



**Ministry of Health
Hashemite Kingdom of Jordan**

**STANDARDS of CARE
for
Health Centers
Volume 2
Clinical Case Management**

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List of Acronyms

ARI:	Acute Respiratory Infection
BID:	Twice a day
BMI:	Body Mass Index
BP:	Blood Pressure
DKA:	Diabetic Ketoacidosis
DM:	Diabetes Mellitus
ECG:	Electrocardiogram
FBS:	Fasting Blood Sugar
FEV1:	Forced Expiratory Volume in 1 second
FVC:	Forced Volume Capacity
FPG:	Fasting Plasma Glucose
HDL:	High Density Lipoprotein
LDL:	Low Density Lipoprotein
OGTT:	Oral Glucose Tolerance Test
ORS:	Oral Rehydration Solution
ORT:	Oral Rehydration Therapy
WHO:	The World Health Organization

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Introduction

Health for all is an achievable goal for the citizens of the Hashemite Kingdom of Jordan where primary care focuses on providing high quality preventive, promotive, and curative care in a cost-effective manner. The Jordanian Ministry of Health and USAID-funded Primary Health Care Initiatives Project (PHCI) have formed a partnership to reach this goal.

The *Standards of Care for Health Centers* described here represent a milestone in the road towards better health. They are tangible evidence of the considerable thought and effort that has been devoted to promoting quality of care by the Ministry of Health.

The purpose of the “Standards” is to ensure that health center staff members have the basic and essential guidance required for safe, effective, and humane service delivery. The Standards are contained in five volumes, each addressing a distinct aspect of health center services. A sixth volume of performance checklists is included with the Standards to facilitate self-assessment and performance review. As a set, the Standards are intended to serve as a convenient reference, a guide for service delivery, and a tool to support performance improvement. When following the guidelines set forth in the Standards, members of health center staff are assured that services meet the accepted standard of care required by their communities. The volumes and contents are described below.

Volume 1: Health Center Management

The Management Standards are organized in four sections. The first section contains job descriptions for staff providing direct and supportive care at health centers. The descriptions are meant to serve as a job aid for those who hold the positions and their supervisors rather than a model for staffing. The second section conveys the expected values and norms for health center services through a description of patient and provider rights and responsibilities. The third section contains the MOH guidance for managing health center accounting procedures and records. The fourth section contains instructions for procurement of drugs, contraceptives, vaccines, and supplies for laboratory and dental services.

Volume 2: Clinical Case Management

The five clinical problems addressed in Clinical Case Management are: diabetes mellitus type II, hypertension, acute respiratory infection, asthma, and diarrhea. These conditions represent a significant percentage of the common medical problems encountered at health centers. Detailed guidance for diagnosis and management of each clinical problem is given, including recommendations for drug management, health education, referral, and follow-up care. Algorithms accompanying each clinical problem inform critical diagnostic or management decision-making. Together, these tools provide reference options for both quick and comprehensive review. Performance checklists complete the package for facilitating self-assessment and peer review.

Volume 3: Reproductive Health

This volume contains guidance for the reproductive health care services typically performed by doctors, nurses, and midwives at primary health centers. Antenatal care focuses on initial assessment and continuing support for pregnant women. The postnatal care section guides follow-up care for new mothers and their infants. Family planning includes guidance for counseling and information on the full range of contraceptive methods available in Jordan. A brief section on HIV/AIDS provides general information, basic education, and prevention messages for the community. All procedures described in the volume are accompanied by performance checklists, which reinforce and highlight the essential skills required for high quality reproductive health services.

Volume 4: Preventive Services

This volume addresses two different but complementary aspects of prevention, which are of great importance to the communities served by health centers. The first section covers prevention of childhood diseases through immunization; the second addresses the prevention of infection transmission within the health facility and among clients, staff, and the communities they serve. Immunization guidelines describe management of the cold chain and vaccines, immunization procedures and schedules, roles of staff, recordkeeping, and supervision. Infection prevention includes guidelines for maintaining protective barriers through handwashing, use of gloves and antiseptics, and procedures for decontamination, cleaning, sterilization, and waste disposal. Performance checklists are provided for all important procedures as a guide for self-assessment and performance review.

Volume 5: Nursing Care

Nursing procedures influence the care of most patients who visit the clinic by supplying the medical information that forms the basis for higher-level medical decisions about care and follow-up. This volume gives special attention to the procedures that are commonly called nursing care, but which are frequently performed by other members of the health center team. Guidance for home visits, child growth and development, immunizations, general care, and first aid is presented. As in the other volumes, performance checklists are included.

Volume 6: Performance Checklists

The performance checklists presented in each of the five volumes have been compiled in this final volume. These compiled checklists are a convenient tool and job aid for refreshing knowledge, guiding self-assessment, and standardizing performance assessment at the health centers.

Case 1: Diabetes Mellitus Type II

Case 1: Diabetes Mellitus Type II

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Case 1: Diabetes Mellitus Type II

Definition

Diabetes mellitus is a metabolic disorder of multiple etiology characterized by chronic hyperglycemia with disturbances of carbohydrates, fat and protein metabolism resulting from a defect in insulin secretion, insulin action or both. (WHO, 1999).

Diabetes is a chronic disease that requires continuing medical care and education to prevent acute complications and to reduce the risk of long-term complications. People with diabetes should receive treatment and care from a physician-coordinated team of health professionals, including nurses and social workers.

Initial Evaluation

History

The following information should be documented when a patient presents with the following set of symptoms: polyuria, thirst, weight loss, and vision change.

- Current medications
- Past medical history (previous medical or surgical illness)
- Family history (focus on diabetes, heart and vascular problems, kidney failure)
- History of acute complications hyperglycemia (diabetic ketoacidosis: DKA), or hypoglycemia
- Evidence of current diabetic complications (vision loss, oedema, vascular problems in feet, foot ulcers, paresthesias)
- Other risk factors associated with complications (smoking, alcohol abuse, drug abuse, obesity, history of cholesterol elevation or hypertension, family history of diabetes)
- Life style factors (occupation, level of daily exercise, eating patterns, economic level)
- Dietary history (previous and recent)

Physical Examination

- Height and weight – calculate Body Mass Index
Normal range of BMI: 18.5-24.9

$$\text{BMI} = \frac{\text{Weight (kg)}}{\text{Height (m}^2\text{)}}$$

- Ophthalmoscopic exam – visual acuity, conduct fundoscopic exam or refer
- Mouth and dental condition
- Thyroid abnormalities
- Cardiac exam – heart sounds, heart size, heart beat and regularity
- Abdominal exam – liver, spleen enlargement, any mass
- Peripheral pulses and distal capillary circulation

- Skin condition – check color, pigmentation, abscess, site of injection, and oedema, especially legs
- Neurological exam – especially distal Deep Tender Reflexes, foot pin, vibration, position, temperature sensation
- Condition of feet and toes – colloids, ulcers, infections, dryness of skin

Diagnostic Tests and Procedures

- Fasting plasma glucose
- Two-hour postprandial plasma glucose
- Oral Glucose Tolerance Test (OGTT)

Follow-up Tests

- Hemoglobin HbA1c
- Fasting cholesterol, low density lipid, high density lipid, Triglycerides
- Blood urea and serum creatinine
- Urine albumin, ketones, and glucose (dipstick)
- Urine for quantitative albumin (or 24-hour urine for albumin and creatinine clearance)
- ECG

Diagnostic Values

- Fasting plasma glucose (FPG) > 126 mg/dl (7.00 mmol)
- Two-hour postprandial plasma glucose > 200 mg/dl (11.1 mmol) during OGTT, together with polyuria, polydipsia, weight loss, visual blurring
- Must confirm diagnosis with two abnormal plasma glucose results on separate days. Casual plasma glucose concentration \geq 200 mg/dl (11.1 mmol)

Treatment Plan

The goal of management is to maintain fasting (i.e., before meals) plasma glucose of 90-130 mg/dl (mmol). The plasma glucose value when using the whole blood-finger stick method is 80-120 mg/dl. Diet and exercise management is the first line of treatment for type II diabetes. If this approach is unsuccessful in reducing blood glucose levels, begin medications in combination with diet and exercise.

For Obese Patients

- Initial trial of diet- calorie restricted to 1600-1800 calories, 50-60% starchy carbohydrates, 20% fats, 20% protein. The main goal of diet regulation is gradual weight loss in obese patients to increase Insulin sensitivity.
- Regular exercise program daily for 30 minutes continuously.
- Evaluate emotional adjustment to diagnosis and management goals, counseling as needed.
- If diet, exercise and weight loss do not achieve goal glucose levels within two to four months, begin medication.
 - Glibenclamide
Begin at 2.5 mg/day; increase as needed to 20 mg/day

- If no response after 1-2 months, add Metformin
Begin at 500 mg/day; increase as needed to 850 mg/day if no response after 1-2 months
- Begin insulin therapy, usually by discontinuing oral medications. Consider referral for initiation of insulin therapy.

For Lean Patients

- Begin the medication regimen immediately.
- Counsel patients on the importance of a well balanced diet.
- Discuss the benefits of exercise.

Referral Guidelines

A diabetic patient should be referred under the following conditions:

- Initiation of insulin therapy
- Uncontrolled DM type II
- Acute complications
- Serious concurrent illness
- Annual referral for complete visual exam
- Gestational DM should always be referred to specialist (gynecologist)
- Albumin/creatinine ratio >30

Recommended Follow-up Schedule

Diabetics should be seen on a monthly basis until well stabilized.

Monthly

Conduct the following examinations during each monthly visit:

- Blood pressure
- Weight
- Fasting glucose
- Neurological examination (vibration sensation, ankle jerk)
- Urine albumin
- Foot exam for ulcers, redness, infection
- Medication dose review
 - Patient education – physician may rotate topics discussed
 - Monitor for stress, anxiety, and depression

Quarterly (Every Three Months)

Conduct the following examinations every three months:

- Hemoglobin HbA1C
- Quantitative albumin/creatinine ratio (spot urine for quantitative albumin, serum creatinine). If the albumin/creatinine ratio is >30, refer the patient to a specialist.
- If diagnosed dyslipidaemic; lipid profile every three months

Yearly

Conduct the following examinations every year (especially after five years' duration of diabetes or when the patient is over 40 years of age):

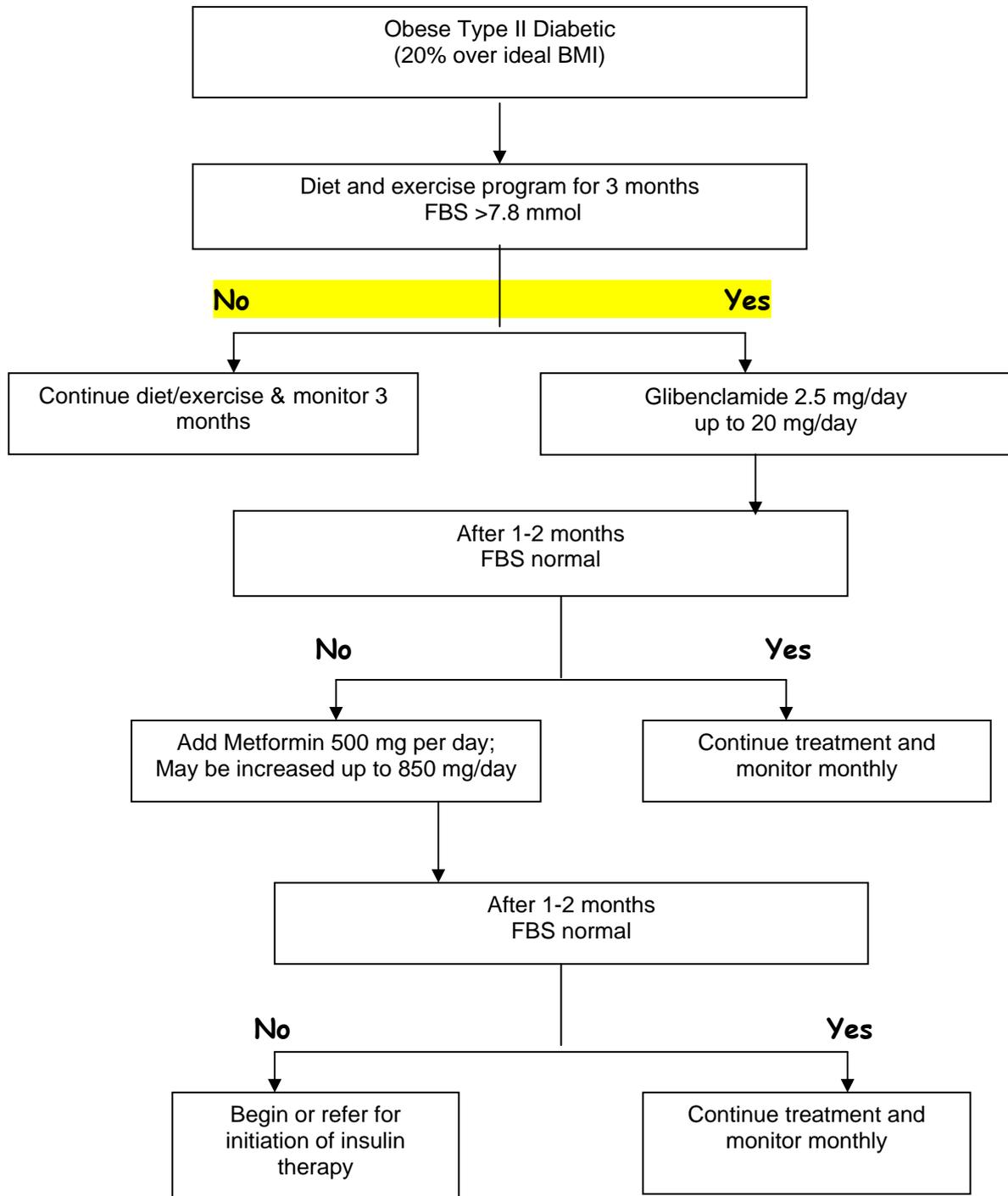
- Refer to ophthalmologist for fundoscopic evaluation
- Monitor serum cholesterol, HDL, LDL, creatinine
- ECG in patients over 40 years

Health Education Messages and Counseling

The aim of health education is to assist diabetics in becoming more knowledgeable about their disease and more proficient in self-management. Patient education should begin at the time of diagnosis, continue at every visit, and include:

- Education about the disease and its complications. The patient and family members should know and understand:
 - The danger signs of hypoglycemia
 - The treatment for hypoglycemia (15 grams of sugar)
 - Cause and actions to prevent relapse of hypoglycemia
 - Vaginal yeast infections are more common among women with diabetes
- Improving patient compliance with treatment. Patients should be able to:
 - Adhere to prescribed dosage
 - Take medicine at regular hours
 - Recognize insufficiency of treatment if it occurs
- Helping patients cope with the demands of treatment. Patients should be able to:
 - Recognize their own type of insulin and syringes
 - Prepare insulin doses
 - Change the injection site
 - Perform injections
- Assisting patients to make dietary and social adjustments. Patients should:
 - Participate in regular physical activity and make dietary adjustments for exercise
 - Know the ingredients of a balanced meal
 - Know which foods are likely to increase blood sugar
- Guidance on foot care. Patients should:
 - Wash and dry feet daily
 - File (but *not* cut) nails
 - Wear shoes that are soft and well fitting
 - Notice and deal with small injuries or signs of pressure
- Guidance (for diabetic patients who smoke) about:
 - The dangers of smoking
 - The benefits of quitting smoking

Algorithm Management of Type II Diabetes



Diabetes Mellitus Follow-up Chart

Name of Patient: _____ Male Female Date of Birth: _____ Diabetes Onset Date: _____

	Visit Date												
Every Month	Blood pressure												
	Weight												
	Height/BMI												
	Glucose (Fasting/Random)												
	Urine Albumin (dipstick)												
	Neurological exam (Vibration or position)												
	Medication/dose												
	Medication/dose												
	Medication/dose												
	Ed √	Use of Meds											
Danger Signs													
Foot Care													
Diet													
Exercise													
Every 3 Months	HbA1c												
	Albumin/Creatinine Ratio												
Yearly	Ophthalmoscopic Exam: normal/abnormal	Results: _____ Date: _____											
	Serum cholesterol HDL, LDL, Creatine	Cholesterol: _____ Date: _____			HDL: _____ Date: _____			LDL: _____ Date: _____			Creatine: _____ Date: _____		
	ECG (adults over 40)	Results: _____ Date: _____											
	Referral to:												
	Follow-up Appt.												

Performance Checklist 1: Diabetes Mellitus Type II

Instructions: For each of the tasks listed below, place a check in the “Yes” or “No” box, as appropriate, to indicate whether or not the task was achieved. If a particular task is not applicable, enter NA (“not applicable”) in the “Comments” column. Use the “Comments” column to note details about why a particular task was not achieved or other information that may be useful in identifying or resolving inappropriate practices.

Task	ACHIEVED?		COMMENTS
	YES	NO	
History			
Patient is asked about:			
1. Personal, family, and past history			
2. Symptoms related to diabetes			
3. Symptoms of coexisting illness (hypertension, liver disease, heart disease)			
4. Frequency of acute complications (DKA, hypoglycemia)			
5. Full dietary history (habits, types, amount, times of main meals and snacks, weight changes)			
6. Current medications used for coexisting diseases (steroids, thiazides, etc.)			
7. Methods of glucose monitoring			
Physical Examination			
1. Height and weight			
2. Heart rate, blood pressure			
3. Palpates peripheral pulses			
4. Examines feet (deformities, cracking, brittle nails, infections, calluses, dryness, ulcers, oedema)			

Task	ACHIEVED?		COMMENTS
	YES	NO	
5. Examines mouth, teeth, gum			
6. Examines thyroid gland			
7. Examines skin (dermopathy, infections, sites of insulin injections)			
Local Examination			
1. Chest and heart			
2. Abdomen (liver, spleen, loin)			
Neurological Examination			
1. Vibration sense, glove and stocking hypoesthesia, ankle jerks			
Patient Education			
1. Uses simple, clear language			
2. Periodically checks if patient understands instructions			
3. Asks patient if s/he has any questions			
Educational Messages			
1. Basic pathophysiology of diabetes			
2. Nutrition (Caloric requirements, exchange system, main meals and snacks, constitution of food)			
3. Drugs (oral hypoglycemics or insulin)			
4. Exercise (proper methods and timing precautions)			
5. Glucose monitoring			
6. Hypoglycemia (symptoms, treatment and prevention)			

Task	ACHIEVED?		COMMENTS
	YES	NO	
7. DKA (symptoms, prevention, importance of hospitalization)			
8. Management of other illnesses			
9. Long-term complications and how they can be prevented (or at least delayed) with good glycemic control			
10. Personal hygiene			
11. Foot care			
12. Referral of patients to educational sessions (nutritionist, diabetes nurse, if available)			
Diagnostic Tests/Procedures – Monthly			
Orders and records the following tests/procedures on a <i>monthly basis</i> :			
1. Fasting Plasma Glucose (FPG) and/ or 2H PPPG and/or OGTT			
2. Urine glucose			
3. Blood urea and serum creatinine			
Diagnostic Tests/Procedures – Quarterly			
Orders and records the following tests/procedures <i>every 3 months</i> :			
1. Quantitative albumin/Creatinine ratio			
2. Hb A1c			
Diagnostic Tests/Procedures – Yearly			
Orders and records the following on a <i>yearly basis</i> :			
1. HDL – LDL – TG – T cholesterol			
Diagnostic Tests/Procedures – Yearly After 5 Years			
Orders and records the following <i>yearly after 5 years of diabetes</i> :			
Fundus examination			
Treatment Plan			

Task	ACHIEVED?		COMMENTS
	YES	NO	
Appropriate drug prescription according to guidelines			
Referral			
Appropriate referral for consultation according to guidelines.			

Case 2: Systemic Hypertension

Case 2: Systemic Hypertension

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2: Systemic Hypertension

Definition

Systemic hypertension is an intermittent or sustained elevation in systolic or diastolic blood pressure. It is a major cause of cerebrovascular accident (stroke), cardiac disease, and renal failure.

Initial Evaluation

History

A comprehensive clinical history is essential and should include:

- Family history of hypertension, diabetes, dyslipidaemia, chronic heart disease, stroke, or renal disease.
- Duration and previous levels of high blood pressure, and results and side effects of previous antihypertensive therapy.
- Past history or current symptoms of the following, as well as information about the drugs used to treat these conditions:
 - Chronic heart disease and heart failure
 - Cerebrovascular disease, peripheral vascular disease
 - Diabetes
 - Gout
 - Dyslipidaemia
 - Bronchospasm
 - Sexual dysfunction
 - Renal disease
 - Other significant illnesses
- Symptoms suggestive of secondary causes of hypertension (palpitation, sweating, abdominal and back pain).
- Careful assessment of lifestyle and factors including dietary intake of fat, sodium and alcohol, smoking and physical activity, and weight gain since early adult life (as a useful index of excess body fat).
- Past history of drug use or use of substances that can raise blood pressure, including oral contraceptives, non-steroidal anti-inflammatory drugs, cocaine and amphetamines. Attention should be paid to the use of erythropoietin, cyclosporins or steroids for concomitant disorders.
- Personal, psychological and environmental factors that could influence the course and outcome of antihypertensive care, including family situation, work environment and educational background.

Physical Examination

A full physical examination is essential and includes careful measurement of blood pressure as well as:

- Measurement of height and weight, and calculation of Body Mass Index (weight in kilograms divided by height in meters, squared).
- Examination of the cardiovascular system, particularly for heart size, evidence of heart failure, evidence of arterial disease in the carotid, renal and peripheral arteries, and coarctations of the aorta.

- Examination of the lungs for rales and bronchospasm and of the abdomen for bruits, enlarged kidneys, and other masses.
- Examination of the optic fundi and of the nervous system for evidence of cerebrovascular damage (consider referral).

Diagnostic Tests and Procedures

Routine investigations should include:

- Urinalysis for blood, protein and glucose and microscopic examination of urine
- Blood chemistry should include measurement of potassium, creatinine, fasting glucose, and total cholesterol
- ECG

Diagnosis and Risk Assessment

Patients are assigned to risk groups based upon the severity of hypertension and other factors such as age, and history of cardiovascular or renal disease. This section is a guide for assigning patients to risk groups.

Table 2.1. Classification of Blood Pressure Levels

Category	Systolic (mm/Hg)	Diastolic (mm/Hg)
Normal	<139	<89
Subgroup: borderline	140-149	90-94
Grade 1 Hypertension ("Mild")	140-159	90-99
Grade 2 Hypertension ("Moderate")	160-179	100-109
Grade 3 Hypertension ("Severe")	≥180	≥110
Isolated Systolic Hypertension	>140	<90

Low Risk Groups

- Men under 55 and women under 65 years of age with Grade 1 hypertension and no other risk factors.

Medium Risk Groups

- Patients with a wide range of blood pressure and risk factors for cardiovascular diseases.

High Risk Groups

- Patients with Grade 1 or Grade 2 hypertension who have three or more risk factors listed in Table 2.2 below or target organ damage and patients with Grade 3 hypertension without other risk factors.

Very High Risk Groups

- Patients with Grade 3 hypertension and one or more risk factors listed in Table 2.2, and all patients with clinical cardiovascular disease or renal disease. These patients carry the highest risk of cardiovascular events.

Table 2.2. Cardiovascular Disease Risk Factors

Guidance for Risk Stratification
<ul style="list-style-type: none">• Level of systolic and diastolic BP (Grades 1-3)• Men under 55 years of age• Women under 65 years of age• Smoking• Total cholesterol >6.5 mmol/l (250 mg/dl)• Diabetes• Family history of premature cardiovascular disease

Treatment Plan

Risk Assessment

Having assessed the patient and determined the overall risk profile, including the level of blood pressure elevation, the responsible physician should determine whether the patient is at low, medium, high or very high risk of cardiovascular disease events.

High/Very High Risk

For a patient in the high and very high-risk groups, drug treatment should be instituted within a few days as soon as repeated measurements have confirmed the patient's blood pressure.

Low/Medium Risk

For a patient in the medium and low risk groups, the initiation of drug therapy will be influenced by:

- Consultation with the patient on preferred strategies.
- The degree of blood pressure lowering achieved with lifestyle measures.
- The degree of control achieved for other risk factors.
- The availability of resources in the health system.

Lifestyle Measures

Consider the use of non-drug measures (i.e., changes in lifestyle), including diet and exercise, as an important aspect of treatment for all patients.

Low/Medium Risk Groups

Lifestyle measures for a 3-12 month trial BEFORE beginning drug treatment: Measures include:

- Daily exercise for 20-30 minutes
- Weight loss if BMI >28
- Mild sodium restriction
- Stop smoking (if smoking)
- Decrease caffeine drinks
- Control other factors such as diabetes and cholesterol

Choice of Antihypertensive Drugs

Start most patients with a thiazide diuretic unless there is a contraindication. Consider adding a second medication if there is no response after 2-3 months of treatment with thiazide medication. The following tables provide information to guide the selection and prescription of antihypertensive drugs.

Table 2.3. Selecting Drug Treatment for Hypertension

Class of Drug	Compelling Indications	Possible Indications	Compelling Contraindications	Possible Contraindications
Diuretics	-heart failure -elderly patients -systolic hypertension	-diabetes	-gout	-dyslipidaemia -sexually active men -pregnancy
Beta-Blocker	-angina after myocardial infarct (MI) -tachyarrhythmias	-heart failure -pregnancy -diabetes	-asthma/chronic obstructive lung disease -heart block ¹	-dyslipidaemia -athletes & physically active patients -peripheral vascular disease
ACE Inhibitors	-heart failure -left ventricular dysfunction after MI -diabetic nephropathy		-pregnancy -bilateral renal artery stenosis -hyperkalaemia	-bilateral renal artery stenosis
Calcium Antagonists	-angina -elderly patients -systolic hypertension	-peripheral-vascular disease	-heart block ²	-congestive heart failure ³
Alpha-Blockers	-prostatic hypertrophy	-glucose intolerance -dyslipidaemia		-orthostatic hypotension
Angiotensin Antagonists	-ACE inhibitor cough	-heart failure	-pregnancy -bilateral renal artery stenosis -hyperkalaemia	

¹ Grade 2 or 3 atrioventricular block
² Grade 2 or 3 atrioventricular block with Verapamil or Diltiazem
³ Verapamil or Diltiazem

Principles Of Drug Treatment

There is general agreement on the principles governing the use of antihypertensive drugs to lower blood pressure independent of the choice of particular drugs. These principles include:

- Use low doses of drugs to initiate therapy.
- Use appropriate drug combinations to maximize hypotensive efficacy while minimizing side effects. It is often preferable to add a small dose of a second drug rather than increasing the dose of the original drug.
- Change to a different drug class altogether if there is very little response or poor tolerability to the first drug used, before increasing the dose of the first drug or adding a second drug.

- Use long-acting drugs providing 24-hour efficacy on a once daily basis.

Table 2.4. Dose and Range Recommendations for Specific Drugs

Class	Drug	Dose/Range
Diuretics	Hydrochlorothiazide Furosemide Spironolactone	12.5-50 mg once per day 40-240 mg per day in 2 doses 25-100 mg once per day
Beta-Blocker	Atenolol Propranolol hydrochloride Timolol maleate	25-100 mg once or twice/day 40-480 once per day 20-60 mg per day in 2 doses
ACE Inhibitors	Captopril Enalapril maleate	25-150 mg per day in 2 doses 5-40 mg per day in 2 doses
Calcium Antagonists	Diltiazem hydrochloride Verapamil hydrochloride Nifedipine	120-360 mg per day in 2 doses 90-480 mg per day in 2 doses 30-120 mg once per day
Alpha-Blockers	Prazosin hydrochloride Terazosin hydrochloride	2-30 mg per day in 2 doses 1-20 mg once per day
Angiotensin Antagonists	Losartan potassium Valsartan Irbesartan	25-100 mg per day in 2 doses 80-320 mg once per day 150-300 mg once per day

Referral Guidelines

A hypertensive patient should be referred under the following conditions:

- If therapeutic goals, including blood pressure control, have not been reached within six months.
- For annual ophthalmoscopic exam.
- Immediately after all necessary emergency measures have been taken and the following conditions are present:
 - Evidence of severe hypertension with papilloedema or hemorrhage in optic fundus
 - Hypertension complicated by acute left ventricular failure, cerebrovascular accident, acute coronary events or hypertensive encephalopathy
 - Severe hypertensive crisis due to pheochromocytoma: tumor of the adrenal medulla
 - Eclampsia

Recommended Follow-up Schedule

Lifestyle Modification Treatment

- Patients treated with lifestyle modification should be seen after 3-6 months. After their blood pressure is stabilized, they should be seen every 6-12 months.

Pharmaceutical Therapy

- Patients who started pharmaceutical therapy should be seen every 1-2 months. When their blood pressure is stabilized, they should be seen every 6-12 months.

Emergent and Urgent Hypertension

- Patients with emergent and urgent hypertension should be seen within 24 hours.

Change in Medication

- Patients whose medication has changed should have a follow-up within 1-3 months.

Health Education Messages and Counseling

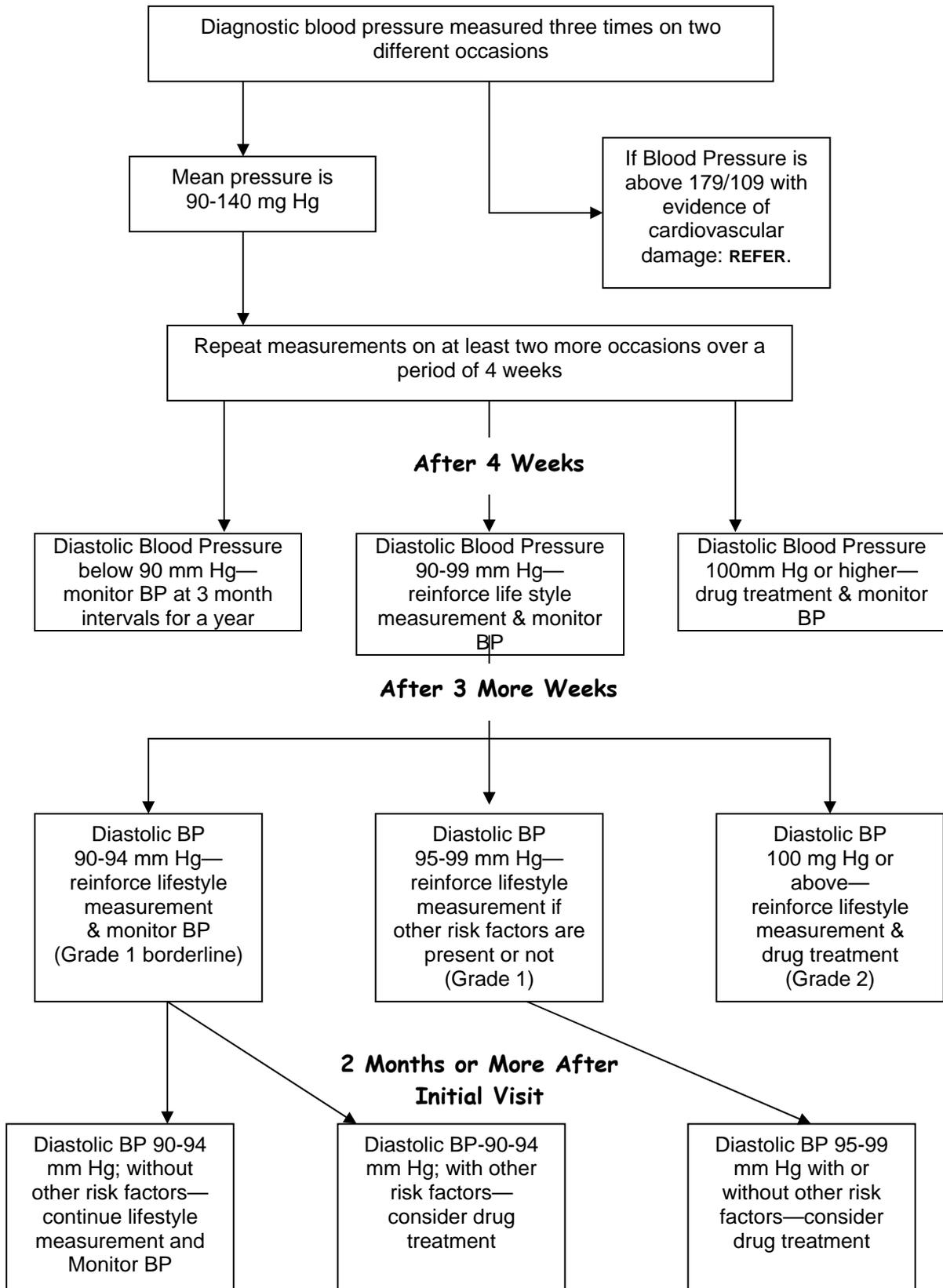
Physicians should provide the following information about blood pressure and high blood pressure:

- Risks and prognosis
- Expected benefits of treatment
- Risks and side effects of treatment
- Need for and benefit of life long treatment

Clinical pharmacists should instruct the patient about the following:

- How to use medications.
- Possible side effects.
- Clinical nurses should counsel patients to improve compliance with therapy and contribute to reinforcing the following health education messages:
 - Awareness about the disease and other risk factors
 - Sequence and complications
 - Proper diet (i.e., low salt and weight reduction)
 - Importance of exercise
 - Dangers of smoking
 - Use of medications
 - Importance of return visits

Algorithm Management of Hypertension



Hypertension Follow-up Chart

Name of Patient: _____ Male Female Date of Birth: _____ Date Diagnosis Hypertension: _____

<i>Visit Date</i>													
Update History	Diet/salt intake												
	Smoking												
	Medications												
Examination	Blood Pressure												
	Weight												
	Cardiac Exam												
	Pulmonary Exam												
	Ophthalmoscopic Exam (NI/abnormal)												
Medication/Dose													
Health Education	Diet												
	Exercise												
	Medication Use												
	Side Effects												
	Lab tests: Creatine Urea Nitrogen												
	ECG												
Referral	Location												
	Reason												
Follow-up Appointment	Date												

ECG Date: _____ Creatinine/BUN Date: _____ Urea Nitrogen: _____
 ECG Result: _____ Creatinine/BUN Result: _____ Urea Result: _____

Performance Checklist 2: Systemic Hypertension

Instructions: For each of the tasks listed below, place a check in the “Yes” or “No” box, as appropriate, to indicate whether or not the task was achieved. If a particular task is not applicable, enter NA (“not applicable”) in the “Comments” column. Use the “Comments” column to note details about why a particular task was not achieved or other information that may be useful in identifying or resolving inappropriate practices.

Task	ACHIEVED?		COMMENTS
	YES	NO	
History Patient is asked about:			
1. Duration of hypertension			
2. Home blood pressure readings in past 3 months (if applicable)			
3. Factors that increase potential risk or influence control of hypertension			
4. Family history of hypertension, premature coronary artery disease (CAD), strokes, diabetes or renal disease			
5. Weight gain			
6. Intake of sodium, alcohol, saturated fats and/or caffeine			
7. Any medication use that may raise BP or interfere with effectiveness of antihypertension drugs (e.g., non steroidal antinflamatory, amphetamin, steroids, oral contraceptives, appetite suppressants)			
8. Any stress from work/family environment			
9. Symptoms suggesting secondary causes of hypertension			
10. Results and adverse effects of previous hypertensive therapy (if applicable)			

Task	ACHIEVED?		COMMENTS
	YES	NO	
11. Symptoms suggestive of target organ damages (e.g., coronary artery disease, heart failure, stroke, renal disease, diabetes, peripheral vascular diseases, gout, sexual dysfunction)			
Physical Examination			
1. Takes and records vital signs in chart: pulse, temperature, and respiratory rate			
2. Verifies BP in contralateral arm			
3. Measures height and weight			
4. Examines optic fundi or refers to fundus examination			
5. Cardiovascular review			
a. Evidence of heart disease			
b. Pulmonary: bronchospasm, respiration rate			
c. Abdomen: bruits, enlarged kidneys, abnormal aortic pulsations.			
d. Optic fundi			
e. Calculate Body Mass Index (BMI)			
Patient Education			
Explains the following:			
1. Uses simple, clear language			
2. Periodically checks if patient understands instructions			
3. Asks patient if s/he has any questions			
4. Informs patient about diagnosis and severity of condition			

Task	ACHIEVED?		COMMENTS
	YES	NO	
5. Explains use and possible adverse side effects of prescribed medications			
6. Explains chronic nature of hypertension and the necessity of patient involvement in management			
7. Explains that the following lifestyle modifications are integral to management of hypertension:			
a. Weight reduction, cessation of smoking			
b. Aerobic physical activity (30-45 minutes, 3-4 times per week)			
c. Sodium intake should not exceed 6 grams of sodium chloride a day			
d. Maintain adequate intake of dietary potassium			
e. Reduce intake of dietary saturated fat and cholesterol			
8. Encourages home BP measurement and bringing in BP values to encourage positive attitudes about achieving therapeutic goals			
9. Explains to patient under what conditions referral to hospital or consultant is needed			
Diagnostic Tests/Procedures			
Orders and records the following tests/procedures during first visit:			
1. Blood chemistry: potassium, creatinine, fasting glucose, total cholesterol			
2. Urinalysis for blood, protein & glucose			

Task	ACHIEVED?		COMMENTS
	YES	NO	
3. Electrocardiogram			
4. Other optional tests with justifications			
Diagnosis Checks that hypertension stage and risk group are recorded (see CGS)			
Treatment Plan			
Appropriate drug prescription according to guidelines			
Referral			
Appropriate referral for consultation according to guidelines			

Case 3: Bronchial Asthma

Case 3: Bronchial Asthma

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Case 3: Bronchial Asthma

Definition

Bronchial asthma is a chronic inflammatory disorder of the airways resulting in airflow obstruction. It is currently recognized that the characteristic features of asthma are bronchial hyper-responsiveness and inflammatory changes in the airways. Inflammation results in airflow obstruction secondary to mucosal swelling, increased mucus production, and bronchial muscle constriction. It is important to have respect for this condition, as the mortality rate among young people appears to be rising.

Environmental and other factors provoke airway inflammation in people with asthma. Examples of these factors include allergens to which the patient is sensitive, some irritants, and viruses. Inflammation is always present to some degree, regardless of the level of severity of asthma.

Initial Evaluation

History

The comprehensiveness of clinical history taken will depend upon the severity of the attack. If the patient is severely ill, take a brief history and begin treatment immediately. Obtain further information about history when the patient's condition has improved.

A clinical history should include the following points:

- Episodes of wheezing, chest tightness, shortness of breath and cough
- Symptoms that worsen at night
- Allergic rhinitis or atopic dermatitis (50-80% of patients with atopic dermatitis have or develop asthma or allergic rhinitis)
- Family history: relatives with asthma, allergy, sinusitis and rhinitis

Physical Examination

A full examination of the patient's general condition should include assessment of speech, presence of cyanosis, level of anxiety, level of effort in breathing, respiratory rate, blood pressure, pulses paradoxes.

The chest examination should focus on the use of accessory muscles, chest movement, air entry, and wheezing. Use the peak flow meter to measure peak expiratory flow rates and establish a baseline measure of airflow obstruction.

While examining the patient, check for the following danger signs:

- Cyanosis
- Exhaustion
- Inability to talk
- Silent chest

Diagnosis and Risk Assessment

Diagnostic Tests and Procedures

Conduct pulmonary function assessment if spirometer is available at the clinic. Refer for assessment if equipment is not available. Spirometry can provide evidence that airflow obstruction exists and is partially reversible. The two most commonly used tests are:

- a) The FEV1 (Forced Expiratory Volume in 1 second)
- b) The FEV1/FVC ratio. FVC (Forced Volume Capacity) is the largest air volume measured on complete exhalation after full inspiration

To Test for Airflow Obstruction

- Normal FEV1 is 80% or higher
- FEV1/FVC is < 65%, the lower limit of normal
Airway obstruction as seen with asthma or chronic obstructive pulmonary disease will cause a decrease in the FEV1 with only minimal changes in FVC, reducing the FEV1/FVC ratio.

To Test for Reversibility

- Repeat FEV1 after administration of a short acting inhaled beta2-agonist. Reversibility is possible when FEV1 increases > 12% and at least 200 ml after use of a short-acting inhaled beta2-agonist (i.e., Salbutamol, Terbutaline).

Risk Assessment

The presence of the following historical information, symptoms and physical signs can lead to a presumptive diagnosis of bronchial asthma:

- Episodic wheeze, chest tightness, shortness of breath, or especially persistent cough.
- Recurrent coughing or wheezing episodes are the only symptom.
- Asthma symptoms vary throughout the day.
- Symptoms worsen at night, while exercising, or in the presence of aeroallergens or irritants.
- Allergic rhinitis or atopic dermatitis is present.
- The patient has relatives with asthma, allergy, sinusitis, or rhinitis.
- A physical exam reveals:
 - Hyperextension of the thorax
 - Wheezing, prolonged or forced exhalation
 - Nasal secretions, sinusitis, rhinitis, or nasal polyps
 - Atopic dermatitis or eczema, or allergic skin problems

Note: It is important to remember that the absence of symptoms at the time of the physical exam does not exclude a diagnosis of asthma.

To confirm a diagnosis of asthma, refer the patient for spirometry and blood gas analysis. During the referral visit, additional tests will rule out a number of diseases that cause symptoms similar to asthma. These diseases include vocal cord dysfunction, vascular rings, foreign bodies, and other pulmonary diseases.

Table 3.1. Assessment of Severity in Acute Exacerbations of Asthma

Sign	Mild	Moderate	Severe
Respiratory rate	<40	>40	>40
Recession	Absent	Present	Marked
Pulse/minute	<100	100-120	>120
Accessory muscle use	Absent	Present	Marked
Able to talk/count to 10?	Yes	No	No
Alertness	May be agitated	Usually agitated	Agitated
Peak flow (% predicted or best)	>75	<50	<33
Wheeze	Moderate	Loud	Usually loud

Presence of the following danger signs is also a clear indication of severe disease:

- Cyanosis
- Drowsiness (indicates hypoxia)
- Restlessness (indicates CO₂ retention)
- Silent chest (not “moving” any air)
- Bradycardia

Treatment Plan for Chronic Asthma

1. Define Goals of management

- Prevent asthma symptoms and asthma exacerbations during day and night:
 - No sleep disruptions
 - No missed school or work
 - No visits to the emergency department
 - No hospitalization
- Maintain normal or near-normal activity, including exercise and other physical activities.
- Achieve normal or near-normal lung function.
- Ensure patient satisfaction with the asthma care received.
- Significantly reduce or eliminate attacks and enhance long-term prognosis by ensuring that the patient takes anti-inflammatory medicines regularly.

2. Assess the severity of asthma according to the following classification:

Classification of chronic Severity: Clinical Features Before Treatment

	Day with Symptoms	Nights with Symptoms	PEF or FEV ₁ *
Mild Intermittent	<2 symptomatic episodes/week	<2 nights/month	>80%
Mild Persistent	3-6 symptomatic episodes/week	3-4 nights/month	>80%
Moderate Persistent	Daily symptoms	>5 nights/month	>60%- <80%
Severe Persistent	Continual symptoms	Frequent	<60%

* percent predicted values for forced expiratory volume in 1 second (FEV₁) and percent of personal best for peak expiratory flow (PEF) (relevant for children 6 years old or older who can use these devices).

Notes:

- Patients should be assigned to the most severe step in which any feature occurs
- An individual's classification may change over time
- Patient at any level of severity of chronic asthma have mild, moderate or severe exacerbations of asthma. Some patients with intermittent asthma experience severe and life-threatening exacerbations separated by long periods of normal lung functions and no symptoms
- Patients with two or more asthma exacerbations per week (ie., progressively worsening symptoms. That may last hours or days tend to have moderate-to-severe persistent asthma

3. Develop management plan for long-term control based on severity classification, as follows:

Table 3.2. Treatment Plan for Long-Term Control and Quick Relief of Asthma in Adults and Children Older than Five Years

For All Levels of Severity	Use short acting inhaled β_2 agonist (salbutamol or albuterol inhaler) as needed with other long term control medications (1-3 puffs every 4 hours)
Mild Intermittent Asthma <2 symptomatic episodes/week	No daily medication needed. Use short-acting inhaled β_2 agonist (salbutamol or albuterol inhaler) as needed (1-3 puffs every 4 hours).

<p>Mild Persistent Asthma 3-6 symptomatic episodes/week</p>	<p>One daily medication: Anti-inflammatory drug</p> <ul style="list-style-type: none"> • Low-dose inhaled corticosteroid (40 mcgm. 1-4 puffs/day). • Cromolyn (Intal) or nedorcromil (Tilade) • Zafirlukast (Accolate) or Zileuton (Zyflo) may also be considered in patients 12 years or older. <p style="text-align: center;"><i>OR</i></p> <ul style="list-style-type: none"> • Sustained-release theophylline-to-serum concentration of 5-15 (but not preferred therapy).
<p>Moderate Persistent Asthma Daily symptoms</p>	<p>One daily medication:</p> <ul style="list-style-type: none"> • Medium-dose inhaled corticosteroid >500 mcg/day <p style="text-align: center;"><i>OR</i></p> <p>Two daily medications:</p> <ul style="list-style-type: none"> • Low to medium dose inhaled corticosteroid <p style="text-align: center;"><i>OR</i></p> <p>Long-acting Bronchodilator especially for nighttime symptoms (Salmeteral (serevent), sustained-release theophylline or long-acting β2 agonist tablets).</p>
<p>Severe Persistent Asthma Continual symptoms</p>	<p>Three daily medications:</p> <ul style="list-style-type: none"> • High-dose Inhaled corticosteroid 80 mcgm. 4-5 puffs twice daily) <p style="text-align: center;"><i>AND</i></p> <ul style="list-style-type: none"> • Long-acting bronchodilator (Salmeterol, sustained-release theophylline or long-acting β2 agonist tablets). <p style="text-align: center;"><i>AND</i></p> <ul style="list-style-type: none"> • Oral corticosteroid in dosage of 0.25-1 mg per Kg per day with the dose generally not exceeding 60 mg/day.
<p>Rapidly Worsening Symptoms at Any Level of Severity Emergency treatment</p>	<p>Begin oral corticosteroid (Prednisolone) in dosage of 12 mg/kg/day.</p> <p>Increase dosage of inhaled short acting β2 agonist.</p>

Referral Guidelines

A patient with asthma should be referred in the following situations:

- A differential diagnosis is problematic, other conditions aggravate the asthma, or the effects of occupational or environmental exposures on the patient's condition need to be confirmed.
- Specialized treatment (e.g., immunotherapy) or patient education (e.g., allergen avoidance) is needed.
- The patient has not met therapeutic goals after three to six months.
- The patient does not respond to therapy.
- A life-threatening exacerbation occurs.
- The patient requires Step 4 care.
- The patient is younger than three years and requires Step 3 or Step 4 care.
- For initial spirometry and blood gas analysis

Recommended Follow-up Schedule

Periodic clinical assessments every one to six months and patient self-monitoring are essential for asthma care because:

- Asthma symptoms change over time, requiring changes in therapy.
- Patients' exposure to precipitants of asthma will change.
- Patients' memories and self-management practices fade with time.
- Reinforcement, review, and reminders are needed.

During Periodic Clinic Visits

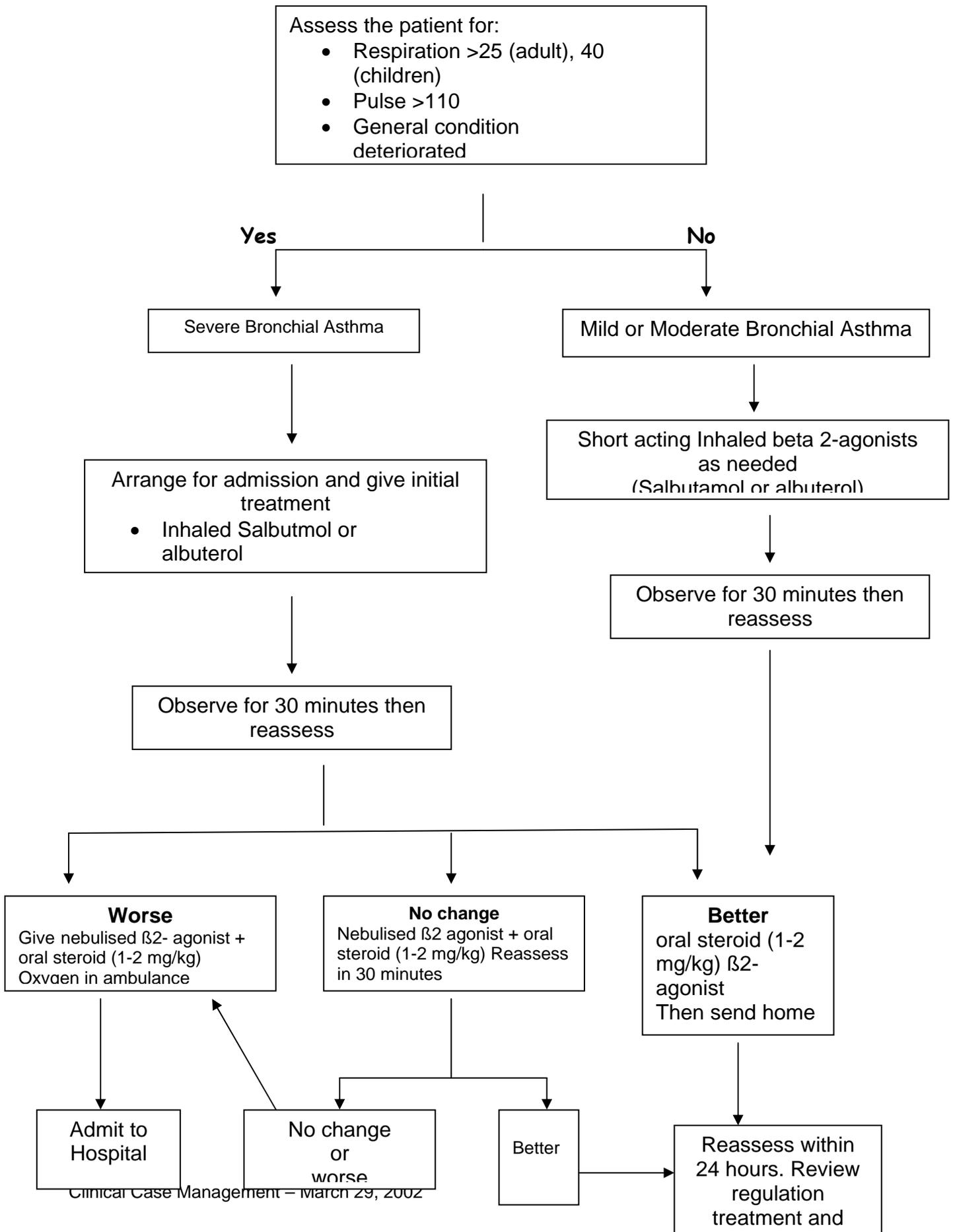
- Have patients return to the clinic more often, especially in the beginning, to allow time for assessment and patient education.
- Use nurses and office staff to perform tasks like checking the patient's inhaler technique and peak flow numbers before the patient sees the doctor.
- Identify patients' concerns about asthma & their expectations for the visit.
- Assess achievement of patients' goals and the general goals of asthma therapy.
- Review patients' medication usage and skill in using inhalers and peak flow meters correctly.
- Use the same peak flow meter and, when needed, replace with the same brand.
- Spirometry is recommended at clinic visits on the following schedule:
 - At initial assessment.
 - After treatment stabilizes symptoms and peak flow, to document baseline of *normal* airway function.
 - At least every 1-2 years when asthma is stable, more frequently when asthma is unstable.
 - Any time the clinician believes it is needed.

Health Education Messages and Counseling

Patient education should begin at the time of diagnosis and continue at every visit. The health center team should use the following guidance when counseling patients:

- Provide clear training and practice in how to use medications, peak flow meters, inhalers & other equipment.
 - Observe how patients use the equipment; especially observe use of inhaler and correct any errors
 - Praise patients for what they do correctly and explain what needs improvement
- Teach patients to recognize serious or frequent symptoms early:
 - Waking at night with asthma
 - Increased medicine use
 - Reduced ability for physical activity
- Encourage patients to keep a diary of symptoms and peak flow numbers.
- Help patients and their families recognize signs that they need to call the doctor or seek emergency care.
- Follow-up: review and discuss the action plan at each patient visit.
- Provide time for patient education and questions during every office visit.

Algorithm
Emergency Management of Acute Exacerbation



Bronchial Asthma Follow-up Chart

Name of Patient: _____

Male Female

Date of Birth: _____

Visit Date													
Update History	Frequency of episodes												
	Cough												
	Wheezing												
	Difficult breathing												
	Activity												
Examination	Blood Pressure – adult												
	Temperature												
	Weight												
	Pulmonary examination												
	Cardiac examination												
Assess Level of Severity	(Indicate level – Mild, Moderate, Severe)												
Medication/ Doses	Salbutamol Inhaler												
	Beclomethasone Inhaler												
	Theophylline												
Health Education	Avoid allergens												
	Diet												
	Medication use												
Referral	Location:												
	Reason:												
Follow-up Appointment	Date:												

ECG Date (adult): _____

Spirometer Date: _____

Result: _____

Results: _____

Performance Checklist 3: Bronchial Asthma

Instructions: For each of the tasks listed below, place a check in the “Yes” or “No” box, as appropriate, to indicate whether or not the task was achieved. If a particular task is not applicable, enter NA (“not applicable”) in the “Comments” column. Use the “Comments” column to note details about why a particular task was not achieved or other information that may be useful in identifying or resolving inappropriate practices.

Task	ACHIEVED?		COMMENTS
	YES	NO	
History			
Patient is asked about:			
1. Duration of asthma			
2. Family history			
3. Symptoms related to asthma (wheezing, chest tightness, shortness of breath)			
4. Frequency of acute episodes			
5. Sleeping patterns			
6. Current medication			
Physical Examination			
1. Respiratory rate			
2. Pulse/minute			
3. Ability to talk			
4. Alertness			
5. Accessory muscles used			
6. Wheeze			
7. Other danger signs according to guidelines			
Patient Education			
1. Uses simple, clear language			

Task	ACHIEVED?		COMMENTS
	YES	NO	
2. Periodically checks if patient understands			
3. Asks patient if s/he has any questions			
Educational Messages			
1. Basic pathophysiology of asthma			
2. Nature of the disease			
3. Role of patient in management			
4. Medication use and its side effects			
5. Home care			
6. When to return			
Diagnostic Tests/Procedures			
1. Peak Flow Analysis			
2. Spirometry			
Treatment Plan			
Treatment plan corresponds with level of severity (Scale 1-4)			
Referral			
Appropriate referral for consultation according to guidelines			

Case 4: Diarrheal Diseases in Children

Case 4: Diarrheal Diseases in Children

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Case 4: Diarrheal Diseases in Children

Definition

Diarrhea is the passage of loose or watery stools, usually at least three times in a 24-hour period (a loose stool is the one that would take the shape of the container). However, it is the consistency of the stools rather than the number that is most important. Frequent passing of formed stools is not diarrhea. Babies fed only breast milk often pass loose, “pasty” stools; this is also not diarrhea. Mothers usually know when their children have diarrhea and may provide useful working definitions.

Initial Evaluation

History

Health providers should obtain the following essential information described when taking the history of a patient with diarrhea:

- Duration of diarrhea
- Frequency and consistency of stools
- Presence of mucous or blood in the stool
- Presence of fever, cough or any important problems such as convulsion or recent measles
- Ask about urine output
- Pre-illness feeding practices
- Type and amount of fluid (including breast milk) and food taken during illness
- Drugs or other remedies taken
- Immunization history

Physical Examination

When conducting a physical examination, health providers should pay special attention to the signs of dehydration. Severe dehydration is a dangerous consequence of diarrhea characterized by restlessness, sunken eyes, dry mucous membranes, and poor skin elasticity (turgor).

Look for these signs when evaluating physical condition, particularly in children, who are especially vulnerable to rapid dehydration:

General Condition	Restless, irritable, lethargic, unconscious, or floppy
Eyes	Sunken or very sunken and dry
Tears	Presence or absence
Mouth & Tongue	Dry or very dry
Thirst	Although a dehydrated child is usually thirsty, a severely dehydrated child may not be able to drink
Skin Turgor	When pinched, adequately hydrated skin quickly returns to normal; poorly hydrated patients skin remains “tented” and returns to normal slowly.

Diagnosis and Risk Assessment

Clinical Types of Diarrhea

Three clinical types of diarrhea can be recognized, each reflecting the basic underlying pathology and altered physiology.

- Acute watery diarrhea lasting several hours or days: the main danger is dehydration; weight loss occurs if feeding is not continued.
- Bloody diarrhea or dysentery is associated with intestinal damage, sepsis and malnutrition; other complications, including dehydration, may occur.
- Persistent diarrhea can last 14 days or more. The main danger is malnutrition and serious non-intestinal infection; dehydration may occur.

Table 4.1. Guide for Assessment and Management of Dehydration

	Level of Dehydration		
	No Dehydration	Some Dehydration	Severe Dehydration*
Observe:			
General condition:	Well, alert	Restless, irritable	Lethargic or unconscious, floppy
Eyes:	Normal	Sunken	Very sunken & dry
Tears:	Present	Absent	Absent
Mouth/Tongue:	Moist	Dry	Very dry
Thirst:	Drinks normally, no thirst	Drinks eagerly, thirsty	Drinks poorly or not able to drink
Skin turgor:	Pinched skin quickly returns to normal	Pinched skin returns to normal slowly	Pinched skin returns to normal very slowly
Decide:	The patient has no signs of dehydration	If patient has two or more of these signs there is some dehydration.	If patient has two or more of these signs there is severe dehydration.
Treat: (see below)	Use Plan A	Weigh the patient Use Plan B.	Urgently use Plan C.

**Dehydration Danger Signs: drinks poorly or not able to drink at all; pinched skin returns to normal very slowly.*

Treatment Plan

Select the treatment plan that corresponds with child's degree of dehydration.

Treatment Plan A: Home Therapy

Home therapy is appropriate when the child has no signs of dehydration. Explain the three rules of treating diarrhea at home to the mother:

Rule 1. Give the child more fluid than usual to prevent dehydration and continue to give these fluids until the diarrhea stops.

- Suitable fluids contain salt (e.g., ORS, salted rice water, yogurt, and chicken soup).
- Fluids that do not contain salt are unsuitable (e.g., plain water, unsalted rice water, weak tea, sweetened drinks, very sweet tea, soft drinks).
- Fluids with purgative action and stimulants such as coffee are also unsuitable.

Rule 2. Continue to feed the child to prevent malnutrition.

Continue breastfeeding or, if the child is not breast-fed, give the usual milk. If the child is six months or older or is already taking solid food:

- Give cereal or another starchy food mixed, if possible, with pulses, vegetables, and meat or fish. Add 1-2 teaspoonfuls of vegetable oil to each serving.
- Give fresh fruit juice or mashed bananas to provide potassium.
- Give freshly prepared food. Cook and mash or grind food well.
- Give the same food after diarrhea stops and give an extra meal each day for two weeks.

Rule 3. Take the child to the health worker if the child does not get better in 3 days or develops any of the following symptoms:

- Many watery stools
- Repeated vomiting
- Marked thirst
- Eating or drinking poorly
- Fever
- Blood in stool

Note: If the child will be given oral rehydration solution (ORS) at home, show the mother how to prepare and how much ORS to give. Provide her with a two-day supply of packets.

Treatment Plan B: Patients with Some Dehydration

To treat dehydration, children should receive oral rehydration therapy (ORT) in a health facility. The health provider should assist the mother in rehydrating her child by doing the following:

- Show the mother how much solution to give her child.
- Show the mother how to give the fluids. Give a teaspoonful every 1-2 minutes for the child under two years, frequent sips from a cup for an older child.

- Guide the mother to re-hydrate according to the following guide. In the first four hours give sufficient fluid to equal the child's body weight*75 ml. Example: a 5 kg child would receive 375 ml in four hours.
- Instruct the mother to use a dropper or syringe rather than a bottle if the child is too small for a teaspoon.
- If child vomits, wait 10 minutes, then continue giving ORS, but slowly.
- Monitor the progress of therapy regularly and record findings every 1-2 hours, then reassess the child fully after four hours and decide what treatment to give next, following the guidelines (plan A, B or C).
 - If there are no signs of dehydration, shift to plan A.
 - If signs of some dehydration are still present, repeat plan B and start to offer food, milk and juice as described in plan A.
 - If signs indicating severe dehydration have appeared shift to plan C.

Note: If the mother must leave before completing Treatment Plan B, give her enough ORS packets to complete re-hydration therapy for two days.

Treatment Plan C: Severe Dehydration (Urgent)

Children with signs of severe dehydration can die quickly from hypovolemic shock. They should be treated immediately.

If IV fluids are available immediately:

- Start IV fluids immediately. Give 100 ml/kg Ringer's Lactate Solution or, if not available, normal saline, divided as follows:

	First give	Then give
Infants (under 12 mos.)	30ml/kg in 1 hour	70ml/kg in 5 hours
1 Year or Older	30ml/kg in 30 minutes	70ml/kg in 2:30 hours

- If the patient can drink, give ORS by mouth while the drip is set up.
- Reassess the patient every 1-2 hours. If hydration does not improve, give the drip more rapidly.
- After six hours, infants (or three hours for older patients), reassess the patient and choose which plan should be conducted to continue treatment.
- Be sure that mothers are taught to continue caring for children at home.

If IV fluids are available nearby (within 30 minutes):

- Send the patient immediately for IV treatment.
- If the patient can drink, provide the mother with ORS solution and show her how to administer it during the trip.

If IV treatment is not available nearby and the provider is trained to use a nasogastric tube for rehydration:

- Start rehydration by tube with ORS solution: give 20 ml/kg/hour for six hours (total of 120ml/kg).
- Reassess the patient every 1-2 hours.
- If there is repeated vomiting or increasing abdominal distension, give the fluid more slowly.
- If hydration is not improving after three hours, send the patient to IV therapy.
- After six hours, reassess the patient and choose the appropriate treatment plan.

If IV treatment is not available nearby, you are not trained to use a naso-gastric tube, and the patient can drink:

- Start rehydration by mouth with ORS solution, giving 20ml/kg/hour for six hours (total of 120 ml/kg)
- Reassess the patient every 1-2 hours.
- If there is repeated vomiting, give fluid more slowly.
- If hydration is not improving after three hours, send the patient IV therapy.
- After six hours, reassess the patient and choose the appropriate treatment plan.

Management of Other Problems

Acute Bloody Diarrhea (Dysentery)

Dysentery is defined as diarrhea with visible blood in the stool. The most important and most common cause of acute dysentery is Shigella, especially the S. Flexner and S. Dysenteriae types. Management of dysentery is as follows:

- Treat for five days with the oral antibiotic recommended for Shigella in your area.
- Teach the mother to feed the child as described in Treatment Plan A.
- See the child again after two days if:
 - Under one year of age
 - Initially dehydrated
 - There is still blood in the stool
 - Not getting better. If stool is still bloody after two days, change to a second oral antibiotic recommended for Shigella in your area and give for five days.

Note: Anti-diarrheal drugs have no practical benefit and are never indicated for treatment of acute diarrhea in children.

Persistent Diarrhea (present for at least 14 days)

Refer the patient to a hospital if:

- The child is under six months old
- If child is dehydrated, refer the child after immediate treatment of dehydration

Management of Persistent Diarrhea:

- Teach the mother to feed her child as in Treatment Plan A, but give only half the usual amount of milk, or replace milk with a fermented milk product, such as yogurt.
- Assure full energy intake by giving six meals a day of thick cereal and added oil, mixed with vegetables, pulses meat or fish.
- Tell the mother to bring the child back after five days:
 - If diarrhea has not stopped, refer to hospital.

- If diarrhea has stopped, tell the mother to use the same food for the child's regular diet and gradually resume the usual animal milk after one more week.
- Give an extra meal each day for at least one month.

Severe Malnutrition

Do not attempt rehydration. Refer the patient to a hospital for management. Provide the mother with ORS solution and show her how to give 5ml/kg/hr during the trip.

Referral Guidelines

Patients with diarrhea should be referred under the following conditions:

- Severe dehydration: management with IV fluids or naso-gastric infusion is not possible
- Persistent diarrhea lasting more than 14 days
- Severe malnutrition

Recommended Follow-up Schedule

Providers should advise parents or patients to return for reassessment and to complete the follow-up chart during reassessment visits.

- Patients with some dehydration – advise patients to return to the health center for reassessment if there is no improvement after three days
- All patients with severe dehydration – advise patients to return to the health center for reassessment after three days.

Health Education Messages and Counseling

Mothers should be taught how to prevent dehydration and malnutrition and should know what signs indicate that the child should be taken to a health worker. Health staff should advise family members to promote good nutrition and improve hygiene, thereby reducing both the frequency of diarrhea and the severity of cases.

- Breastfeeding
- Improve weaning practices
- Use of safe water
- Hand washing (personal hygiene)
- Use of latrines and safe disposal of stools
- Immunization

Diarrhea Follow-up Chart

Name of Patient: _____

Male Female

Date of Birth: _____

Visit Date		Episode #1			Episode #2			Episode #3			Episode #4		
Update History	Presence of diarrhea												
	Presence of mucus/blood												
	Fever												
	Feeding practice												
	Urine output												
Examination	Temperature												
	Weight												
	General condition												
	Eyes – tears												
	Mouth and tongue												
	Thirst												
	Skin												
Medication/ Doses	ORT												
	IV Therapy												
	Other:												
Health Education	Fluid Intake												
	Diet												
	Medication use												
	ORS medication												
Referral	Location												
	Reason												
Follow-up Appointment	Date												

Lab. Results: _____

Date: _____

Performance Checklist 4: Diarrheal Diseases in Children

Instructions: For each of the tasks listed below, place a check in the “Yes” or “No” box, as appropriate, to indicate whether or not the task was achieved. If a particular task is not applicable, enter NA (“not applicable”) in the “Comments” column. Use the “Comments” column to note details about why a particular task was not achieved or other information that may be useful in identifying or resolving inappropriate practices.

Task	ACHIEVED?		COMMENTS
	YES	NO	
History			
Mother or caretaker is asked about:			
1. Duration of diarrhea			
2. Frequency and consistency of stool			
3. Presence of mucus and/or blood in stool			
4. Urine output			
5. Feeding practices			
6. Drugs or other remedies taken			
7. Immunization history			
Physical Examination			
1. Height and weight			
2. Patient’s general condition:			
a. Well, all right, irritable?			
b. Eyes: normal, sunken or dry?			
c. Tears: present or absent?			
d. Mouth and tongue: moist or dry?			
e. Patient drinks eagerly, poorly, or unable to drink?			
f. Pinched skin returns to normal quickly or slowly?			

Task	ACHIEVED?		COMMENTS
	YES	NO	
3. Degree of dehydration corresponds with the history and physical examination findings			
Patient Education			
1. Uses simple, clear language			
2. Periodically checks if patient understands instructions			
3. Asks patient if s/he has any questions			
Educational Messages			
1. Breastfeeding			
2. Use of safe water			
3. Handwashing (personal hygiene)			
4. Use of medication			
5. Use of oral rehydration solutions			
6. Homemade food			
7. Importance of immunizations			
8. When to return			
9. If the child is referred, explains the reason for referral to parents			
Treatment Plan			
1. Appropriate drug prescription according to guidelines			
2. Health provider selects the treatment plan that corresponds with the child's degree of dehydration			
Referral			
Appropriate referral for consultation according to guidelines			

**Case 5: Acute Respiratory Infection (ARI)
In Children Under Five**

Case 5: Acute Respiratory Infection (ARI) In Children Under Five

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Case 5: Acute Respiratory Infection (ARI) In Children Under Five

Definition

Acute respiratory infection is the name given to a set of respiratory tract diseases commonly found in children, presented as cough, cold, fever and respiratory distress. These conditions are found in the upper and lower respiratory tract and range from the common cold to severe pneumonia.

Acute respiratory tract infections (ARI) are among the most common causes of death in children in developing countries. Annually, they account for more than four million deaths in children under five years of age, of which two thirds are infants.

Initial Evaluation

Assessment involves obtaining information about the illness by questioning the mother and looking at and listening to the child. A child with a cough or difficult breathing could have pneumonia, a serious disease that can result in death.

However, a cough or difficult breathing can also be caused by a common cold, a blocked nose, whooping cough, tuberculosis, measles, croup or wheezing disorders.

- Remember not to wake the child, if the child is asleep.
- Keep the child as calm as possible.

History

A comprehensive clinical history should be obtained from the mother and include the following:

- Child's age
- Presence and duration of cough or difficult breathing
- Presence and severity of fever
- Presence and description of convulsions (focal or generalized, frequency and duration)
- Nutritional status: ability to drink, swallow or breastfeed
- Abnormal sleepiness or difficulty in waking; an abnormally sleepy child is drowsy most of the time
- Immunization history

Physical Examination

During the full physical examination, the physician should look at and listen for:

- *Fast Breathing* (count number of breaths in one minute):
 - 40/minute or more in a child between 1-5 years
 - 50/minute or more in a child between 2 months and 1 year
 - 60/minute or more in a child under 2 months

- *Chest Indrawing*
Watch the chest as the child breathes in; indrawing is present if the lower chest wall goes in when the child breathes.
- *Stridor*
Listen for a harsh noise when the child breathes, this indicates narrowing or swelling at the pharynx.
- *Wheezing*
Listen for a soft musical noise when the child breathes out; this indicates narrowing of the air passages in the lungs.
- *Fever*
Feel or measure for fever or low body temperature.
Body temperature of 38°C or more is considered high body temperature.
Body temperature of 35.5°C or less is considered low body temperature.
- *Severe Malnutrition*
Marasmus: severe loss in fatty and muscle tissues – child looks like an old man.
Kwashiorkor: general oedema – split hair, broken nails, with skin pigmentation.

Note: If the child is obviously very sick and in need of care that you cannot provide, the child should be referred immediately to the hospital without assessment.

Diagnosis and Risk Assessment

Children 2 Months to 5 Years

Classification of the illness means making decisions about the type and severity of the disease. There are four classifications:

Very Severe Disease

- Cough and difficult breathing plus any of the following danger signs:
 - Inability to drink
 - Convulsions
 - Abnormal sleepiness or difficulty waking up
 - Severe malnutrition
 - Stridor when calm

Severe Pneumonia

- Cough or difficult breathing
- Chest indrawing with or without fast breathing

Note: A child classified as having severe pneumonia might also have other signs that could support the classification, as follows:

- Nasal flaring: widening of the nose as the child breathes.
- Grunting: short sound made with difficult breathing.
- Cyanosis: dark bluish coloration of skin caused by hypoxia.

Pneumonia

- Cough or difficult breathing
- Fast breathing
- No chest indrawing

No Pneumonia – Cough or Cold

- No danger signs
- No chest indrawing
- No fast breathing

Infants Younger Than Two Months

Young infants have special characteristics that must be considered when their illness is classified, since they can become sick and die very quickly from serious bacterial infections. They are much less likely to cough with pneumonia and frequently have only non-specific signs, such as poor feeding, fever or low body temperature. Mild chest indrawing is normal in young infants because their chest wall bones are soft.

Acute respiratory infection is classified at three levels for this group:

Very Severe Disease

- Convulsions
- Abnormally sleepy or difficult to wake up
- Stridor when calm
- Stopped feeding well
- Wheezing
- Fever or low body temperature

Severe Pneumonia

- Fast breathing (60 times/minute or more)
- Severe chest indrawing

No Pneumonia – Cough or Cold

- No fast breathing
- No severe chest indrawing

Treatment Plan

After assessing the child and determining the classification of disease, the begin treatment as indicated below.

Very Severe Disease

A child with a very severe disease should be referred to the hospital urgently. See the “Referral Guidelines” section for specific guidance.

Severe Pneumonia

A child with severe pneumonia should be referred to the hospital urgently. See the “Referral Guidelines” section (below) for specific guidance.

Pneumonia

Treat the infection with antibiotic medication. Use any of the following drugs for five to seven days, prioritized as below and based on availability:

- Cotrimoxazol
Age 2-12 months: 5 ml in the morning and 5 ml in the evening.
Age 1-5 years: 7.5 ml in the morning and 7.5 ml in the evening.
- Amoxicillin
50-100 mg/kg 24 hours in three doses.
- Ampicillin
Age 2 months-5 years: 5 ml four times a day.
- Procaine penicillin
50,000 units/kg per day. IM

Treat for fever if the temperature is 38.5°C and above:

- Give Paracetamol: 10 mg/kg every six hours
- Give more fluids
- Use warm water compressor

No Pneumonia – Cough or Cold

- Do **not** give antibiotics
- Advise mother on home care (see “Health Education Messages and Counseling” below)
- Refer to hospital for more evaluation if cough persists for more than one month
- Treat for any other conditions

Referral Guidelines

A child with a very severe disease or severe pneumonia should be:

- Referred to the hospital urgently
- Given the first dose of antibiotic before leaving the center
- Treated for fever and wheezing when present

Write a referral note containing your assessment findings and any medication provided at the center. Ensure that the mother is willing and able to take the child to the hospital immediately.

Recommended Follow-up Schedule

The child should return to the center after two days of home treatment and care, even if his condition has improved. Reassess the child’s condition using the same procedures as for the initial assessment.

Consider the child's condition improved and ask the mother to continue the use of the same antibiotic for the full course of treatment (5-7 days) if:

- Fever is lower
- Breathing rate is slower
- Appetite has improved (eating better)

Consider the child's condition the same if there is no change in the signs and clinical symptoms. Confirm that the child received the antibiotic correctly. If confirmed, send the child to hospital for further evaluation.

Consider the child's condition worse and send immediately to hospital for further evaluation if any of the following conditions are evident:

- Child is unable to drink
- Child has chest indrawing
- General condition is deteriorating

Health Education Messages and Counseling

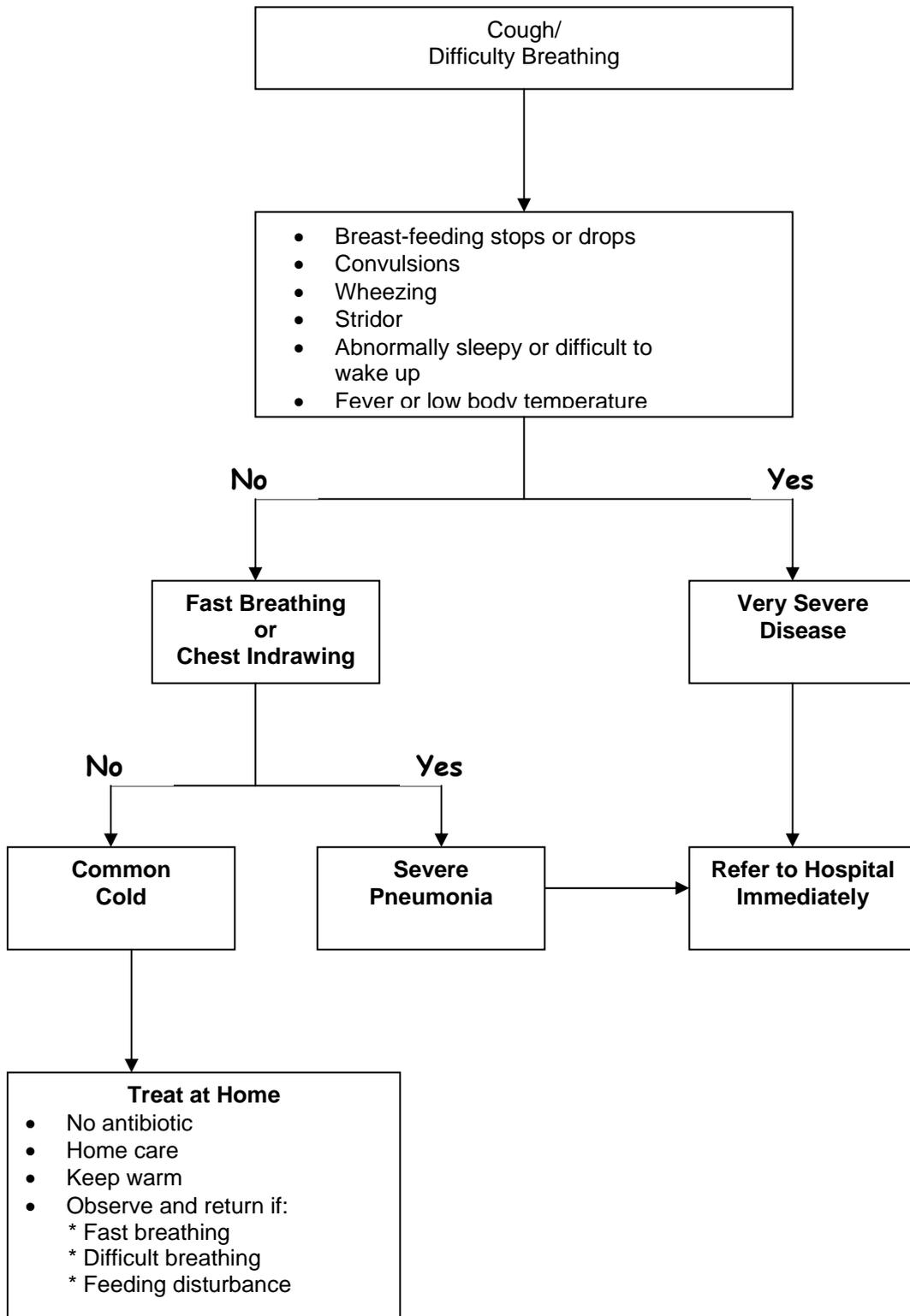
Give the mother the following instructions on home care:

- Continue breastfeeding and proper nutritious meals, increasing the amount after recovery and give additional fluids
- Clean the nose
- Soothe the throat and relieve cough with home made safe remedy
- Keep the child warm

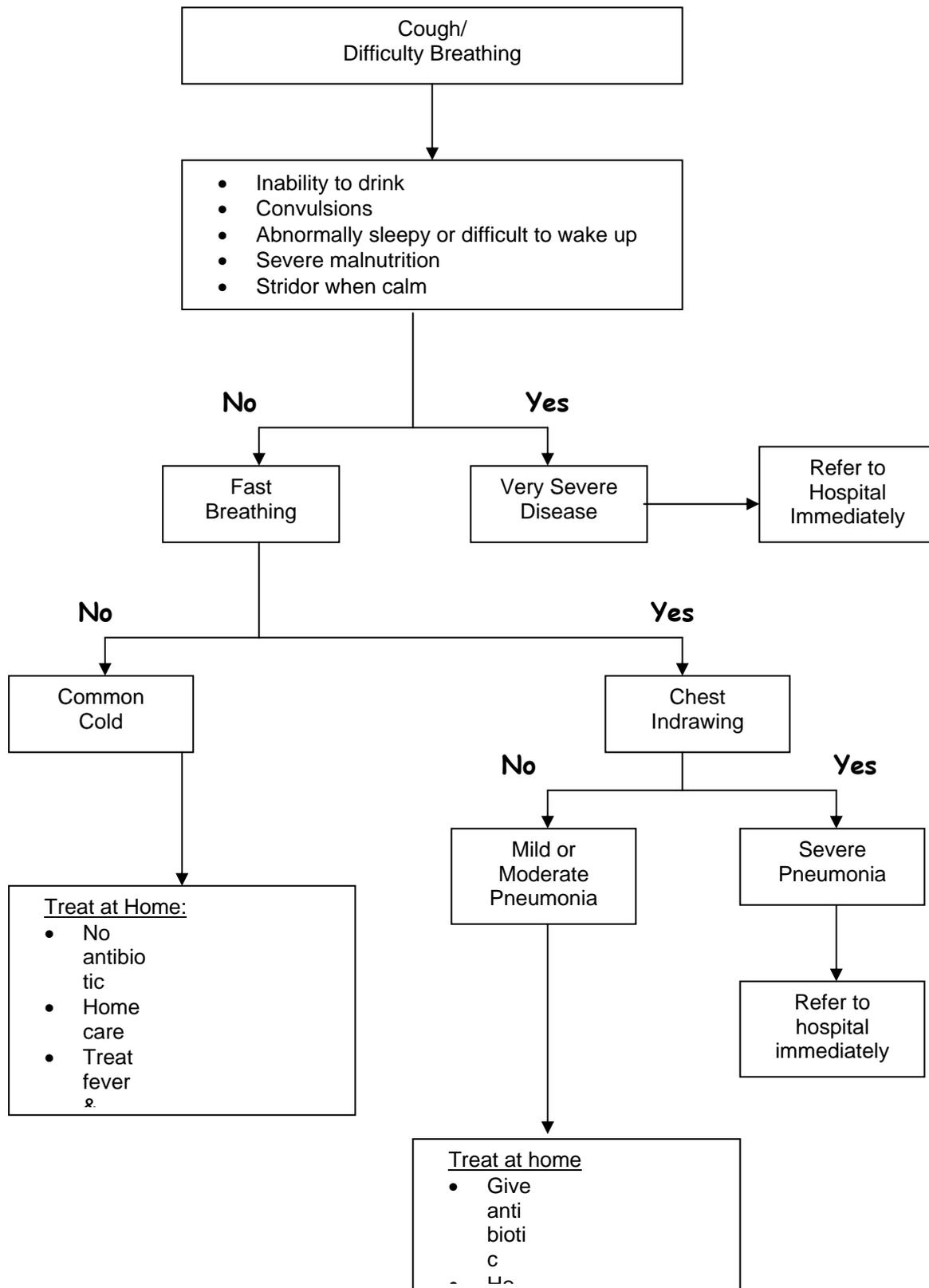
Tell the mother to return immediately if the child has and of the following symptoms:

- Difficult breathing
- Faster breathing
- Inability to drink
- General deterioration (the child's condition worsens)

Algorithm Management of Cough or Difficult Breathing (Children under 2 months)



Algorithm Management of Cough or Difficult Breathing (Children 2 months to 5 years old)



ARI Follow-up Chart

Name of Patient: _____

Male Female

Date of Birth: _____

<i>Visit Date</i>		Episode #1			Episode #2			Episode #3			Episode #4		
Update History	Cough												
	Difficult breathing												
	Able to eat or drink												
	Use of medication												
Examination	General condition												
	Temperature												
	Respiratory rate												
	Chest indrawing												
Medication/ Doses													
Health Education	Child's nutrition												
	Preparation of homemade fluids												
	Keeping warm												
	Medication use												
	When to return												
Referral	Reason												
	Location												
Follow-up Appointment	Date												

Lab. Results: _____

Date: _____

Performance Checklist 5: ARI in Children Under 5

Instructions: For each of the tasks listed below, place a check in the “Yes” or “No” box, as appropriate, to indicate whether or not the task was achieved. If a particular task is not applicable, enter NA (“not applicable”) in the “Comments” column. Use the “Comments” column to note details about why a particular task was not achieved or other information that may be useful in identifying or resolving inappropriate practices.

Task	ACHIEVED?		COMMENTS
	YES	NO	
History			
Mother or caretaker is asked about:			
1. Child’s age			
2. Cough and its duration			
3. Difficulty breathing			
4. Sore throat			
5. Ability to eat or drink			
6. Wheezing			
7. Sleeping patterns			
8. Convulsions			
9. Fever			
10. Immunization history			
11. Other illnesses, diarrhea, malnutrition			
Physical Examination			
1. Body weight			
2. Temperature			
3. Count breathing rate			
4. Look for chest indrawing			

Task	ACHIEVED?		COMMENTS
	YES	NO	
5. Listen to wheezing or stridor			
Patient Education			
1. Uses simple, clear language			
2. Periodically checks if patient understands			
3. Asks patient if s/he has any questions			
Educational Messages			
1. Basic pathophysiology of ARI			
2. Nature of the disease			
3. Role of patient in management			
4. Medication use and its side effects			
5. Home care			
6. When to return			
Treatment Plan			
1. Child illness classification corresponds with the assessment findings			
2. Treatment plan corresponds with child illness classification			
3. First dose of antibiotic is given before referring the child			
Referral			
Appropriate referral for consultation according to guidelines			

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