shock	Treatment	Remarks
Hypovolemic shock	▪ Identify the source of volume depletion. ▪ Stop the bleeding with direct pressure over the wound or finger pressure to a proximal vessel or pulse. ▪ Give fluid resuscitation (see instructions above and table 16.9B). ▪ Refer patient rapidly for definitive treatment.	The vast majority of patients are in shock because of trauma (i.e., bleeding) or diarrhea (i.e., dehydration).
Cardiogenic shock	▪ Start an IV line. ▪ Give *minimal* fluid. ▪ ***Caution:*** Do not perform fluid resuscitation for patients in cardiogenic shock. ▪ **REFER URGENTLY.**	See sections 6.2 "Cardiac Failure" and 6.5 "Acute Myocardial Infarction." Patients in cardiogenic shock require medications available only at a referral center.

TABLE 16.9C. Management of the Specific Types of Shock (CONTINUED)

Type of Shock	Treatment	Remarks
Septic shock	▪ Start aggressive crystalloid fluid resuscitation (see instructions above and table 16.9B). ▪ Titrate fluid to urine output. ▪ Children: 0.5–1 ml/kg/hour • Adults: >30 ml/hour ▪ Start early antimicrobial therapy. Consider the origin site of infection and, before referral, give the first dose of— • Ampicillin dose of severe infection—refer to table A4 in annex A for standard dosages. **—PLUS—** • Gentamicin dose for severe infection—refer to table A13 in annex A for standard dosages. **—PLUS—** • If you suspect a gastrointestinal infection, metronidazole. Refer to table A14 in annex A for standard dosages. ▪ Refer.	See section 15.6 "Sepsis."

TABLE 16.9C. Management of the Specific Types of Shock (CONTINUED)

Type of Shock	Treatment	Remarks
Neurogenic shock	▪ Provide supportive therapy. ▪ Stabilize the spine. ▪ Give fluid resuscitation (see instructions above and table 16.9B).	***Note:*** In the setting of severe trauma, many spinal cord injury patients are in shock because of *missed injury* and internal bleeding from an additional trauma site. Treat as hypovolemic shock.
Anaphylactic shock	▪ Reduce the body's allergic response. • Give epinephrine (adrenaline) 1:1000 solution (vial 1 ml of 0.1% contains 1 mg epinephrine) ‣ Subcutaneous injection: 0.01 ml/kg/dose (maximum 0.5 ml); may repeat 3 times at 10-minutes intervals if the pulse is <140 **—OR—** ‣ IM injection: 0.01 ml/kg/dose; may repeat 3 times if necessary at 5-minute intervals, depending on blood pressure, pulse, and respiratory functions • If the patient's circulation is inadequate, give a slow IV injection of epinephrine 1:10,000 solution (i.e., dilute one vial 0.1% of 1 ml with 9 ml normal saline and give at a rate of 1 ml/minute). Dose is 0.1 ml/kg.	

16.9. Shock

TABLE 16.9C. **Management of the Specific Types of Shock** (CONTINUED)

Type of Shock	Treatment	Remarks
Anaphylactic shock (continued)	▪ Stabilize vital functions. • Maintain an open airway. • Give oxygen by mask to help compensate for restricted breathing. • Restore blood pressure by laying the patient flat and raising the feet. • Reduce inflammation of the air passages and improve breathing, by giving: - Antihistamine, such as chlorphenamine (vial of 10 mg per ml), by IV injection over *1 minute* - Infants and children: Refer to table A7 in annex A for standard dosages. Dose can be repeated if necessary up to 4 times daily (maximum dose of 0.4 ml in 24 hours for infants and children <1 year). - Adults: 10–20 mg, repeated if required (maximum total dose 40 mg in 24 hours) - —PLUS— - Corticosteroids, such as hydrocortisone, by slow IV injection: - Children <1 year: 25 mg - Children 1–5 years: 50 mg - Children 6–12 years: 100 mg - Adults and children >12 years: 100–300 mg • Give fluid resuscitation for hypovolemia (see instructions above and table 16.9B).	***Note:*** If the patient has asthma-like symptoms, give salbutamol (2.5–5 mg) by nebulization OR aminophylline (5 mg/kg) by IV injection, slowly (i.e., over at least 20 minutes).

16.10. Dislocation

Description

Dislocation is defined as the total loss of contact between the two ends of bones. The cause of dislocation is most often trauma, but it can be with other causes (e.g., congenital hip dislocation). All dislocations are emergencies and need prompt reduction and early treatment to prevent complication. Children have a remarkable ability to heal fractures if the bones are aligned properly.

Diagnosis

- History of trauma (e.g., road traffic accident)
- Pain, deformity, swelling, and loss of joint movement

Management

Nonpharmacologic

- If the dislocation is accompanied by an open fracture, close the injury with a clean dressing.
- Immobilize the affected part and refer.

Pharmacologic

For pain relief, give an analgesic (e.g., paracetamol). Refer to table A15 in annex A for standard dosages.

16.11. Abscess

Description

An abscess is a localized collection of pus in the skin or soft tissue. It is commonly caused by *Staphylococcus aureus*. Patients who have a compromised immune system (i.e., from diabetes, human immunodeficiency virus [HIV], malnutrition, or cancer) may have a mixed infection (e.g., gram-positive, gram-negative, anaerobes). Complex wounds (e.g., bites, severe contamination) may also have a mixed infection. The three types of abscess are the following:

- Simple abscess—originating in the dermis, hair follicles, or superficial skin glands
- Complex abscess—originating in deeper tissue, most commonly the breast or the perianal region
- Cold abscess—a localized TB infection of soft tissue

Diagnosis

- Local signs are most obvious when the abscess is superficial:
  - Pain or tenderness
  - Local warmth or heat
  - Redness
  - Shiny appearance
  - Fluctuant mass, in mature abscess
- A deep or complex abscess may present only with throbbing pain and not the other typical signs.
- A cold abscess may present as a painless, fluctuant swelling without other signs.
- If in doubt about the diagnosis, confirm the presence of pus with a needle aspiration using an 18-gauge needle. ***Caution:*** Use for a superficial mass *only.* Avoid puncturing into the chest or abdominal cavity.
- In the case of a patient who has a history of recurrent abscesses, screen for diabetes or immunodeficiency.

Management

Nonpharmacologic

- During the early indurated stage that precedes the suppurative (i.e., fluctuant pus collection) stage, apply warm compresses to the involved area every 6 hours. Compresses may help to prevent pus formation, may cause spontaneous drainage, or both.
- Incise and drain a mature abscess. This procedure is the cornerstone of treatment.
  Caution: Do *not* incise and drain a cold abscess. Refer.
  - Prepare the skin with an antiseptic, and give the patient adequate anesthesia. A local anesthetic field block (e.g., 1% lidocaine) circumferentially infiltrating *uninfected* tissue surrounding the abscess is effective.
  - Perform the preliminary aspiration using an 18-gauge or larger needle to confirm the presence of pus.
  - Make an incision over the most prominent part of the abscess, or use the needle to guide your incision. Make an adequate incision to provide complete and free drainage of the cavity. An incision that is too small may lead to recurrence.
  - Introduce the tip of sterile artery forceps into the abscess cavity and *gently* open the jaws. Explore the cavity with a gloved finger and *gently* break down all septa.
  - Extend the incision if necessary for complete drainage, but do *not* open healthy tissue or tissue planes beyond the abscess.
  - Irrigate the abscess cavity with saline and drain or pack open. The objective is to prevent the wound edges from closing, allowing healing to occur from the bottom of the cavity upward. To provide drainage, place a latex drain or gauze wick into the depth of the cavity. Fix the drain or wick to the edge of the wound with suture and leave in place until the drainage is minimal, typically 2–3 days.
  - Apply a large dressing to avoid further contamination. Change this dressing daily at the health facility.

Pharmacologic

- Give paracetamol for pain. Refer to table A15 in annex A for standard dosages.
- Give antibiotics *only* under certain conditions. The treatment of common abscess relies on incision

16.11. Abscess

EMERGENCIES

and drainage of the pus, and *not* antibiotics. Special indications for giving antibiotics include the following:

- In the *early stage* of induration, before fluctuance and pus have collected
- If the patient has large surrounding area of cellulitis
- In the case of fever or other systemic signs of infection
- If the lymph nodes are tender or swollen or if you diagnosis lymphangitis
- If the patient has a compromised immune status

- Give antibiotics, when indicated, for 7 days.
  - Penicillin V tablet. Refer to table A16 in annex A for standard dosages.
    —OR—
  - Erythromycin tablet (for penicillin-allergic patients). Refer to table A12 in annex A for standard dosages.
    —PLUS—
  - If you suspect an anaerobic infection (e.g., perianal abscess), metronidazole. Refer to table A14 in annex A for standard dosages.

Referral

- All patients who have a suspected cold (i.e., TB) abscess. Refer *without* drainage of abscess.
- Complex abscess in a deep or critical site (e.g., thorax, abdominal cavity, pharynx, perianal region)

Prevention

Advise the patient to practice good hygiene, sanitation, and nutrition.

Patient Instructions

Advise the patient to—

- Return for daily dressing
- Keep the area from additional contamination
- Maintain good nutrition

16.12. Poisoning

Description

A poison is a substance that causes harm if it gets into the body through ingestion (e.g., drugs and medicines, caustics, and other dangerous substances), skin contact (e.g., pesticides), or inhalation (e.g., vapors, fumes, spray). Most poisoning in children is accidental, and prevention is key. Poisoning may be intentional, self-inflicted, or both. Review the patient's history of psychiatric illness. Suspect poisoning in any unexplained illness in previously healthy individuals.

Diagnosis

- Take the patient's history of exposure to poisonous agents via ingestion, inhalation, or skin contact. Investigate details of exposure:
  - Determine the agent, quantity, time of ingestion, and other people exposed.
  - Attempt to establish the *exact* agent involved by inspecting the container or label, if available, and questioning witnesses.
  - Obtain warning information and recommended poison procedures from container or label, if available.
  - Refer to reference sources regarding the identified agent (e.g., textbooks, drug tables) to determine if it presents a danger and to ascertain specific antidotes.
- Examine for signs and symptoms, which are varied and depend on poisonous agent.
  - Check for emergency signs (e.g., obstructed breathing, severe respiratory distress, cyanosis, coma, convulsion, and signs of shock such as cold hands, weak or fast pulse, and capillary refill longer than 3 seconds).
  - Check for hypoglycemia.

- Inspect for burns of the skin or about mouth and nose, which may be present with corrosive agents.
- Check for respiratory difficulty, stridor, or changes in speech, which may indicate an inhaled or aspirated agent.
- Check for neurologic changes, parasympathetic activation, or both, which may be seen following exposure by ingestion, skin contact, or inhalation to organophosphorous and carbonate compounds as found in pesticides. Look for—
  - Increased salivation
  - Sweating
  - Lacrimation
  - Slow pulse
  - Small pupils
  - Seizures
  - Muscle weakness, twitching, or paralysis
  - Pulmonary edema
  - Respiratory depression

▪ Many ingested agents cause nausea, vomiting, changes in level of consciousness, or a combination of the three.

Management

Nonpharmacologic

The presentation for those poisoned is extremely varied, depending on causative agent. Treatment options follow recommendations outlined in reference sources regarding the specific agent. The BPHS approach emphasizes removal, neutralization, or dilution of the causative agent, if it can be done safely and in a timely fashion (see table 16.12A), supportive care, and referral.

In the case of ingested poisons, gastric decontamination by induced vomiting or gastric lavage is generally helpful only if it is performed *within 2 hours* of the ingestion—ideally

TABLE 16.12A. **Removing or Eliminating the Causative Agent in a Poisoning**

Type of Causative Agent	Nonpharmacologic Management	Cautions and Remarks
Ingested poisons	▪ To remove or eliminate a caustic agent— • Induce vomiting by stimulating the back of the pharynx with soft spoon or spatula. • ***Caution:*** Never use salt as an emetic agent. It can be very dangerous. **—OR—** • Perform gastric lavage • Use gastric lavage *only if*— - The staff are familiar with the procedure - The staff can perform it safely - The patient unable or unsafe to vomit • Use gastric lavage *only if* the ingestion— - Was only a few hours earlier - Is life threatening - Was *not* a corrosive or a petroleum derivative • Follow these steps to perform gastric lavage: - Make sure a suction apparatus is available in case the patient vomits. - Place the patient in the left lateral/head down position. - Measure the length of tube to be inserted and ensure the tube is in the stomach.	▪ ***Caution:*** *Never* induce vomiting or perform gastric lavage in a patient who— • Has an altered level of consciousness or other reason that he or she cannot protect the airway • Has ingested caustic, corrosive, or petroleum agents • Has evidence of burn around the nose or mouth

TABLE 16.12A. Removing or Eliminating the Causative Agent in a Poisoning (CONTINUED)

Type of Causative Agent	Nonpharmacologic Management	Cautions and Remarks
Ingested poisons (continued)	- Perform lavage with 10 ml/kg body weight of warm normal saline (0.9%). The volume of lavage fluid returned should approximate to the amount of fluid given. Lavage should be continued until the recovered lavage solution is clear of particulate matter. ▪ To neutralize the ingested agent, give activated charcoal, if available, by mouth or nasogastric tube. This action is advised only if the patient arrives within two hours of ingestion, when it is not possible to induce vomiting, and there are no other contraindications. ***Caution:*** Give activated charcoal *only* if the staff is experienced with the procedure. • If giving by nasogastric tube, be particularly careful that the tube is in the stomach. • Give as single dose when possible, otherwise by divided dose 30 minutes apart. Mix the following charcoal amounts in the proportion of 8 cc of water per gram of charcoal: ◦ Children <1 year: 1 g/kg body weight ◦ Children 1–12 years: 25–50 g	▪ Identify the causative agent before proceeding to induce vomiting or perform gastric lavage. Corrosive agents include the following: • Kerosene and other petroleum-based products • Most pesticides • Acids and alkaline cleansers and solvents (bleach) • Battery acid

TABLE 16.12A. Removing or Eliminating the Causative Agent in a Poisoning (CONTINUED)

Type of Causative Agent	Nonpharmacologic Management	Cautions and Remarks
Ingested poisons (continued)	◦ Adults and children >12: 25–100 g ***Caution:*** Charcoal may cause nausea. Use cautiously and with care if the ingested agent is a caustic or other agent with contraindication to vomiting. ▪ When induced vomiting or charcoal neutralization is not indicated or possible, give the patient clean water or milk orally to dilute the ingested agent.	

16.12. Poisoning

TABLE 16.12A. **Removing or Eliminating the Causative Agent in a Poisoning** (CONTINUED)

Type of Causative Agent	Nonpharmacologic Management	Cautions and Remarks
Skin or eye exposure to poisonous agent	▪ Remove all the patient's clothing and personal effects. ***Note:*** Removed clothing and personal effects should be stored safely in a see-through plastic bag that can be sealed for later cleansing or disposal. ▪ Wipe away any liquid or powder agent with a dry, clean cloth. ▪ Thoroughly flush all exposed areas with copious amounts of tepid water. Use soap and water for oily substances. ▪ Irrigate with clean water for *at least* 20 minutes—longer for alkali agents, which continue to cause damage for many hours after exposure. ▪ For eye exposure, rinse with clean water or normal saline for *at least* 20 minutes (40 minutes for alkali agents), taking care that run-off does not enter the other eye. (See section 16.7 "Eyes Injuries [Trauma, Foreign Bodies, and Burns]."")	Attending staff should take care to protect themselves from secondary contamination by wearing gloves and apron.
Inhaled poisonous or caustic agents	▪ Inhalation of irritant gases may cause swelling and upper airway obstruction, bronchospasm, and delayed pneumonia. ▪ Intubation, bronchodilators, and ventilation support may be required.	

within 1 hour. Likewise, neutralization of the ingested agent is advised *only* if the patient arrives within 2 hours of the ingestion, when it is not possible to induce vomiting and there are no other contraindications.

Note: Often it is not possible to eliminate or neutralize the causative agent because the patient arrives at the health facility more than 2 hours after the ingestion.

Pharmacologic

- Give oxygen if the patient is short of breath, has change in level of consciousness, or has had carbon monoxide exposure.
- The specific antidote for the poison should be given based on label or reference recommendation, if available. Most cases will require transfer to higher level facility for specific therapies not available at BPHS level.
- For pharmacologic management of specific poisons, see table 16.12B.

Referral

- Refer *all* patients suspected of significant poisoning to be observed for *at least* 6 hours. Observation may extend to 24 hours, depending on the poison exposure, distance from health facility, and other factors.
- Patients who have ingested corrosives or petroleum products should not be sent home without observation for 6 hours. Corrosives can cause esophageal burns, which may not be immediately apparent. Petroleum products, if aspirated, can cause pulmonary edema that may take some hours to develop.
- Transfer the following patients to next level referral hospital, when appropriate and when it can be done safely:
  - Unconscious patient or patient who has a deteriorating level of consciousness

Note: Keep unconscious patients in recovery position.

- Patient who has burns to mouth and throat
- Patient in severe respiratory distress
- Patient who has circulatory compromise
- Patient who has a significant ocular injury

- Refer all patients who have ingested poison deliberately or may have been given the poison intentionally.

Prevention

- Keep medicines, drugs, and poisons in properly labeled and identified containers
  Caution: Keep these substances out of the reach of children.
- Patients who have psychiatric problems or suicide risk should have early, supportive intervention.

Patient Instructions

- Review late findings and complications of specific poison. Return if you experience danger signs.
- Advise parents on first aid in case a poisoning happens again in the future.
  - Do not make the child vomit if—
    - He or she has swallowed corrosives, kerosene, petrol, or petrol-based products
    - The child's mouth and throat have been burned
    - The child is drowsy
  - If other medicines, drugs, or poisons have been taken, try to make the child vomit by stimulating the back of the throat.
  - Take the child to a health facility as soon as possible, together with detailed information about the substance concerned (e.g., the container, label, sample of poisonous agent).

TABLE 16.12B. Pharmacologic Management of Specific Poisons

Type of Specific Poison	Pharmacologic Method	Cautions and Remarks
Corrosive compounds: ▪ Sodium hydroxide ▪ Potassium hydroxide ▪ Acids ▪ Bleaches ▪ Disinfectants	▪ Give milk or water as soon as possible to dilute the corrosive agent. ▪ Afterward, give the patient nothing by mouth and arrange referral if necessary for surgical review to check for esophageal damage or rupture.	***Caution:*** ▪ Do *not* induce vomiting. ▪ Do *not* use activated charcoal when corrosives have been ingested because doing so may cause further damage to the mouth, throat, airway, esophagus, and stomach.
Petroleum compounds: ▪ Kerosene ▪ Turpentine substitutes ▪ Petrol	Specific treatment includes oxygen therapy if patient exhibits respiratory distress.	***Caution:*** ▪ Do *not* induce vomiting ▪ Do *not* give activated charcoal because inhalation can cause respiratory distress with hypoxemia due to pulmonary edema or pneumonia. ▪ Encephalopathy also is a risk.

TABLE 16.12B. Pharmacologic Management of Specific Poisons (CONTINUED)

Type of Specific Poison	Pharmacologic Method	Cautions and Remarks
Organophosphorous and carbamate compounds: ▪ Organophosphorous (e.g., malathion, parathion, TEPP, mevinphos) ▪ Carbamates (e.g., methiocarb and carbaryl—pesticides)	▪ These agents can be absorbed through the skin, ingested, or inhaled. ▪ Remove the poison by irrigating the eye or washing the skin as appropriate. ▪ Give activated charcoal if poisoning is by ingestion and within 1 hour of the ingestion. ▪ If the child has signs of excess parasympathetic activation (i.e., salivation, teary eyes, urination, defecation, gastric disturbance, and emesis), give atropine (vial): 0.015–0.05 mg/kg IM injection (maximum 1 mg), when available. ▪ Refer the patient to receive pralidoxime for muscle weakness. It is used as an antidote to treat poisoning by a chemical or pesticide (insect) spray or by a medicine used to treat a muscle disorder.	***Caution:*** Do *not* induce vomiting because most pesticides are in petrol-based solvents.
Paracetamol	▪ If patient seen within 1 hour of ingestion, induce vomiting. Use nasogastric lavage or activated charcoal if you cannot induce vomiting. ▪ Refer patient to receive the antidote, methionine or acetylcysteine, to prevent liver failure. ▪ Refer for ingestions of a dose of paracetamol of 150 mg/kg or more (to regional hospitals).	

16.12. Poisoning

TABLE 16.12B. Pharmacologic Management of Specific Poisons (CONTINUED)

Type of Specific Poison	Pharmacologic Method	Cautions and Remarks
Acetylsalicylic acid (aspirin) and other salicylates	▪ This agent can be serious in young children because they rapidly become acidotic and are consequently more likely to suffer the severe central nervous system effects of toxicity. Aspirin causes acidotic-like breathing, vomiting, and tinnitus. ▪ Induce vomiting. Use nasogastric lavage or activated charcoal if you cannot induce vomiting. ▪ For acidosis, hydrate to encourage high urine output. Refer to hospital for further therapy (e.g., sodium bicarbonate, vitamin K).	
Iron	▪ Check for clinical features of iron poisoning: • Nausea, vomiting, abdominal pain, and diarrhea • Gray or black vomit or stools • Gastrointestinal hemorrhage, hypotension, drowsiness, convulsions, and metabolic acidosis—in severe poisoning ***Note:*** Gastrointestinal features usually appear in the first 6 hours. A patient who has remained asymptomatic for this time probably does not require antidote treatment. ▪ Induce vomiting if <2 hours from ingestion. ▪ Refer to hospital symptomatic patients for consideration of antidote therapy.	Activated charcoal does not bind to iron salts; therefore, consider giving a gastric lavage if potentially toxic amounts of iron were taken when patient cannot vomit and ingestion was recent.

TABLE 16.12B. Pharmacologic Management of Specific Poisons (CONTINUED)

Type of Specific Poison	Pharmacologic Method	Cautions and Remarks
Carbon monoxide poisoning	Give 100% oxygen to accelerate removal of carbon monoxide until signs of hypoxia disappear.	Patient can look pink but still be hypoxemic.
Narcotics: opioids (e.g., morphine, heroin, codeine, tramadol, propoxyphene)	▪ Check for clinical features of narcotic poisoning: • Mild intoxication is characterized by euphoria, drowsiness, and constricted pupils. • Severe intoxication may cause hypotension, bradycardia, hypothermia, seizures, pulmonary edema, coma, and respiratory depression or arrest. • Death is usually due to apnea or pulmonary aspiration of gastric content. ▪ Protect the airway, give oxygen, and assist ventilation. ▪ Induce vomiting (or stomach lavage), and administer activated charcoal, if can be done safely.	Naloxone hydrochloride may be administered in the same doses by IM or subcutaneous injection, but only if the IV route is not feasible. IM and subcutaneous routes have a slower onset of action.

TABLE 16.12B. Pharmacologic Management of Specific Poisons (CONTINUED)

Type of Specific Poison	Pharmacologic Method	Cautions and Remarks
Narcotics: opioids (e.g., morphine, heroin, codeine, tramadol, propoxyphene) [continued]	▪ Refer patient to receive naloxone, a specific opioid antagonist, if available (in DHs and higher). Vial is 400 micrograms (=0.4 mg) per ml. Dosages by IV injection: • Children: 10 micrograms/kg body weight. Repeat dose in 2 minutes if no response. • Adults: 0.4–2 mg repeated at intervals of 2–3 minutes up to a maximum of 10 mg. Question the diagnosis if respiratory function does not improve.	
Benzodiazepines	Flumazenil is a benzodiazepine receptor specific antagonist (available in DHs and higher). Give 0.2 mg/kg IV over 2 minutes (to a maximum dose of 2 mg).	

NATIONAL STANDARD TREATMENT GUIDELINES FOR THE PRIMARY LEVEL

16.12. Poisoning

CHAPTER 17. SIGNS AND SYMPTOMS

17.1. Febrile Convulsion

Description

A febrile convulsion is a seizure triggered by a high fever (38.5°C or higher). It typically occurs between the ages of 3 months and 5 years in the absence of detectable central nervous system (CNS) infection. Generally, febrile convulsion has an excellent prognosis.

- A febrile convulsion may be simple or complex.
  - Simple febrile convulsion
    - A single, generalized seizure usually occurs at beginning of febrile condition.
    - Seizure lasts 2–3 minutes and always less than 15 minutes.
    - No associated neurologic defect is found.
    - Often the family has a history of febrile seizures.
    - Typically, the convulsion does not recur, has a good prognosis, and not associated with epilepsy.
  - Complex febrile convulsion
    - It may be focal, recurrent, or both.
    - Seizures last more than 10 minutes.
    - Residual neurologic abnormality, subsequent epilepsy, or both are found.
    - It is associated with intracranial infection or other CNS problem.
- The problem is to differentiate the simple febrile convulsion (due to fever) from the convulsion associated with the following:
  - Serious intracranial disease (e.g., meningitis)
  - Extracranial disease, such as pneumonia, viral disease, or malaria, or a specific infection such as urinary tract infection and hypoglycemia

17.1. Febrile Convulsion

SIGNS AND SYMPTOMS

Diagnosis

- Always check the child younger than 5 years for danger signs per IMCI flipchart.
- Look for a temperature 38.5°C or higher.
- Seizure is typically tonic-clonic and may be associated with loss of consciousness and bowel or bladder control.
- Establish cause of fever and of seizure.
  - Viral infection (e.g., viral pharyngitis)
  - Bacterial infection—
    - Intracranial: meningo/encephalitis or brain abscess
    - Extracranial: upper respiratory tract infection, acute otitis media, bacterial pharyngitis, or urinary tract infection
  - Metabolic: hypoglycemia
  - Malaria

Management

The goals of management are to maintain the airway, stop the seizure, control the fever, and identify and treat the cause of the fever.

Nonpharmacologic

- Maintain the airway.
  - Turn the child on his or her side to avoid aspiration.
  - If the lips or tongue are blue, open the child's mouth and ensure that airway is clear. Give oxygen.
  - Clear secretions.
  - Do not give anything by mouth to patient while he or she is convulsing.
- Protect from injury.
  - Prevent from falling or local trauma.
  - Protect tongue from biting.
- Lower fever.
  - Remove the child's clothing.

- Sponge with cool, damp cloth (i.e., give a tepid sponge bath).

- Encourage fluids once the patient has recovered from the seizure.

Pharmacologic

- First priority: treat the seizure with diazepam.
  Caution: Treat *only* if the patient is still having seizure. If the seizure has stopped, control the fever.
  - Give diazepam: 0.5 mg/kg/dose, rectally. Repeat once in 10 minutes if seizure continues.
  - Follow this administration procedure:
    - Draw the appropriate amount of diazepam solution using a TB syringe or insulin syringe. Refer to table A9 in annex A for standard dosages.
    - *Take out the needle* and insert the syringe 4–5 cm into rectum before emptying.
    - Squeeze buttocks together for 2–3 minutes.
- Second priority: treat the fever with paracetamol until the fever subsides. Refer to table A15 in annex A for standard dosages.
  - If the child is unable to eat, give the paracetamol through nasogastric tube.
    Caution: Do *not* give aspirin to children younger than 5 years because of the risk of Reye's syndrome.
- Third priority: treat the infection, which is the cause of the high temperature. When a bacterial illness is suspected and there are no general danger signs or signs of severe disease, appropriate antibiotic treatment should be given according to diagnosis. If you diagnose an upper respiratory tract infection or urinary tract infection—
  - Give co-trimoxazole. Refer to table A8 in annex A for standard dosages.
    —OR—
  - If the patient has an allergy to co-trimoxazole or shows no improvement after 48 hours of treatment, give the second choice: amoxicillin. Refer to table A3 in annex A for standard dosages.
    —OR—
  - In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 in annex A for standard dosages.
- Avoid or treat low blood sugar (hypoglycemia) with sugar water or breastfeeding in infants.

Referral

- *All* first attack of convulsions and atypical types (e.g., recurrent seizures, full consciousness not regained after seizure) should be immediately referred to hospital for more investigation.
- *All* children younger than 5 years who have suspected meningitis or encephalitis, IMCI general danger signs, or signs of severe disease should be referred after stabilization and initial dose of treatment of antibiotics: ampicillin **PLUS** gentamicin. (Refer to tables A4 and A13, respectively, in annex A for standard dosages.)

Prevention

Prevent high fever (38.5°C or higher) in children, especially those with history of febrile convulsion, by giving a tepid sponge bath and paracetamol.

Patient Instructions

- Encourage the mother or caregiver to continue feeding the fully conscious child.
- Avoid recurrent fever by giving a tepid sponge bath and paracetamol.
- Place patient in a warm but well-ventilated place. Remove patient's excess clothing. Cover patient with only a sheet or other light covering. If the patient feels cold, then cover him or her lightly.

17.1. Febrile Convulsion

SIGNS AND SYMPTOMS

- Advise the family to bring the child back after 2 days for re-evaluation.
- Advise the family to bring the child back *immediately* if new symptoms arise or the child's condition worsens.

17.2. Cough

Description

Cough is a pulmonary reflex most often caused by irritation of the respiratory system due to infection, foreign body, or chronic disease. Cough is a common sign in children and adults. Cough is often mild and self-limiting (common cold). Cough may, however, be an indication of serious or life-threatening disease. Cough may be a sign of an acute condition (e.g., acute respiratory infection, foreign body, pneumonia, asthma, or lung edema from cardiac failure) or a sign of chronic condition (e.g., TB, chronic obstructive pulmonary disease, or carcinoma).

Diagnosis

- Take a history to determine duration of cough and associated findings:
  - Investigate a persistent cough of more than 2 weeks.
  - Look for sputum production, fever, and vomiting.
  - Assess the character of the cough (i.e., sporadic, constant, paroxysmal "whooping cough").
  - Ask about the patient's exposure to TB patient or person with other infectious disease.
  - Determine the patient's immunization history.
- Do an examination, especially in children younger than 5 years. Refer to IMCI flipchart and look for danger signs of severe disease and signs of severe pneumonia such as the following:
  - Inability to drink or breastfeed
  - Uncontrolled vomiting
  - Convulsions of recent onset
  - Lethargy or loss of consciousness
  - Chest in-drawing
  - Stridor in a calm child
  - Pneumonia in an infant younger than 2 months
- Look for other respiratory findings:
  - Dyspnea: an awareness of breathlessness
  - Rapid breathing
    - Infants 0–2 months old: more than 60 or more breaths per/minute
    - Infants 2–11 months old: more than 50/minute
    - Children 1–5 years old: more than 40/minute
  - Cyanosis, grunting, nasal flaring, neck swelling, stridor, lower chest wall in-drawing (children), or an inability to feed
- Associated conditions include the following:
  - Common cold or flu
  - Pneumonia: fever, purulent sputum, crackles, decreased breath sounds, dullness to percussion (consider pleural effusion or empyema)
  - Wheezing—may be associated with asthma, or as a complication of pneumonia, bronchiolitis, croup, other pulmonary diseases, or the pulmonary phase of worm or parasite infestation (i.e., Loeffler's syndrome)
  - Heart failure—fluid in the lungs may trigger cough
  - Stridor—a harsh noise during inspiration due to narrowing of major air passages caused by—
    - Foreign body aspiration or trauma
    - Edema from: viruses (e.g., croup or measles), diphtheria, pertussis, retropharyngeal abscess, or anaphylaxis

Management

Determine cause of the cough and associated conditions. Provide emergency care and referral for those presenting

with danger signs and signs of severe disease. Determine risk for TB. Refer *all* patients who have had a cough for more than 2 weeks for TB check.

Note: Ensure there is no foreign body or laryngeal edema, especially in patients who have stridor.

Nonpharmacologic

- Instruct the patient to maintain good hydration and nutrition; continue breastfeeding.
- Advise bed rest, as needed.

Pharmacologic

- Give oxygen, as needed.
- Treat underlying diseases.

Referral

- Pneumonia in infants younger than 2 months
- *All* patients exhibiting danger signs or respiratory distress; patients who have—
  - Severe pneumonia
  - Severe asthma
  - Any condition that may be life-threatening (e.g., foreign body)
- *All* suspects with exposure or symptoms of TB, particularly blood in sputum and cough more than 2 weeks
- Cough associated with loss of weight or growth faltering
- Patients who have not improved with initial treatment

Prevention

- Isolate patients who have suspected pneumonia or other contagious disease.
- Ensure proper immunization for all children (see chapter 19 “Immunization”).

Patient Instructions

- Practice good cough etiquette.
  - Turn head away from others.
  - Cough into clean cloth.
- Maintain hydration and nutrition.
- Sip tea, warm water, or soup to help soothe the throat and alleviate symptoms.
- Return in 5 days for check, or sooner if condition worsens.
- Do *not* use cough suppressant or traditional medicine.

17.3. Fever

Description

Fever is a frequent symptom, often linked to infection, but not always. Fever is defined as a body temperature higher than 38°C (rectal) or 37.5°C (oral or axillary). Always look for signs of serious illness before trying to establish a diagnosis. Fever is a natural and sometimes useful response to infection. Fever alone is not a diagnosis. Fever can cause pain, myalgia, arthralgia, headache, insomnia, and convulsions in children.

Diagnosis

- Determine duration and pattern of fever.
- Determine whether the patient has any localizing signs of infection to explain the fever.
- Carefully take the temperature. If you use a mercury thermometer, measurement should take at least 5 minutes.
- If the patient is a child younger than 5 years, follow the IMCI flipchart and look for signs of very severe disease (i.e., general danger signs are present).
  - Child refuses to drink or breastfeed.
  - Child is abnormally sleepy or difficult to wake.
  - Child is unconscious.

17.3. Fever

- Child has convulsions or has had convulsions.
- Child vomits or has been vomiting persistently and is at risk for dehydration.

- If the patient is a child younger than 5 years, follow the IMCI flipchart and look for signs of severe disease
  - Fast breathing (60 breaths/minute or more) in a child younger than 2 months of age
  - Chest in-drawing: the lower part of the chest goes *in* when the child breathes *in*
  - Hoarse noise when the child breathes *in*
  - Lethargic, sunken eyes, unable to drink, skin pinch goes back very slowly
  - Stiff neck
  - Clouded cornea or deep mouth ulcers
  - Tender swelling behind ear
  - Visible severe wasting or edema of both feet
  - Severe palmar pallor
- Look for localizing signs to explain the fever and diagnose problem. (Possible diagnoses are in parentheses.)
  - Severe headache, stiff neck, coma (meningitis, sinusitis)
  - Severe throat pain (pharyngitis, abscess)
  - Ear or mastoid pain or pus (otitis media, mastoiditis)
  - Cough, lower chest wall in-drawing, fast breathing (pneumonia)
  - Cough, cold (viral upper respiratory tract infection)
  - Abdominal pain, diarrhea, constipation (gastrointestinal problem, peritonitis, typhoid)
  - Pain with urination, flank pain, or both (urinary tract infection)
  - Pain of joint or limb (osteomyelitis, septic arthritis)
  - Localized pain, swelling, or fluctuance (cellulitis, abscess)
- Consider causes that may not have localizing signs
  - Malaria—endemic area or travel in endemic area within the past 4 weeks, recurrent fever, jaundice, anemia (check malaria blood test)
  - Septicemia—seriously and obviously ill with no apparent cause (purpura, petechia, shock in young infant, or severely malnourished child)
  - TB
  - Malignancy
  - Endocarditis, rheumatic fever
  - Brucellosis
- Consider causes of fever that may be associated with a rash
  - Measles: typical rash
  - Meningococcal infection: petechial or purpuric rash
  - Viral syndrome

Note: In neonates and the elderly, fever may be absent or preceded by other symptoms such as confusion and failure to feed.

Management

All patients who have fever should be examined for signs and symptoms that will indicate the underlying cause of the fever and should be treated accordingly.

Nonpharmacologic

- Place patient in a warm but well-ventilated place.
- Remove patient's excess clothing.
- Cover patient only with a sheet or other light covering.
- Sponge the patient's body with lukewarm water if the room temperature is higher than 40°C.
- If the patient feels cold and begins to shiver, then cover him or her lightly.
- Prevent dehydration. Encourage to increase oral fluid intake or continue to breastfeed an infant.

SIGNS AND SYMPTOMS

Pharmacologic

- For children younger than 5 years presenting signs of very severe disease or severe disease, give the first dose of treatment as per IMCI flipchart, and refer *urgently* to hospital.
- Treat according to underlying cause (if identified).
- For a fever 38.5°C or higher, give paracetamol until fever subsides. Refer to table A15 in annex A for standard dosages.
  Caution: Do *not* give aspirin to children younger than 5 years because of the risk of Reye's syndrome.
- Give antibiotics, only if needed.
  - Treat an *identified* cause of fever with appropriate antibiotic(s).
  - Do *not* treat an unidentified cause of fever with antibiotic(s).

Referral

- All neonates
- All children younger than 5 years who have signs of very severe or severe disease (IMCI).
- All patients who have signs of possible severe disease or fever combined with signs of meningitis, jaundice, coma, confusion, convulsion, or malignancies
- Children without known cause of fever lasting more than 3 days
- Patients who have signs of severe pneumonia
- Patients who have signs of deeps space infection or abscess—may require surgical drainage
- Toxic patients (i.e., patients who look very sick or are becoming sicker)
- Fever that recurs (i.e., went down but comes back)
- Patients who have severe abdominal pain or guarding (i.e., signs of peritonitis)

Prevention

- Practice good hygiene and hand washing.
- Practice good cough etiquette (i.e., covering nose and mouth) to prevent possible airborne spread of diseases such as upper respiratory infections, pneumonia, TB, or measles.

Patient Instructions

- Check temperature regularly.
- Return to the clinic—
  - If new symptoms develop
  - If the fever persists more than 3 days after beginning of treatment
- If no underlying cause for the fever has been identified, return within 2 days.
  Note: Keep the patient close by for 48 hours if it is difficult for him or her to return.

17.4. Headache and Migraine

17.4.1. Headache

Description

Headache can be benign or serious. Headache can have serious underlying causes including the following:

- Encephalitis and meningitis
- Hypertension emergencies
- Stroke
- Mastoiditis and otitis media
- Brain tumor
- Anemia

Diagnosis

Headache due to a serious disease will often be associated with neurological symptoms and signs including the following:

- Impaired consciousness

17.4. Headache and Migraine

- Mood change
- Visual disturbances
- Confusion
- Pupillary changes and difference in size
- Focal paralysis
- Convulsions
- Neck stiffness
- Vomiting
- Fever

Tension headache due to muscle spasm and migraine (see section 17.4.2 "Migraine") are common benign headaches.

Management

The goals of management are to determine the cause and treat as well as to provide symptomatic support for common benign headache:

- Teach relaxation techniques.
- Advise patient to increase fluid intake.
- Give oral paracetamol. Refer to table A15 in annex A for standard dosages.

Referral

- Suspected meningitis; refer immediately after initial treatment (see section 7.2 "Encephalitis and Meningitis")
- Headache in children lasting for 3 days
- Headache with neurological manifestations
- Newly developed headache persisting for more than 1 week in an adult

Patient Instructions

Patient should consult the health facility when headaches—

- Occur more frequently than usual
- Are more severe than usual
- Worsen or do not improve with appropriate use of paracetamol
- Prevent the patient from working, sleeping, or participating in normal activities

17.4.2. Migraine

Description

A classic migraine headache is a lateralized throbbing headache that occurs episodically following its onset in adolescence or early adult life, although not all headaches that are throbbing in character are of migrainous origin.

Patients often give a family history of migraine. Attacks may be triggered by emotional or physical stress, lack or excess of sleep, missed meal, specific foods (e.g., chocolate), alcoholic beverages, menstruation, or use of oral contraceptives (see chapter 18 "Family Planning").

Diagnosis

- Headache, usually pulsatile
- Nausea, vomiting, photophobia, and phonophobia
- May be transient neurologic symptoms (commonly visual)

Management

Nonpharmacologic

Advise the patient to avoid any precipitating factors.

Pharmacologic

Pharmacologic management encompasses both prophylactic treatment and treatment of acute attacks (i.e., symptomatic treatment).

- Treatment of an acute attack:
  - Aspirin 300–900 mg every 4–6 hours when necessary
    Caution: Do *not* give aspirin to children younger than 5 years because of the risk of Reye's syndrome.
    —OR—

17.5. Jaundice

- Paracetamol. Refer to table A15 in annex A for standard dosages.
  —OR—
- Ibuprofen (tablet 400 mg): 1 tablet every 6 hours in adults when necessary
  —PLUS—
- Treatment with extra-cranial vasoconstrictions: caffeine 100 mg **PLUS** ergotamine tartrate 1 mg: 1 or 2 tablets at the onset of headache, followed by 1 tablet every 30 minutes, if necessary, up to 6 tablets per attack and 10 tablets per week (not available in BPHS facilities).

- Prophylactic treatment: prophylactic treatment may be necessary if migraine headaches occur more than 2–3 times a month and disturb normal life. Treatment will be given by a specialist, which will require referral. The following are typically prescribed:
  - Propranolol 80–240 mg (usual adult daily dose) (available in DH)
  - Amitriptyline 10–150 mg (available in CHCs and DHs)
  - Imipramine 10–150 mg (not available in BPHS facilities)

17.5. Jaundice

Description

Jaundice is a condition in which the skin, palms, and eyes become yellow. It is the result of accumulation of bilirubin in the body tissue typically either from increased production (hemolysis) or decreased processing (hepato-biliary disease). Jaundice is not clinically recognizable until level of bilirubin is more than 3 mg/dl; normal is less than 1.2 mg/dl. Jaundice may be physiologic in the newborn when it presents in mild form at 2–5 days of life, and all other causes have been excluded. All other presentations of neonatal jaundice should be referred to prevent complication of kernicterus (i.e., hyperbilirubin of the brain), which may cause mental disorders or death. *All* cases of jaundice in children and adults are abnormal and should be referred for proper testing and treatment of possible causes: hepatitis, biliary tract obstruction or disease, hemolysis, or severe infection.

Diagnosis

- Physiologic neonatal jaundice occurs in more than 50% of normal newborns and more than 80% of premature babies. To diagnose physiologic and mild jaundice look for the following evidence:
  - The condition presents 2–5 days after birth, is resolved by 14 days, and is very mild.
  - With your finger, gently compress the skin on the baby's forehead. When you remove your finger, the imprint will be slightly yellowish instead of white.
- Nonphysiologic or abnormal neonatal jaundice will present with the following:
  - Jaundice starts either in first 24 hours or after 13th day of life.
  - Jaundice lasts for more than 2 weeks.
  - Skin and eyes are a deep yellow.
  - Yellow jaundice is obvious on the palms of the hands and soles of feet.
  - Convulsions or jitteriness in the newborn with jaundice may be an indication of bilirubin crossing into the brain.
  - Evidence of infection, danger signs, or both may be present.

  Caution: Jaundice is always abnormal in non-newborns, children, and adults.

Management

Nonpharmacologic

Neonatal jaundice may benefit from phototherapy (i.e., for physiologic jaundice) or exchange transfusion (i.e., for severe jaundice). Patients should be referred for diagnosis and treatment when possible. Normal breastfeeding should continue for infants.

Pharmacologic

- Give antibiotics if you suspect neonatal infection.
  - Treat as for sepsis (see section 15.6 "Sepsis").
  - Refer.
- Give oral chlorpheniramine for itching if the diagnosis is known and there is no contraindication.
  - Children: Refer to table A7 in annex A for standard dosages.
  - Adults: 4 mg every 8 hours

Referral

- All adults and children for diagnosis and treatment options of jaundice
- All newborns with evidence of nonphysiologic jaundice
- All newborns with evidence of physiologic jaundice, if possible, to assess bilirubin level and for full treatment options

Prevention

- Identify high-risk pregnancies for neonatal complication with proper antenatal care (see section 9.1 "Pregnancy and Antenatal Care") and deliver at EPHS facility.
- Prevent complications of severe neonatal jaundice with early referral of newborn.
- Look for signs of sepsis and other causes of neonatal jaundice.

- Abstain from alcohol consumption, which can lead to jaundice from hepatitis or cirrhosis in adults.

Patient Instructions

- In newborns being treated at home, monitor closely for severity and complications.
- Support breastfeeding, particularly for preterm infants, who are at higher risk of developing jaundice and of having complications of jaundice.

17.6. Chest Pain

Description

Chest pain (or chest discomfort) is a common symptom that can occur as result of cardiovascular, pulmonary, pleural, esophageal, gastrointestinal, or musculoskeletal disorders; skin disease; or anxiety states. It may be described as sharp, dull, or burning or as a sensation of pressure.

The evaluation of the patient with chest discomfort must—

- Assess the safety of the immediate management plan
- Determine the diagnosis

Diagnosis

To determine the cause of chest pain see table 17.6.

Management

Nonpharmacologic

- The most important issue is to eliminate a life-threatening problem as the cause of the chest pain, such as angina, myocardial infarction, or pneumothorax. If one of those diagnoses seems plausible, the patient requires *urgent* referral.
- Otherwise, treatment of chest pain should be guided by the underlying etiology.

Pharmacologic

- If angina or myocardial infarction is suspected, give acetylsalicylic acid (81–325 mg) prior to referral. Patient will need to go to hospital for evaluation and possible nitroglycerine therapy.
- If angina or myocardial infarction is suspected, and blood pressure is more than 160/100, give 1 tablet of captopril (25 mg) by mouth prior to referral, when available.
- If esophagitis or peptic ulcer disease is suspected, give an antacid: aluminum hydroxide plus magnesium hydroxide, 2–4 chewable tablets by mouth.

Referral

- All cases of suspected angina pectoris, myocardial infarction, pneumothorax, or severe pneumonia require urgent referral.
- If you suspect myocardial infarction, transport with health worker and oxygen, when possible.
- If treatment by antacid of a suspected esophagitis or peptic ulcer is not successful, refer for further investigation.

Prevention

Often chest pain is the result of esophageal reflux or disorder and may be helped by avoiding spicy and fatty food.

Patient Instructions

- Patients who have mild symptoms should be encouraged to document what activities seem to bring on the pain because the history is important in making the correct diagnosis. For example, are the symptoms associated with exertion, with food, or with coughing?
- Patients who have mild and rare symptoms may have trial of antacid therapy to see if it is helpful. Patients should return for reevaluation in all cases.

TABLE 17.6. Typical Clinical Features of Common Causes of Acute Chest Discomfort

Condition	Quality	Location	Associated Features
Angina pectoris (see section 6.4)	Pressure, tightness, squeezing, heaviness, burning lasting 2–10 minutes	Retrosternal, often with radiation to neck, jaw, shoulders, or arms, frequently on the left	▪ Precipitated by exertion, exposure to cold, or stress ▪ Relieved by rest and nitroglycerine
Acute myocardial infarction (see section 6.5)	Similar to angina but often more severe, often lasting >30 minutes	Similar to angina	▪ Unrelieved by rest and nitroglycerin ▪ May be associated with evidence of heart failure or arrhythmia
Pneumonia (see section 3.3)	Sharp chest-wall pain aggravated by respiration	Unilateral, often localized	▪ Dyspnea ▪ Cough ▪ Fever ▪ Rales (i.e., crackles)
Pneumothorax	Sudden onset; lasts several hours	Lateral, to the side of the pneumothorax	▪ Dyspnea ▪ Decreased breath sounds
Esophageal or gastrointestinal (see section 2.2 "Peptic Ulcer Disease")	Burning	Epigastric, substernal	Relieved with food or antacids

TABLE 17.6. **Typical Clinical Features of Common Causes of Acute Chest Discomfort** (CONTINUED)

Condition	Quality	Location	Associated Features
Gallbladder disease (see section 16.2.3)	Burning, pressure	Epigastric, right upper quadrant, substernal	May follow a meal, especially a high-fat meal
Musculoskeletal disease	Aching	Variable	Aggravated by movement and localized pressure on examination
Herpes zoster—skin disease	Sharp or burning	Dermatomal distribution	Vesicular rash in area of discomfort

17.7. Constipation

Description

Constipation may be defined as delay or difficulty of defecation. A stool frequency of fewer than 3 times per week at any age is abnormal. In children, constipation is most often functional (i.e., nonorganic). In some cases, constipation is organic (e.g., anal stricture, Hirschprung disease, hypothyroidism, cerebral palsy, or due to some medicines, such as narcotics).

Note: Be suspicious of new onset of constipation in adults; it may be sign of colon cancer.

Diagnosis

- Take a history of the patient that includes the following:
  - History of family, psychological profile, school performance, and medication
  - The age of onset of symptoms (e.g., the infant who fails to pass meconium within 48 hours may have Hirschprung disease)
- Perform a perineal and rectal examination to assess perineal sensation, anal tone, size of rectum, and presence of anal wink.

Management

Nonpharmacologic

Patients should be reassured of the benign nature of simple constipation, and children should be helped to developed normal bowel habits. Advise the following:

- Increase fluid intake (at least 6–8 cups/day),
- Eat a high residue (i.e., high fiber) diet, high in whole wheat flour, fruits, and vegetables.
- Make appropriate behavior modifications to establish regular toilet habits. Children should be encouraged to use the toilet regularly without hurry or distraction.

Note: Excessive milk drinking may worsen constipation.

Pharmacologic

If nonpharmacologic treatment is not successful, advise a trial of oral daily medication for 1 week. Give—

- Mineral oil

  —OR—

- Magnesium hydroxide
  - Children 5 years or younger: 5–15 ml of oral liquid once a day
  - Children from 6–12 years: 15–30 ml oral liquid
  - Children 13–18 years: 6 chewable tablets at once daily
  - Adults: 6–8 chewable tablets at once daily

    Caution: Avoid magnesium hydroxide in pregnant and breastfeeding women.

    —OR—
  - Lactulose (15–30 ml at breakfast)

    —OR—
  - Bisacodyl tablet (5–10 mg at night adjusted according to the response) in adults and children older than 6 years (generally avoided in children younger than 6 years). Alleviation of constipation should be expected within 8–12 hours if taken at bedtime.
  - For rectal disimpaction of the hard fecoliths, use a saline enema, mineral oil enema, or glycerin suppository until dissolved and evacuated.

Referral

- Patients who have no response to treatment should be referred for further investigation.
- Newborn infants with failure to produce stool should be referred.

Patient Instructions

- Eat a high residue (i.e., high fiber) diet.
- Drink lots of liquid.

17.8. Nausea and Vomiting

Description

Nausea is a vague, disagreeable sensation of sickness or queasiness. Vomiting often follows nausea and is a violent ejection of stomach contents via the mouth. Vomiting may be self-limiting or associated with serious disease. The approach to the patient who is vomiting involves identifying cause or associated disease and treating dehydration rapidly, particularly in children younger than 5 years.

Diagnosis

Establish the patient's medical history and the sequence of the illness. Assess degree of dehydration (see section 2.1 "Diarrhea and Dehydration"). Identify any associated signs or symptoms:

- If the patient has fever, consider infection including the following:
  - Meningitis—stiff neck, bulging fontanel (infants)
  - Gastroenteritis
  - Pneumonia—cough, rales (i.e., crackles)
  - Urinary tract infection—dysuria, flank pain
  - Hepatitis—enlarged, tender liver; jaundice
  - Peritoneal irritation—abdominal tenderness, guarding and rebound, diminished bowel sounds (e.g., appendicitis, cholecystitis, pancreatitis)
- If the patient exhibits signs of central nervous system disorder or raised intracranial pressure, consider meningitis, cerebral malaria, migraine, vertigo or inner ear inflammation, closed head trauma, or tumor.
- If there is constipation, consider bowel obstruction and look for abdominal distension and hyperactive or high-pitched bowel sounds.
- If there is diarrhea, consider gastroenteritis, parasite infestation, or systemic infection.

17.8. Nausea and Vomiting

- Evidence of systemic or metabolic disorders could indicate pregnancy, acidosis or diabetic ketoacidosis, or uremia.
- In the case of bleeding (hematemesis), consider gastritis, ulcer, or a stomach or esophageal (i.e., mucosal) tear.
- Ingestion of harmful substances such as medications, alcohol, drugs, poisons, or food toxins can cause nausea and vomiting.

Management

Management should be based on the cause of vomiting; see specific condition cited above for identified diagnosis.

Nonpharmacologic

- Withhold food until you have established whether the patient has peritonitis, intestinal obstruction, or a severe illness requiring urgent referral.
- When the patient is ready to begin a feeding trial, start with small, frequent quantities of clear liquids (e.g., clean water, broth, tea, or soup) and dry foods (e.g., soda crackers, bread, and rice).

Pharmacologic

- Treat dehydration or the inability to take oral fluids:
  - Give ORS for those able to tolerate oral intake (see section 2.1 "Diarrhea and Dehydration" plan A).
  - Provide IV hydration if—
    - Patient is unable to tolerate oral intake, has a decreased level of consciousness, or has a possible surgical condition.
    - Patient is dehydrated. Give Ringer's lactate solution (Hartmann's solution), or if not available, give normal saline (0. 9%) solution (see section 2.1 "Diarrhea and Dehydration" plan C or plan B, based on estimated severity of dehydration).
    - Patient is not dehydrated, but is unable to take liquids orally.
  - Maintain a balanced rate of hydration: maintenance plus replacement of estimated ongoing losses from vomiting or diarrhea.
- Give an antiemetic: metoclopramide.
  Caution: Remember, vomiting treatment should be based on the cause.
  - Children: 0.1–0.2 mg/kg IM injection
    —OR—
    0.1–0.2 mg/kg orally every 8 hours until nausea or vomiting stops (maximum dose 10 mg/dose)
  - Adults: 10 mg IM injection
    —OR—
    10 mg orally every 8 hours until nausea or vomiting stops

Referral

Referral is indicated if—

- Patient has a possible surgical problem such as an intestinal obstruction or peritonitis or is vomiting blood
- Dehydration is moderate to severe, especially in children younger than 5 years (see IMCI flipchart)
- Patient shows evidence of severe illness or infection such as shock, septicemia, pneumonia, meningitis, central nervous system disturbance, jaundice, acidosis (diabetes or other metabolic disturbance), or complications of pregnancy
- Symptoms have been present for more than 1 week
- The patient is an infant who has projectile vomiting
- You diagnose other complex or obvious causes requiring treatment at a higher level facility
- The symptoms persist or worsen after initiating treatment

SIGNS AND SYMPTOMS

Patient Instructions

- Reassure the patient that most cases of vomiting are self-limiting.
- Advise patient to increase his or her diet volume and complexity slowly as the symptoms improve.
- Instruct the patient to return in 48 hours if vomiting persists or sooner if he or she develops new symptoms or signs of dehydration.

CHAPTER 18. FAMILY PLANNING FOR BIRTH SPACING

18.1. Preparing to Use a Family Planning Method

Description

Family planning (FP) for birth spacing allows couples to have children at a time where pregnancy, delivery, and breastfeeding entail the lowest risk for mothers and children. Consecutive births should be spaced at least 3 years apart to avoid unnecessary risk for mothers and children.

Management

FP counseling primarily involves helping the couple decide on an FP method that is not only objectively safe and effective but also acceptable to them. (The available methods are outlined in table 18.1A.)

- The first step in FP counseling is to assess the couple's needs. Listen carefully to what the couple says about their FP preferences. Make sure both partners understand the effectiveness of the available methods.

Determining the Couple's Pregnancy Status

The next step in FP counseling is to rule out pregnancy. Table 18.1B will help you ask the right questions in the right order. Start with question 1 and if the answer is "No," go to the next question until you get a "Yes" answer. If the woman answers "No" to all questions, assume she is pregnant. If you get one "Yes," go to table 18.1C to explicitly rule out the symptoms and signs of pregnancy.

With at least one "Yes" answer to the list in table 18.1B and no symptoms or signs of pregnancy from the list in table 18.1C, you can reasonably assume that the woman is not pregnant. You may proceed to table 18.1D and section 18.2, and give the couple the FP method they request.

TABLE 18.1A. Available Contraceptive Methods and Their Effectiveness

Methods	Effectiveness	Refer to Section
▪ Intrauterine devices (IUDs) ▪ Permanent methods	Most effective	▪ 18.2.5 ▪ Not covered in this standard treatment guideline
▪ Injectable methods ▪ Lactational amenorrhea method (LAM) ▪ Combined oral contraception (COC) ▪ Progesterone-only pills (POP)	Very effective	▪ 18.2.4 ▪ 18.2.6 ▪ 18.2.2 ▪ 18.2.3
▪ Condoms ▪ Fertility awareness methods (FAMs)	Effective if used correctly each time	▪ 18.2.1 ▪ 18.2.7
▪ Withdrawal ▪ Spermicides	Less effective	▪ 18.2.8 ▪ 18.2.9

TABLE 18.1B. Ruling Out Pregnancy

Question	Yes	No
1. Did you have a baby <6 months ago, and have you been fully or near-fully breastfeeding, and have you not had any monthly bleeding?		
2. Did you abstain completely from sexual intercourse since your last monthly bleeding or delivery?		
3. Have you had a baby <1 month ago?		
4. Did your last monthly bleeding start within the past 7 days (within past 12 days if IUD is requested)?		
5. Did you have a miscarriage or abortion within the past 7 days (within past 12 days if IUD is requested)?		
6. Have you been using a reliable contraceptive method consistently and correctly?		

18.1. Preparing to Use a Family Planning Method

FAMILY PLANNING

TABLE 18.1C. The Signs and Symptoms of Pregnancy

Ask the woman if she is experiencing any of the following:	
▪ Nausea, especially in the morning	▪ Increased frequency of urination
▪ Breast tenderness	▪ Increased sensitivity to odors
▪ Fatigue more than usual	▪ Unexplained mood changes
▪ Vomiting	▪ Weight gain

If pregnancy is *not* ruled out, however, and if a pregnancy test available, do urine pregnancy test. If the test is negative, you may proceed to table 18.1D and section 18.2, and give the couple the FP method they request.

If pregnancy test is not available, but you (or a colleague) are capable of performing a bimanual pelvic examination, do an examination and determine the following:

- The date of last monthly bleeding
- The size of uterus for future comparison

Until you can be sure the woman is not pregnant, you *cannot* move on to table 18.1D and section 18.2.

- Tell couple that the only available method for them until they come back for check-up is condoms. If condoms are unacceptable, less reliable methods (such as withdrawal) or abstinence can be used.
- Tell couple to come back after 4 weeks, or when the woman gets a monthly bleeding, whichever is first. When the couple returns—
  - If woman has monthly bleeding, you may proceed to table 18.1D and section 18.2, and give the couple the FP method they request.
  - If woman has no monthly bleeding, conduct bimanual pelvic examination:
    - If the uterus is larger than before, then the woman is pregnant. Advise her to start regular antenatal

TABLE 18.1D. Rating of Routine Examinations and Tests for FP Prescribing

Routine Examination	COC	Injection	POP	IUD	Condoms	Spermicides
Breast examination by provider	C	C	C	C	C	C
Blood pressure screening	—[a]	—	—	C	C	C
Cervical cancer screening test	C	C	C	C	C	C
Hemoglobin test	C	C	C	B	C	C
Pelvic/genital examination	C	C	C	C	C	C
Routine laboratory tests	C	C	C	A	C	C
Sexually transmitted infection (STI) risk assessment (history and physical examination)	C	C	C	A	C	C
STI/human immunodeficiency virus (HIV) screening (laboratory)	C	C	C	B	C	C

[a] — = desirable, but if not possible, method should not be denied if preferred

visits (see section 9.1 "Pregnancy and Antenatal Care").

- If you find no change in uterus size and no signs or symptoms of pregnancy, and if the couple has used an FP method consistently during the month, consider the woman not to be pregnant, and give FP method preferred by the couple (i.e., proceed to table 18.1C and section 18.2).

Performing Routine Examinations and Tests for FP Prescribing

Table 18.1D rates procedures often recommended, but not always necessary. Rating is as follows:

- A = essential and mandatory for safe and effective use. If the test cannot be performed or if the client fails the test, an alternate FP method must be used.
- B = contributes substantially to safe and effective use. Failing the test requires considering another method. The risk of not performing the test should be weighed against benefit of making the FP method available.
- C = does not contribute substantially to safe and effective use.

18.2. Family Planning Options Available in Afghanistan

18.2.1. Condoms (Male)

Description

Most condoms are made of latex and packed in aluminum foil, often lubricated. They work by forming a barrier that keeps sperm out of the vagina, preventing pregnancy. They also keep infections residing in the semen, on the penis, or in the vagina from infecting the other partner.

Effectiveness

Condoms require, first, correct use with every act of sex for greatest effectiveness and, second, both the male and female partner's cooperation. As commonly used in the first year, about 15% of couples will still have a pregnancy. When correctly used with every act of sex, about 2% of couples will have a pregnancy. Condom use is the only method that protects both against pregnancy *and* all STIs, including HIV.

Side Effects

Side effects are extremely rare, although condoms cannot be used by people who have a latex allergy. In addition, some men feel a condom interferes with sensation.

FAMILY PLANNING

18.2. Family Planning Options Available in Afghanistan

18.2.2. Combined Oral Contraceptive Pills

Description

COCs are the most commonly used modern FP method. One pill must be taken every day. COCs come in strips of 28 pills: 21 in one color containing low doses of combined estrogen and progestin (similar to the ones naturally present in the body) and 7 pills containing ferrous sulfate.

Effectiveness

COC's effectiveness depends on the user. As commonly used, about 8% of couples using COCs during the first year will have a pregnancy, mainly because pills are skipped or forgotten. Risk of pregnancy diminishes to less than 1% of the couples if the pills are taken quite regularly (i.e., every day at about the same time) for the first year. COCs do *not* protect against STIs.

Side Effects

COCs require sound counseling to the patient, particularly about bleeding changes. Side effects are common, but not all women have them, and they will become less or stop within the first months of using COCs. Advise the client to keep taking COCs and not to skip pills. Side effects can include the following:

- Changes in bleeding patterns (e.g., less volume, irregular, infrequent, none)—common but not harmful
- Headaches
- Dizziness
- Nausea
- Breast tenderness
- Weight change
- Mood changes
- Acne (can improve or worsen, but usually improves)
- Blood pressure (BP) increases a few points (mm Hg). When increase is due to COCs, BP declines quickly after use of COCs stops.

Special Considerations

Who Cannot Use

Recommend other methods for the following women who want to use COC:

- Fully breastfeeding: not before 6 months after birth.
- Not breastfeeding, but has had a baby within the past 3 weeks: give COC and tell her to start 3 weeks after birth
- Age 35 or older and regularly smoking
- Jaundice and serious liver disease or jaundice previously while using COCs
- Hypertension (more than 140/90 mm Hg) confirmed
- Diabetes for more than 20 years or organ damage due to diabetes
- Gallbladder disease presently or medically treated
- Stroke, heart attack, deep vein thrombosis
- Breast cancer or history of breast cancer
- Migraine with aura at any age and without aura but over 35 years
- Taking barbiturates, carbamazepine, phenytoin, topiramate, or rifampicin because these medications reduce the effectiveness of COCs

Correct Use

A nonpregnant woman who qualifies can start at any time of the month, but in certain cases (e.g., if taking it more than 5 days after the start of her monthly bleeding), it is advisable for the couple to use a back-up method for a short time (preferably condoms).

In All Cases

- Explain the pill pack, where to start and where to end; remind her to start the new pack the very next day after a pack ends
- Explain that she should take 1 pill each day, and help her identify the best time to take it each day.

FAMILY PLANNING

18.2. Family Planning Options Available in Afghanistan

- Explain how to start the next pack: finish all the 28 pills in the first pack, then start next pack.
- Explain what she should do if she misses 1 or more pills and help her decide on a back-up method.

Missed Pills

Explain the following, even if the couple does not ask about it:

- If she missed 1 nonhormonal pill, it is not a problem; she should take the missed pill as soon as possible and continue.
- If she missed 1 or 2 pills or started the next cycle 1 or 2 days late, it is not a problem; she should continue taking the pills. If she prefers, she can take 2 pills on one day.
- If she missed 3 or more pills or started next cycle 3 or more days late, she should—
  - Take the next pill as soon as possible and continue as usual
  - Use a back-up method for 7 days
- If she vomited within 2 hours of taking hormonal pill, she should take another one and continue
- If she vomited or had diarrhea for more than 2 days, she should follow instructions for missing 3 or more pills.

Prescribing

Give the number of cycles convenient for the woman (average 6 months). You can start by giving 3 months, then 6 months.

18.2.3. Progestin-Only Pill

Description

POP, or the so-called mini-pill, comes in strips of 28 pills, containing a low dose of a progestin. The most commonly used one in Afghanistan contains 0.03 mg levonorgestrel. Breastfeeding women can start taking this pill 6 weeks after giving birth; smokers and women who have migraines can also take this pill.

Effectiveness

As commonly used, about 3% of couples using POP for the first year will have a pregnancy, mainly because pills are skipped or forgotten. Risk of pregnancy diminishes to less than 1% if pills are taken quite regularly (i.e., every day at about the same time). POP does *not* protect against STIs.

Side Effects

- Changes in bleeding patterns (less volume, irregular, infrequent, prolonged no bleeding)
- Headaches
- Dizziness
- Nausea
- Breast tenderness
- Weight change
- Mood changes
- Abdominal pain

Special Considerations

Who Cannot Use

Recommend other methods for the following woman who wants to use POP:

- Breastfeeding: not before 6 weeks after birth
- Not breastfeeding, but had a baby within 3 weeks before: give POP and tell her to start 3 weeks after birth
- Jaundice, severe liver disease, or both

FAMILY PLANNING

- Current deep vein thrombosis in legs or lungs and not on anticoagulant therapy
- Breast cancer or history of breast cancer
- Taking barbiturates, carbamazepine, phenytoin, topiramate, or rifampicin because these medications reduce the effectiveness of POPs

Correct Use

A nonpregnant woman who qualifies can start at any time, but in certain cases it is advisable to use a back-up method for a short time.

In All Cases

- Give the pills, up to 1 year's supply.
- Explain that the woman should take 1 pill each day at the same time. Help her identify the best time to take each day, and remind her that taking the pill a few hours late increases the risk of pregnancy.
- Explain how to start the next pack: finish all the 28 pills in the first pack, then start next pack.
- Explain what to do when missing 1 or more pills and help her decide on back-up method.

Missed Pills

Explain the following even if the couple does not ask about it:

- If she takes a pill 3 hours late or forgets a pill, she should take the missed pill immediately and then the other pills as planned (even if this means taking 2 pills at once or on the same day).
- If she has regular monthly bleedings, recommend using a back-up method for 2 days; if she had intercourse the last 5 days, consider emergency contraceptive pills.

Prescribing

Give the number of cycles convenient for the woman (up to 12 months).

18.2.4. Progestin-Only Injectables

Description

The only injectable progestin promoted in Afghanistan is medroxyprogesterone acetate (DMPA) 150 mg in IM injection every 3 months. It does not contain estrogen and can be used throughout breastfeeding and by women who cannot use methods that contain estrogen.

Effectiveness

As commonly used over the first year, about 3% of couples normally using DMPA will still have a pregnancy, mainly because injections are not given on time. Risk of pregnancy diminishes to less than 1% if injections are given on time. DMPA does *not* protect against STIs.

Side Effects

Changes in bleeding patterns with DMPA include the following:

- First 3 months
  - Irregular bleeding
  - Prolonged bleeding
- At 1 year
  - No monthly bleeding
  - Infrequent bleeding
  - Irregular bleeding
- Weight gain
- Headaches
- Dizziness
- Abdominal bloating and discomfort
- Mood changes
- Diminished sex drive (libido)
- Occasionally loss of bone density

Special Considerations

Who Cannot Use

Recommend other methods for the following woman who wants to use DMPA:

FAMILY PLANNING

18.2. Family Planning Options Available in Afghanistan

- Breastfeeding: not before 6 weeks after birth
- Not breastfeeding, but had a baby within 3 weeks before. Give DMPA and tell her to start 3 weeks after birth.
- Hypertension (systolic more than 160 mmHG, diastolic more than100 mmHG)
- Jaundice, severe liver disease, or both
- Diabetes for more than 20 years or organ damage due to diabetes
- Heart attack, stroke, or deep vein thrombosis in legs or lungs
- Breast cancer or history of breast cancer
- Unusual vaginal bleeding suggesting some underlying disease. Reevaluate after investigation and treatment.

Correct Use

A nonpregnant woman who qualifies can start at any time. The preferred time of the injection is within 7 days after the onset of menstruation, but in certain cases it is advisable to use a back-up method for a short time.

18.2.5. Intrauterine Device

Description

An IUD is a T-shaped device with copper wires on the arms and vertical stem that when inserted into the uterus prevents pregnancy by interfering with the movement of the sperm and preventing implantation of the embryo.

Effectiveness

IUDs are a very effective long-term contraceptive (99.2% effective), although their effectiveness depends on the provider. They are cost-effective and can be used by breastfeeding women. IUDs do *not* protect against STIs including human immunodeficiency virus/ acquired immunodeficiency syndrome (HIV/AIDS).

Side Effects

Side effects include cramps and increased bleeding during menstruation. Serious complications such as perforation are rare if the insertion procedure is done correctly.

When To Use

The preferred time of insertion is within the first 12 days after the onset of menstruation. During this period, the cervix is open allowing for easy insertion of the IUD.

18.2.6. Lactational Amenorrhea Method

Description

LAM is a temporary FP method based on the natural effect of breastfeeding on fertility, and works on the condition that the baby is fully (no supplement) or nearly fully (occasional supplements) breastfed, is fed often, and is fed night and day for up to 6 months after birth.

Effectiveness

LAM's effectiveness depends whether the woman can nearly fully breastfeed night and day. As commonly used, 2% of couples using LAM in the first 6 months after birth will have a pregnancy. Risk of pregnancy diminishes to less than 1% if LAM is very strictly applied. LAM does *not* protect against STIs.

Side Effects

No other side effects than those of breastfeeding

Special Considerations

Who Cannot Use

Recommend other methods for the following woman who wants to use LAM:

- Woman who—
  - Has had her period after giving birth
  - Is regularly giving other foods to a baby younger than 6 months

18.2. Family Planning Options Available in Afghanistan

- Has a baby older than 6 months
  Caution: Advise another FP method, but encourage the woman to continue breastfeeding until the baby is 2 years old for the baby's health.
- Woman who takes mood altering medicines, reserpine, ergotamine, anti-metabolites, cyclosporine, high doses of corticosteroids, bromocriptine, radioactive medicines, lithium, and certain anticoagulants
- Woman whose newborn has any condition that may interfere with normal breastfeeding, including being small-for-date or premature and needing intensive neonatal care; being unable to digest food normally; or having deformities of the mouth, jaw, or palate

Correct Use

Always check:

- Baby is younger than 6 months.
- Woman is breastfeeding nearly exclusively.
- Woman did not have monthly bleeding after birth.

The method will work reliably only if these three criteria are met. If one is not true, recommend another method, but encourage breastfeeding till the baby is 2 years old for the baby's health. Plan a follow-up visit to help the woman switch to another method when the LAM criteria no longer apply.

18.2.7. Fertility Awareness Methods

Description

A fertility awareness method (FAM) is an FP method based on the woman's knowledge of the fertile time in her menstrual cycle and on practicing abstinence or using a barrier method during that period. There are several ways a woman can know about her fertile period, and they can be used in combination. The MoPH recommends the standard days method for use in Afghanistan.

Effectiveness

As commonly used in the first year, 25% of women using periodic abstinence will become pregnant. Using the standard days method correctly and consistently the first year, 5% of women will become pregnant.

Side Effects

None

Special Considerations

Who Cannot Use

All women can use this method, but you need to carefully consider the decrease of the effectiveness—and, thus, increased risk for pregnancy—in the following cases:

- If the woman's menstrual cycles have just started or have become less frequent or stopped due to older age, identifying the fertile time may be difficult.
- If a woman has irregular bleeding, then identifying the fertile time may be difficult. If 2 cycles a year are longer than 30 days or shorter than 26 days, the method will be less reliable.
- Women who recently gave birth or are breastfeeding should delay using this method until at least 3 regular cycles have taken place. Advise the woman to use another method (e.g., LAM or barrier) in the meantime.
- Women who recently had an abortion or miscarriage should delay starting this method until the start of her next monthly bleeding.
- Women who take mood-altering medicines, certain antibiotics, or NSAIDs should check for the exact influence of the medicine on her cycle.
- If the woman or the husband does not understand the fertile period, recommend another method.

FAMILY PLANNING

18.2. Family Planning Options Available in Afghanistan

Correct Use

Detailed counseling and instruction for the couple is necessary.

- Assure that the woman's cycle is not shorter than 26 days and not longer than 32 days.
- Both the woman and the man must understand what the term "fertile period" means and agree to use the method.
- Always propose and provide condoms as a back-up method, and explain their use.
- Carefully instruct the client to follow this procedure:
  - Note that the first day of cycle is the first day of onset of bleeding or spotting; record that date.
  - Count to the 8th day of the cycle.
  - Avoid sexual intercourse from the 8th day through 19th day.
  - If sexual intercourse cannot be avoided, use a condom.
  - From day 20 until the 7th day of the next cycle, having intercourse is safe.
- Decide with the woman or couple what memory aid they will use for tracking the fertile period each month.

18.2.8. Withdrawal Method (Coitus Interruptus)

Definition

Coitus interruptus is a method of FP in which the man completely withdraws his penis from the woman's vagina before he ejaculates, thus preventing sperm from reaching and fertilizing the ovum.

Effectiveness

Effectiveness is highly dependent on the user. On average during the first year of use, 26% of women will become pregnant. When used consistently and exactly for each intercourse, 4% of women will become pregnant. It is considered the least effective method.

Side Effects

None

Special Considerations

Who Cannot Use

Every couple can use it. Recommend another method if the couple is unsure about using it.

Correct Use

- Counsel the couple, both man and woman.
- Ensure that the clients understand the importance of full withdrawal.
- Provide condoms as a back-up method, and demonstrate the use of condoms. Ensure that the client has understood the use of condoms.
- Counsel and provide emergency contraception in case the penis is not withdrawn before ejaculation.

18.2.9. Spermicides

Description

Spermicides are sperm-killing substances inserted deep in the vagina, near the cervix, before sexual intercourse.

Effectiveness

Spermicides are one of the least effective FP methods. As commonly used during the first year, 29% of women become pregnant. When used correctly with every act of sex 18% of women become pregnant. Spermicides do *not* protect against STIs.

Side Effects

- Irritation in or around vagina or penis, possible vaginal lesions
- May increase risk of HIV infection

Special Considerations

Who Cannot Use

- Women at high risk for HIV infection
- Women who have HIV infection or AIDS

Correct Use

- Advise use anytime less than 1 hour before sex.
- Caution the woman not to wash the vagina after sex.

CHAPTER 19. IMMUNIZATION

Description

As part of the global effort to combat preventable childhood illnesses, the MoPH of Afghanistan participates actively in the global EPI. The objective of EPI in Afghanistan is to protect all children younger than 5 years against the following infectious diseases:

- TB
- Diphtheria
- Pertussis
- Tetanus
- Hepatitis B
- Haemophilus influenza type B
- Measles
- Poliomyelitis

It is the responsibility of health workers to—

- Promote vaccination of target groups at the facility
  - Promote full routine immunization with the EPI vaccines to children younger than 1 year
  - Promote full immunization with TT to women of childbearing age
  - Offer a booster dose of measles vaccine to children at the age of 2
  - Participate in polio eradication campaigns
- Ensure proper temperature-controlled storage of the EPI vaccines
- Promote outreach and mobile vaccination for hard-to-reach areas and population groups
- Collaborate fully with the PPHO EPI team for organizing National Immunization Days

19. Immunization

Management

- *All* children younger than 2 years should be enrolled in EPI.
- *All* women of childbearing age should be fully vaccinated with TT.

Children Younger Than 2 Years

In practice, many parents will not bring the child for vaccination at the exact age recommended by the EPI program. Therefore, any child presenting for any reason at the health facility should be fully checked for immunization (i.e., ask for the immunization card) and the earliest vaccination due (and not yet administered) should be administered before the child leaves the health facility. (See table 19A.)

TABLE 19A. Schedule of Routine Childhood Immunizations According to EPI

Age	Vaccine	How to Give
Birth (as soon as possible)	BCG	Intradermal injection
Birth (from 0–14 days)	OPV 0	Oral drops
At 6 weeks (1.5 months, 45 days)	Pentavalent 1 OPV 1	IM injection Oral drops
At 10 weeks (2.5 months, 73 days)	Pentavalent 2 OPV 2	IM injection Oral drops
At 14 weeks (3.5 months, 88 days)	Pentavalent 3 OPV 3	IM injection Oral drops
At 9 months (270 days)	Measles-1 OPV 4	Subcutaneous injection Oral drops
At 18 months (1.5 years)	Measles-2	Subcutaneous injection

Notes: BCG protects against TB; OPV protects against poliomyelitis; pentavalent contains five vaccines (against diphtheria, pertussis, hepatitis-B, tetanus, and H-influenza B).

Women 15–45 Years

Any woman in this age group presenting for any reason should be asked how many TT vaccinations she has received and when she received the last one. Check the vaccination card if present. Administer the next TT vaccination when due, and remind the woman to come back for the next TT vaccination. (See table 19B.)

TABLE 19B. TT Vaccination Schedule for Women of Childbearing Age

When to Vaccinate	Vaccine
As soon as possible after 15th birthday	TT-1
At least 4 weeks after TT1	TT-2
At least 6 months after TT2	TT-3
At least 1 year after TT3	TT-4
At least 1 year after TT4	TT-5

Note: Make sure all women of reproductive age have received at least 2 TT vaccinations. If a woman is not sure, make sure she receives 2 TT vaccinations (at least 4 weeks apart) before delivery. If she has already received 2 or more TT vaccinations, recommend a TT vaccination about 2 months before delivery is due. If she has documented evidence of having received 5 TT vaccinations and the last one is fewer than 10 years ago, she does not need a TT vaccination.

How to Vaccinate

- Insert the vials sizes with the recommended syringes and needles.
- For BCG and measles, use a diluent. Do not keep reconstituted vaccine for longer than 6 hours.
- Use the DTP-HepB for diluting the *Haemophilus influenzae* type b vaccine (Hib).

IMMUNIZATION

Prevention

Be sure to check vaccination status of women of childbearing age and all children at every health provider visit.

Patient Instructions

- For children younger than 2 years, make sure that—
  - The mother or caregiver understands that the vaccination card should be kept current and brought to every visit.
  - The mother or caregiver repeats back your instructions concerning when to return for the next vaccination (even if the child is sick).
  - The mother or caregiver understands the need for several vaccinations.
  - The mother or caregiver understands that sick or weak children should also be vaccinated.
- Carefully explain that side effects are normal after the vaccinations and may include—
  - Some local redness, stiffness, pain, or swelling at the site of injection
  - Low-grade fever, malaise, muscle pain, headache, or loss of appetite
- For any other reactions, or a persistent normal side effect, tell the mother or caregiver to bring the child back to the health facility.

CHAPTER 20. HIV INFECTION AND AIDS

Description

The human immunodeficiency virus (HIV) infection causes illness by entering the host lymphocytes and progressively destroying the immune system until the infected person is no longer able to fight infections—leading to the most severe form of the infection, acquired immunodeficiency syndrome (AIDS).

- The virus is transmitted through contamination with infected body fluids.
  - It can be sexually transmitted via body fluid contact with an infected person (i.e., semen or vaginal and mucosal fluid).
  - Cross contamination of blood or other fluid can occur from contact with an infected person:
    - Sharing needles (drug addicts) or injury from non-sterile needles or blood products (medical personnel)
    - Use of contaminated (i.e., non-sterile) instruments (traditional medicine)
    - Mother-to-child transmission via placenta, during delivery, or from breast milk
- Studies have shown that HIV is *not* transmitted by everyday social contact such as hugging or kissing, through food or water, or by mosquitoes or other biting insects.
- In some instances, HIV transmission can be limited by appropriately treating exposed people (e.g., exposed health workers, infants of HIV-positive mothers) with prophylactic therapy.
- A person infected with HIV may remain healthy for many years, but can still pass on the infection.

20. HIV Infection and AIDS

- HIV can be controlled (leading to many healthy years), by taking appropriate medication correctly for the life of the patient.

Diagnosis

WHO clinical staging and case definition (four stages) continues to be modified and is based upon severity and number of symptoms along with confirmed positive HIV test.

- Diagnosis is made by clinical suspicion and serologic testing.
  - Counseling and *voluntary* testing should be performed at a recognized center.
  - Clinical signs that may reflect immunosuppression from HIV (or other causes such as cancer or malnutrition) commonly include the following:
    - Major signs
      - Weight loss (more than 10%) or failure to thrive (children)
      - Chronic diarrhea (more than 1 month)
      - Prolonged fever (more than 1 month constant or intermittent)
      - Evidence of opportunistic infection (infection by a microorganism that normally does not cause disease but becomes pathogenic when the body's immune system is impaired and unable to fight off infection, for example, TB, malaria, bacterial pneumonia, herpes zoster, staphylococcal skin infections, and septicemia)
    - Minor signs
      - Persistent cough (more than 1 month)
      - Generalized pruritic dermatitis
      - Recurrent herpes zoster or herpes simplex infection
      - Oropharyngeal candidiasis
      - Generalized lymphadenopathy without apparent cause
      - Repeated common infections (otitis media, pharyngitis) in infant with confirmed maternal HIV infection

Note: It may take as long as 6 months for seroconversion to occur following infection with HIV (window period).

Management

Patients suspected of having HIV should be counseled and referred to voluntary confidential counseling and treatment center for testing and care.

Prevention

Information and education should be provided at the community level to develop awareness and reduce stigma.

HIV infection can be prevented by limiting exposure to infected body fluids of HIV positive person through the following:

- Follow safe sexual practices.
- Avoid blood-borne exposure.
  - Avoid sharing needles (IV drug users).
  - Avoid body fluid exposure to skin wounds or mucous membranes (health workers).
    - Use universal precautions at *all* times including the following:
      - Gloves, eye protection, good hand washing
      - Postexposure prophylaxis when available—per protocol
  - Avoid mother-to-infant transmission.
    - Diagnose and screen for HIV risk among mothers and pregnant women.
    - Treat HIV-positive mothers and pregnant women.
    - Review indications for bottle feeding versus breastfeeding of infants born to HIV-positive mothers.

HIV INFECTION AND AIDS

Patient Instructions

- Review prevention methods for infected and at risk people.
- Review major and minor signs of severity of disease with patient—seek early consultation for concerns.

Annex A. Medicine Dosages and Regimens

TABLE A1. Weight, Height, and Gender

Age	Weight (kg)	Height (cm)
Full-term neonate	3.5	51
1 month	4.3	55
2 months	5.4	58
3 months	6.1	61
4 months	6.7	63
6 months	7.6	67
1 year	9	75
3 years	14	96
5 years	18	109
7 years	23	122
10 years	32	138
12 years	39	149
14 years (male)	49	163
14 years (female)	50	159
Adult male	68	176
Adult female	58	164

Source: United Kingdom–WHO growth charts 2009 and United Kingdom 1990 standard centile charts.

TABLE A2. Aminophylline

Children up to 10 years:
- Oral: 6 mg/kg/dose every 8 hours
- IV: Calculate exact dose based on body weight where possible (weigh the child!). Use the following doses only where this is not possible: Loading dose: IV: 5–6 mg/kg (max. 300 mg); slowly over 20–60 minutes; followed by maintenance dose: IV: 5 mg/kg up to every 6 hours **OR** by continuous infusion 0.9 mg/kg/hour.

Caution: Avoid dosing by age; weigh the child carefully and dose by exact weight if at all possible.

Adults (and children older than 10 years):
- Oral: Loading dose: 6.3 mg/kg orally once, followed by maintenance dose: 4 to 6 mg/kg/dose every 8 hours daily (maximum dose per day 1,125 mg/day). Patient with congestive heart failure: 2.5 mg/kg/dose every 8 hours daily (maximum dose per day 500 mg/day)
- IV: Loading dose: 6 mg/kg in 100 to 200 ml of IV fluid intravenously once over 20 to 30 minutes followed by maintenance dose 0.7 mg/kg/hour up to 0.9 mg/kg/hour continuous IV infusion. Patient with congestive heart failure: 0.25 mg/kg/hour continuous IV infusion.

Caution: Use above dosage *only* if patient has not taken aminophylline or theophylline within 24 hours.

Weight (Age)	Dose According to Body Weight	
	Tablet 100 mg	Vial 250 mg/10 ml
3 – <6 kg (neonate – <3 month)	¼	1 ml
6 – <10 kg (3 month – <1 year)	½	1.5 ml
10 – <15 kg (1 year – <3 years)	¾	2.5 ml
15 – <20 kg (3 years – <5 years)	1	3.5 ml
20–29 kg (5–10 years)	1½	5 ml
>29 kg (adults and children >10 years)	2–3	10–15 ml

TABLE A3. Amoxicillin

Children up to 10 years: Oral: 15 mg/kg/dose every 8 hours daily (for pneumonia: 25 mg/kg every 12 hours daily).
Adults (and children older than 10 years): 250 mg/dose every 8 hours daily; dose is doubled in severe infections. In pneumonia, by mouth, 500 mg –1 g every 8 hours daily.
Note: In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 for standard dosages.

Weight (Age)	Dose According to Body Weight			
	Tablet 250 mg	Syrup (125 mg/5 ml)	Tablet (250 mg) in Pneumonia	Syrup (125 mg/5 ml) in Pneumonia
3 – <6 kg (neonate – <3 month)	¼ tab	2.5 ml	½ tab	5 ml
6 – <10 kg (3 month – <1 year)	½ tab	5 ml	1 tab	10 ml
10 – <15 kg (1 year – <3 years)	¾ tab	7.5 ml	1½ tab	15 ml
15 – <20 kg (3 years – <5 years)	1 tab	10 ml	2 tab	—
20–29 kg (5–10 years)	1½ tab	—	2½ tab	—
>29 kg (adults and children >10 years)	1½ tab	—	2–4 tab	—

TABLE A4. Ampicillin

Children up to 5 years: IM/IV: 50 mg/kg per dose every 6 hours daily.

Adult (and children older than 5 years): 500 mg/dose every 6 hours daily; dose is doubled in severe infections due to sensitive organisms, by IM injection or by slow IV injection or by IV infusion.

Note: In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 for standard dosages.

Dose According to Body Weight	
Weight (Age)	**Vial of 500 mg Mixed with 4.5 ml Sterile Water to Give 100 mg/1 ml**
3 – <4 kg (neonate to <2 months)	1.5 ml = 150 mg
4 – <6 kg (2 months – <4 months)	2 ml = 200 mg
6 – <8 kg (4 months – <9 months)	3 ml = 300 mg
8 – <10 kg (9 months – <12 months)	4 ml = 400 mg
10 – <14 kg (12 months – <3 years)	5 ml = 500 mg
14–19 kg (3–5 years)	7 ml = 700 mg
>19 kg (adults and children >5 years)	5 ml = 500 mg (to 10 ml = 1 g if severe infection)

TABLE A5. Chloramphenicol

Children up to 10 years: Oral: 25 mg/kg/dose every 8 hours (maximum1g per dose). For meningitis IV: 25 mg/kg every 6 hours (maximum 1g per dose).

Adults (and children older than 10 years): 12.5–25 mg/kg every 6 hours (maximum dose: 4 g/day) oral or IV.

Caution: Avoid chloramphenicol in premature infants.

	Dose According to Body Weight		
Weight (Age)	**Syrup 125 mg/5 ml (Palmitate)**	**Capsule 250 mg**	**Vial of 1 g Mixed with 9.2 ml Sterile Water to Give 1 g/10 ml in Meningitis**
3 – <6 kg (neonate – <3 months)	3–5 ml	—	0.75–1.25 ml
6 – <10 kg (3 months – <1 year)	6–9 ml	—	1.5–2.25 ml
10 – <15 kg (1 year – <3 years)	10–14 ml	1	2.5–3.5 ml
15 – <20 kg (3 years – <5 years)	15–19 ml	1½	3.75–4.75 ml
20–29 kg (5–10 years)	—	2	5–7.25 ml
>29 kg (adults and children >10 years)	—	2	5–10 ml

TABLE A6. Chloroquine

Children up to 10 years: Oral: Once a day for 3 days: 10 mg/kg on days 1 and 2, 5 mg/kg on day 3.
Adults (and children older than 10 years): 10 mg/kg followed by 5 mg/kg 6–8 hours later on day 1, then 5 mg/kg daily on day 2 and day 3 **OR** 10 mg/kg once on day 1 and day 2, followed by 5 mg/kg on day 3 (i.e., 4 tablets 150 mg day 1 and day 2 and 2 tablets day 3 as shown in the table below).

Weight (Age)	Dose According to Body Weight					
	Tablet 150 mg			Syrup 50 mg Base/5 ml		
	Day 1	Day 2	Day 3	Day 1	Day 2	Day 3
3 – <6 kg (neonate –<3 months)	—	—	—	5.0 ml	5.0 ml	2.5 ml
6 – <10 kg (3 months – 1 year)	½	½	½	7.5 ml	7.5 ml	5.0 ml
10 – <15 kg (1 year – <3 years)	1	1	½	15 ml	15 ml	10 ml
15 – <20 kg (3 years – <5 years)	1½	1½	1	—	—	—
20–29 kg (5–10 years)	1½	1½	1	—	—	—
>29 kg (adults and children >10 years)	4	4	2	—	—	—

TABLE A7. Chlorphenamine (Chlorpheniramine)

Children up to 12 years: In allergic reactions, anaphylaxis (adjunct), IM/IV or subcutaneous: 0.25 mg/kg once (can be repeated up to 4 times in 24 hours to a maximum dose of 0.4 ml in 24 hours for children younger than 1 year). For symptomatic relief of allergy, oral:
- **Children 2–6 years:** 1 mg/dose every 4–6 hours per day (maximum 6 mg daily)
- **Children 6–12 years:** 2 mg/dose every 4–6 hours per day (maximum 12 mg daily)

Adults (and children older than 12 years): In allergic reaction, anaphylaxis 10–20 mg in single dose, repeated if required (maximum total dose 40 mg in 24 hours). For symptomatic relief of allergy: oral 4 mg/dose every 4–6 hours (maximum, 24 mg daily).

Caution: Do *not* give to premature infants and infants <1 month.

Weight (Age)	Dose According to Body Weight	
	Ampoule 10 mg in 1 ml (IM, IV, or Subcutaneous) Allergic Reaction	Tablet: 4 mg (Oral) Symptomatic Relief of Allergy
4 – <6 kg (2 months – <3 months)	0.1 ml	—
6 – <10 kg (3 months – <1 year)	0.2 ml	—
10 – <15 kg (1 year – <3 years)	0.3 ml	¼
15 – <20 kg (3 years – <5 years)	0.5 ml	¼
20–29 kg (5–12 years)	0.6 ml	½
>29 kg (adults and children >12 years)	1 ml	1

TABLE A8. Co-trimoxazole

Children up to 10 years: Oral: 4 mg trimethoprim/kg +20 mg sulfamethoxazole/kg/dose every 12 hours daily

Adults (and children older than 10 years): Oral two tablets adult 480 mg every 12 hours daily.

Caution: If child is younger than1 month, give co-trimoxazole (½ pediatric tablet or 1.25 ml syrup) every 12 hours daily. Avoid co-trimoxazole in neonates who are premature or jaundiced.

Note: SMX = sulfamethoxazole; TMP = trimethoprim

Weight (Age)	Dose According to Body Weight		
	Pediatric Tablet (20 mg TMP+ 100 mg SMX)	**Syrup (40 mg TMP + 200 mg SMX per 5 ml)** (A Regular Teaspoon Contains 5 ml of Liquid)	**Adult Tablet (80 mg TMP+ 400 mg SMX)**
3 – <4 kg (neonate – <1 month)	½	1.25 ml	—
3 – <6 kg (neonate – <3 months)	1	2 ml	¼
6 – <10 kg (3 months – <1 year)	2	3.5 ml	½
10 – <15 kg (1 year – <3 years)	3	6 ml	1
15-<20 kg (3 – < 5 years)	3	8.5 ml	1
20–29 kg (5–10 years)	4	—	1
>29 kg (adults and children >10 years)	—	—	2

TABLE A9. Diazepam

Children up to 10 years: If convulsions, rectal: 0.5 mg/kg/dose **OR** *slow* IV: 0.2–0.3 mg/kg/dose. For sedation before procedures: 0.1–0.2 mg/kg/dose IV.

Adults (and children older than 10 years): Convulsion, rectal: 0.2 mg/kg **OR** 5 to 10 mg initial dose *slow* IV or IM to be repeated 10 minutes later if seizure continues. Anxiety, by mouth: 2 mg/ dose every 8 hours daily (reduced to half the adult dose in the elderly and debilitated patients).

Weight (Age)	Dose According to Body Weight	
	Ampoule 10 mg/2 ml Rectal Administration	**Ampoule 10 mg/2 ml *Slow* IV or IM Administration**
3 – <6 kg (neonate – <3 months)	0.4 ml	0.25 ml
6 – <10 kg (3 months – <1 year)	0.75 ml	0.4 ml
10 – <15 kg (1 year – <3 years)	1.2 ml	0.6 ml
15 – <20 kg (3 years – <5 years)	1.7 ml	0.75 ml
20–29 kg (5–10 years)	2.5 ml	1.25 ml
>29 kg (adults and children >10 years)	10 ml	1–2 ml

TABLE A10. Doxycycline

Only for adults and children over 8 years:
Oral: one tablet 100 mg every 12 hours daily for 7–10 days

Caution: Do not give to pregnant women and lactating women, and children under 8 years old.

Age	Capsule or Tablet: 100 mg (Hydrochloride)
Adults and children >8 years	100 mg twice daily for 7–10 days

TABLE A11. Epinephrine (Adrenaline)

Children up to 18 years: Subcutaneous or IM in anaphylactic reaction: 0.01 ml/kg/dose (maximum 0.4 ml) of a solution of 1:1000 solution epinephrine (vial 0.1% in 1 ml). May be repeated after 10 minutes in allergic reaction if symptoms have not improved, or after 3–5 minutes in an anaphylactic shock (if pulse less than 140). Alternatively in shock *slow* IV of 10,000 solution, at the dose of 0.1 ml/kg.

Adults (and adolescents more than 18 years): Subcutaneous or IM dose of 0.5 ml of a solution of 1:1000; may be repeated every 10–15 minutes; in shock, *slow* IV injection dose of 5 ml of a solution of 1:10,000.

Weight (Age)	Dose According to Body Weight	
	Vial 0.1% in 1 ml Allergic Reaction IM or Subcutaneous 1:1000 Solution (1 mg = 1 ml)	**Anaphylactic Shock: *Slow* IV 1:10,000 solution (1 mg = 10 ml) (Make a 1:10,000 solution by adding 1 ml of 1 vial 0.1% to 9 ml of normal saline or 5% glucose) *IV given over 5–10 minutes***
3 kg – <8 kg (under 6 months)	0.05 ml	0.1 ml/kg
8 kg – < 20 kg (6 months – 6 years)	0.12 mg = 0.12 ml	0.1 ml/kg
20 kg – <39 kg (6–12 years)	0.25 mg = 0.25 ml	0.1 ml/kg
39–55 kg (12–18 years)	0.30 mg = 0.3 ml	0.1 ml/kg (maximum dose = 5 ml)
>55 kg (adults and adolescents >18 years)	0.5 mg = 0.5 ml	5 ml

TABLE A12. Erythromycin Ethylsuccinate

Children up to 12 years: Oral: 7.5–12.5 mg/kg/dose every 6 hours daily. In severe infections, this dosage may be doubled (maximum dose is 4 g per day).

Adult (and children older than 12 years): 400 mg erythromycin ethylsuccinate (one tablet 400 mg) **OR** 250 mg erythromycin base or stearate (one tablet 250 mg) every 6 hours daily is the usual dose. Dosage may be increased up to 4 g per day according to the severity of the infection. ***Note:*** one tablet 400 mg erythromycin ethylsuccinate is equivalent to one tablet 250 mg erythromycin base or stearate.

Caution: Must *not* be given together with theophylline (aminophylline) due to risk of serious adverse reactions.

Weight (Age)	Dose According to Weight		
	Syrup 125 mg per 5 ml (base)	**Tablet 400 mg of Erythromycin Ethylsuccinate**	**Tablet 250 mg Erythromycin Base or Stearate**
3 – <4 kg (neonate – <2 months)	1.2–2 ml = ¼–½ teaspoon[a]	—	—
4 – <6 kg (2 months – <4 months)	2 ml = ½ teaspoon	¼ tab	¼ tab
6 – <11 kg (4 months – <2 years)	4 ml = ¾ teaspoon	¼ tab	¼ tab
12–23 kg (2 years – <7 years)	8 ml = 1 ½ teaspoon	½ tab	½ tab
23–45 kg (7 years – <12 years)	—	¾ tab	¾ tab
>45 kg (Adults and children >12 years)	—	1 tab	1 tab

[a] 1 teaspoon = 5 ml

TABLE A13. **Gentamicin**

Children up to 10 years: IV or IM: 3.75 mg/kg/dose every 12 hours daily. If severe infection, *slow* IV or IM initial loading dose before referral: 7 mg/kg.

Adults (and children older than 10 years): 1–1.7 mg/kg/dose every 8 hours daily by IM injection or by slow IV injection (over at least 3 minutes) or by IV infusion. Initial loading dose if severe infection: 5 mg/kg/dose once daily IM or IV.

Weight (Age)	Dose According to Body Weight		
	Vial Containing 20 mg (Vial of 2 ml at 10 mg/ml). Add 2 ml Sterile Water to Vial Containing 20 mg = 10 mg/ml	Vial Containing 80 mg (Vial of 2 ml at 40 mg/ml) add 6 ml Sterile Water to Vial Containing 80 mg = 10 mg/ml	Vial Containing 80 mg (Vial of 2 ml at 40 mg/ml) Undiluted
3 – <4 kg (neonate – <2 months)	1.00 ml = 10 mg		—
4 – <6 kg (2 months – <4 months)	1.5 ml = 15 mg		—
6 – <8 kg (4 months – <9 months)	2.25 ml = 22.5 mg		—
8 – <10 kg (9 months – <12 months	3.0 ml = 30 mg		—
10 – <14 kg (1 year – <3 years)	3.75 ml = 37.5 mg		—
14–19 kg (3 years – <5 years)	5 ml = 50 mg		1.25 ml = 50 mg
20–29 kg (>5 years – 10 years)	—		2 ml = 80mg
>29 kg (Adults and children >10 years)	—		2 ml = 80 mg

TABLE A14. **Metronidazole**

Children up to 10 years: Oral: 7.5 mg/kg every 8 hours daily for 7 days. (For the treatment of giardiasis, the dose is 5 mg/kg/dose every 8 hours daily for 5–10 days; for amoebiasis, 10 mg/kg/dose every 8 hours for 7–10 days.)

Adults (and children older than 10 years): Invasive amoebiasis, by mouth: 500–750 mg every 8 hours for 5–10 days. Giardiasis, by mouth: 400 mg every 8 hours daily for 5–7 days. In severe infections: 7.5 mg/kg IV every 8 hours for 10–14 days.

Weight (Age)	Dose According to Body Weight		
	Tablet 200 mg	Tablet 400 mg	Suspension 200 mg/5 ml
3 – <6 kg (neonate – <3 months)	¼ tab	—	1–1.5 ml
6 – <10 kg (3 months – <1 year)	¼ tab	—	1.5–2.5 ml
10 – <15 kg (1 year – <3 years)	½ tab	¼ tab	2.5–4 ml
15 – <20 kg (3 years – <5 years)	1 tab	½ tab	5 ml
20–29 kg (5–10 years)	1 tab	½ tab	—
>29 kg (adults and children >10 years)	—	1 tab	—

TABLE A15. Paracetamol (Acetaminophen)

Neonates age 1 month or less: Oral 10–15 mg/kg/dose every 6 to 8 hours as needed.

Infants older than 1 month to children 10 years: Oral 10–15 mg/kg/dose up to every 4–6 hours daily.

Adults (and children older than 10 years): 500 mg to 1 g every 6–8 hours (maximum 4 g daily).

Caution: Do *not* give aspirin in children because of risk of Reyes syndrome.

Weight (Age)	Dose According to Body Weight		
	Syrup 120 mg/5 ml (Teaspoon = 5 ml)	Tablet 100 mg	Tablet 500 mg
3 – <4 kg (neonate – <1 month)	¼–½	½	—
4 – <6 kg (2–3 months)	½	1	¼
6 – <10 kg (3 months – <1 year)	1	1	¼
10 – <15 kg (1 year – <3 years)	1¼	1	¼
15 – <20 kg (3 years – <5 years)	1½–2	1½–2	½
20–29 kg (5–10 years)	—	2–3	½
>30 kg (adults and children >10 years)	—	—	1

TABLE A16. Penicillin V (Phenoxymethylpenicillin)

Children up to 12 years: Oral: 10 mg/kg/dose every 6 hours usually.
Adults (and children older than 12 years): Usual dose orally: 250–500 mg every 6 hours daily.
Note: In the case of penicillin allergy or sensitivity, use erythromycin. Refer to table A12 for standard dosages.

Weight (Age)	Dose According to Body Weight		
	Powder for Oral Liquid: 250 mg/5 ml (as Potassium Salt)	Tablet: 250 mg (as Potassium Salt)	Tablet 500 mg (as Potassium Salt)
6–10 kg (children up to 1 year)	62.5 mg = 1.25 ml	62.5 mg = ¼ tab	—
10–20 kg (children 1–5 years)	125 mg = 2.5 ml	125 mg = ½ tab	125 mg = ¼ tab
20–39 kg (children 6–12 years)	250 mg = 5 ml	250 mg = 1 tab	250 mg = ½ tab
>39 kg (adults and children >12 years)	—	1 tab to 2 tab	½ to 1 tab

TABLE A17. Salbutamol

Children up to 10 years: Oral 0.1–0.4 mg/kg/dose every 8 hours during acute symptoms.
Adults (and children older than 10 years): Oral 2–4 mg every 6 or 8 hours daily. Relief of acute bronchospasm by aerosol inhalation, 0.1 mg–0.2 mg (1–2 puffs) every 6 to 8 hours daily during acute symptoms. Prophylaxis of exercise-induced bronchospasm, by aerosol inhalation, 0.2 mg (2 puffs) up to 3–4 times daily.
Caution: Give oral salbutamol *only* if child is older than 6 months.

Weight (Age)	Dose According to Body Weight				
	Syrup: 2 mg/5 ml	Tablet: 2 mg	Tablet: 4 mg	Aerosol Inhaler with Spacer: 0.1 mg per Dose	Nebulizer Solution (Rapid Acting Bronchodilator): 5 mg/ml Solution
4 – <7 kg (2–6 months)	None	None	None	None	0.25 ml salbutamol plus 2.0 ml sterile water
7 – <10 kg (6 months – <1 year)	2.5 ml	½	¼	—	0.5 ml salbutamol plus 2.0 ml sterile water
10 – <19 kg (1 year – <5 year)	5 ml	1	½	—	0.5 ml salbutamol plus 2.0 ml sterile water
20 – 29 kg (5–10 years)	5 ml	1	½	1 puff	0.5 ml salbutamol plus 2.0 ml sterile water
>29 kg (adults and children >10 years)	—	1–2	1	1–2 puffs	0.5 ml to 1 ml salbutamol plus 2.0 ml sterile water

Annex B. Newborn Resuscitation

Start resuscitation using the procedure below within 1 minute of birth if baby is not breathing or is gasping for breath. Observe universal precautions to prevent infection.

1. **Keep the baby warm.**
   - Clamp and cut the cord if necessary.
   - Transfer the baby to a dry, clean, and warm surface.
   - Inform the mother that the baby has had difficulty initiating breathing and that you will help the baby to breathe.
   - Keep the baby wrapped and under a radiant heater if possible.
2. **Open the airway.**
   - Position the head so it is slightly extended.
   - Suction first the mouth and then the nose.
   - Introduce the suction tube into the newborn's mouth 5 cm from lips and suck while withdrawing.
   - Introduce the suction tube 3 cm into each nostril and suck while withdrawing until there is no mucus.
   - Repeat each suction if necessary, but no more than twice and for no more than 20 seconds in total.
3. **If the baby is still not breathing, *ventilate.***
   - Place the mask to cover the baby's chin, mouth, and nose.
   - Form a seal.
   - Squeeze the bag attached to the mask with 2 fingers or whole hand (according to bag size) 2 or 3 times.
   - Watch for the chest to rise. If the chest is not rising—
     - Reposition head
     - Check the mask seal
     - Squeeze the bag harder with whole hand
   - Once the seal is good and the chest rising, ventilate at 40 squeezes per minute until the newborn starts crying or breathing spontaneously.

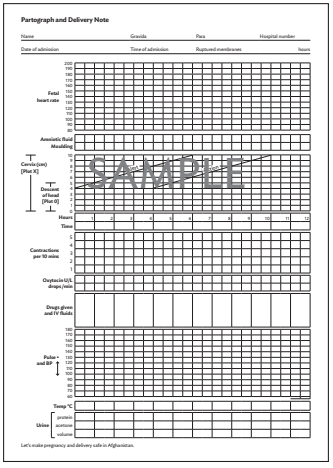
4. **If the baby is breathing or crying, stop ventilating.**
   - Watch the chest for in-drawing.
   - Count the breaths per minute.
   - If breathing is more than 30 breaths per minute and there is no severe chest in-drawing—
     - Do not resume ventilating
     - Put the baby in skin-to-skin contact on mother's chest, and continue essential newborn care (see section 9.10 "Newborn Care")
     - Monitor every 15 minutes for breathing and warmth
     - Tell the mother that the baby will probably be well

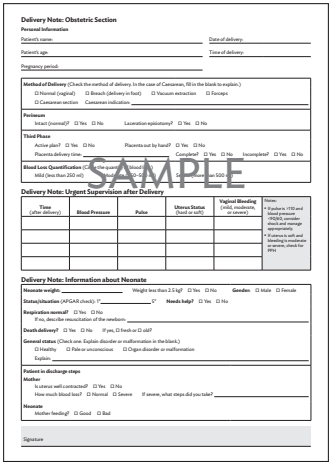
   Caution: Do *not* leave the baby alone.
5. **If the baby's breathing is fewer than 30 breaths per minute or if there is severe chest in-drawing—**
   - Continue ventilating
   - Arrange for immediate referral
   - Explain to the mother what has happened, what you are doing, and why
   - Ventilate during referral
   - Record the event on the referral form and labor record
6. **If the baby is not breathing or gasping at all after 20 minutes of ventilation—**
   - Stop ventilating; the baby is dead
   - Explain to the mother and give supportive care
   - Record

Annex C. Partograph and Delivery Note

Forms for Partograph and Delivery Note are available on the website, www.moph.gov.af

Let's make pregnancy and delivery safe in Afghanistan.





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Annex E. Procedure to Apply for Modification of the NSTG-PL by the MoPH of Afghanistan

A. General

The *National Standard Treatment Guidelines for the Primary Level* (NSTG-PL) is a dynamic document and users are invited to submit any suggestions for improvement using the procedure to apply for modification of the NSTG-PL outlined in this annex.

Applications for modification of the NSTG-PL will be considered only if the application form has been fully completed for each condition for which a modification is proposed. One application form must be filled out for *each* condition for which a modification is proposed. An application for inclusion in the NSTG-PL may be submitted *only* for conditions explicitly included or clearly referred to in the BPHS. In summary, the necessary information required before an application for inclusion in the NSTG-PL will be considered is as follows:

1. The applicant's contact details are complete.
2. The condition is clearly described.
3. The references to the NSTG-PL or the BPHS are clearly indicated.
4. The existing section that needs to be modified is explicitly stated.
5. The proposed modification is given in detail.
6. There is sufficient evidence provided to support the proposed modification.

B. Submittal and Screening Process

Applications are submitted to the STG secretariat by mail or by e-mail:

Ministry of Public Health
General Directorate of Pharmaceutical Affairs (GDPA)
STG Working Group
Kabul, Afghanistan
E-mail: rafi_rahmani2003@yahoo.com
Phone: 0093 799 303 008
OR
E-mail: Zsiddiqui@msh.org
Phone: 0093 707 369 408

Applications are reviewed by the STG Secretariat at the General Directorate of Pharmacy at the MoPH to ensure the following:

1. The applicant's contact details are complete.
2. The condition is clearly described.
3. The references to the NSTG-PL or the BPHS are clearly indicated.
4. The existing section that needs to be modified is explicitly stated.
5. The proposed modification is given in detail.
6. There is sufficient evidence provided to support the proposed modification.

The STG Secretariat will send back incomplete applications for completion by the applicant and will schedule complete applications for review by the STG Working Group.

The STG Working Group will review applications and decide whether to accept or reject the proposed modification. The applicant will be informed by the secretariat of the decision of the STG Working Group and its rationale. All reviewed applications will be kept on file

with the STG Secretariat. Accepted modifications will be incorporated into the next version of the STG.

C. Detailed Description of the Data Elements of the Application Form

The application submission form is divided into five sections.

Section 1. Condition to Be Modified

a. **Name of condition:** The name of the condition to be modified. If the condition is already in the NSTG-PL, use the exact name as mentioned in the NSTG-PL.
b. **NSTG-PL reference:** Indicate the section and chapter number of the condition in the NSTG-PL. If the condition is not in the NSTG-PL, indicate the section number where the condition is proposed to be included.
c. **BPHS reference:** When the application is for inclusion of a new condition, indicate the element and specific component of the BPHS where the condition fits.
d. **Submission date:** The Shamsi calendar date on which the submission is filled out.

Section 2. Applicant's Details

This section forms a vital link between the applicant and the STG decision-making process.

a. **Title:** Mr., Mrs., Dr., Pr., or other title.
b. **Name:** Full name of the applicant. Do not abbreviate (e.g., Mohammad, but not Mhd.; Sayyed, but not S.)
c. **Father's name:** Full name of the applicant's father. Do not abbreviate (e.g., Mohammad, but not Mhd.; Sayyed, but not S.)
d. **Postal address:** Full address where correspondence regarding the application should be sent: house number, street name, village of city *nahia*, district, and province. Both professional and private addresses are acceptable.
e. **Phone:** Phone number(s) at which the applicant can be contacted.
f. **E-mail:** E-mail address where correspondence regarding the application can be sent.
g. **Facility ID:** If applicable, the official MoPH facility code of the facility where the applicant works. If the applicant is a private practitioner working in a nonregistered facility, put the name of the facility. If there is no name, put "NA".

Section 3. Current NSTG-PL Information

For the proposed condition, insert the text of the NSTG-PL to be modified. If a longer section is proposed for modification, indicate precisely the section by page number, paragraph, and lines.

Section 4. Proposed Modification

Write in detail exactly what is proposed to be inserted into the NSTG-PL. If a longer piece is suggested, add on a separate page or pages, and indicate the number of additional pages on the form.

a. **If needed, number of pages attached:** When applicable, write the number of pages attached.
b. **Evidence:** Cite the reference used to propose the modification (exact reference of publication, or website page).

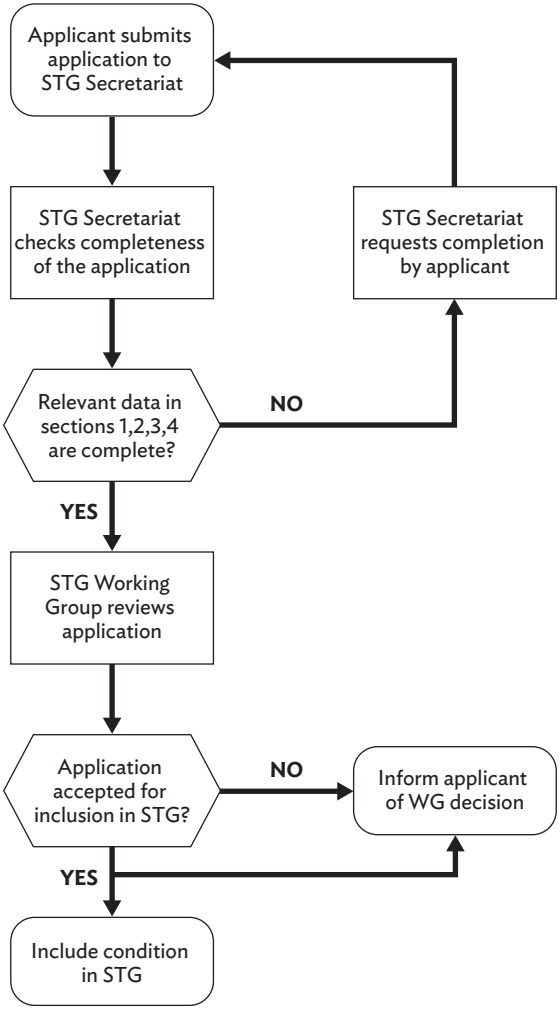
Section 5. For Use by STG Working Group Only

This section is intended to ensure that the applications follow the proper process. Dates of steps or decisions will be noted as appropriate. The section will allow the interested parties to quickly review the history of an application.

a. **Application number:** Upon receipt, the serial number of the application is noted. It consists of the following:
   - Number of the form
   - The four digits of the Shamsi year of submission
   - The serial number of submission in that year
b. **Date received:** Date on which the application was received
c. **Date reviewed:** Date on which the STG Working Group reviewed the application for modification of the condition
d. **Decision of the STG Working Group:** Circle the appropriate decision
e. **Rationale for the decision:** Brief summary of the reasons for acceptance or rejection
f. **Signature of STG Secretary:** STG Secretary signs and dates the completed form
g. **Signature of STG Chairperson:** STG Chairperson signs and dates the completed form

The applicant will be informed in writing of the final decision. Figure E1 summarizes the modification process.

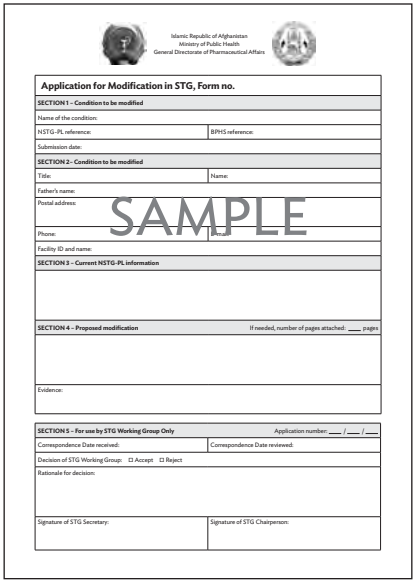
FIGURE E1. **The STG modification process**



Form for Application for Modification in STG is available on the website, www.moph.gov.af

An electronic copy of the STG modification form may be sent to the following e-mail addresses:

E-mail: rafi_rahmani2003@yahoo.com
Phone: 0093 799 303 008
OR
E-mail: Zsiddiqui@msh.org
Phone: 0093 707 369 408



Islamic Republic of Afghanistan
Ministry of Public Health
General Directorate of Pharmaceutical Affairs

Application for Modification in STG, Form no.

SECTION 1 – Condition to be modified

Name of the condition:

NSTG-PL reference: | BPHS reference:

Submission date:

SECTION 2 – Condition to be modified

Title: | Name:

Father's name:

Postal address:

Phone: | Email:

Facility ID and name:

SECTION 3 – Current NSTG-PL information

SECTION 4 – Proposed modification If needed, number of pages attached: ___ pages

Evidence:

SECTION 5 – For use by STG Working Group Only Application number: ___ / ___ / ___

Correspondence Date received: | Correspondence Date reviewed:

Decision of STG Working Group: ☐ Accept ☐ Reject

Rationale for decision:

Signature of STG Secretary: | Signature of STG Chairperson:

INDEX

Index

Index

INDEX

Index

Index

R

S

Index

INDEX

DRUGS INDEX

Drugs Index

DRUGS INDEX

D

E

Drugs Index

DRUGS INDEX

Drugs Index

DRUGS INDEX

Drugs Index

DRUGS INDEX