PN-ADD-435

IRAQ HEALTH SYSTEM STRENGTHENING PROJECT

PRIMARY HEALTH CARE DELIVERY

TRAINING MANUAL - 2003

Abt Associates Inc.

BEST AVAILABLE

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1. ADULT HEALTH

The Family Health Care Model

THE FAMILY HEALTH CARE MODEL AND PRINCIPLES OF PREVENTIVE HEALTH CARE

LEARNING OBJECTIVES

- Understand the basic principles of the family health care model
- Apply the family health care model to practice in the Health Center
- Understand the basic principles of prevention in health care

TEACHING STRATEGIES

- Use lecture format to present the basic principles noted
- Encourage group discussion of the principles
- Use small group discussion to develop strategies in which the family health care model can be applied to their specific Health Centers

MATERIALS AND EQUIPMENT NEEDED

- Overhead projector and transparencies of didactic material
- Flipchart and markers for small group presentations

LEARNING POINTS

- Family health care model is a paradigm, a way of thinking; rather than a collection of medical or nursing activities
- Takes into consideration the needs of the whole person, not just medical issues, in context of his family and community
- Does not just deal with illness, but promotes the well-being (health) of each individual in the family
- Family health care model is not new
  - has been practiced around the world for decades
  - recognized as ideal method of health care by WHO, and many primary health care conferences (Almaty – 1978, Health for All 2000)
- Characteristics of the Family Health Care Model
  - Comprehensive
    - Medical attention deals with psychological, social, and spiritual aspects of the problem, not just medical aspects.
    - Example – a 5 year old child with pneumonia – means lost sleep for the mother, added expense for the family, all of which are added stressors
    - Comprehensive care by health care staff would be aware of these additional issues around illness of a family member, and try to work with these also
  - Integrated
    - All aspects of health care function in a coordinated fashion
    - Team approach to care of each patient in the Health Center – doctor, nurse, pharmacist, clerk, lab technician all work together as a team
    - Referral system is available for managing problems beyond the scope of the Health Center, with appropriate feedback from specialist to the Health Center doctor
  - Continuous

    - Single health care team follows each family through various stages of life.
    - Medical record contains information necessary to give new doctors or nurses background information
  - High Quality
    - Confidence of the patient and family is gained through competent diagnosis and management of problems
    - Requires an on-going process of continuing education for members of Health Center staff, to keep up to date
  - Preventive Care
    - Significant focus on prevention of illness and promotion of health and well-being, not just on treatment of disease
    - Done by identification of high risk factors for patients and their family members, based on family history, past history, age, local epidemiology
    - Treated by appropriate screening for disease, and counseling

Preventive Health Care in the Health Center

- Definition of preventive health care - Identification and management in anticipation of potential health problems, of which the patient may not be aware
- Key Principle – it is always easier to prevent disease, or to treat it in the earliest stage, than to treat it later
- Key element of preventive health care -- Screening of individuals with no current symptoms of illness
- Principles of screening for health problems:
  - Identifies only persons who are at risk for a disease, or who might have an illness – not a definitive diagnosis
  - Screening only identifies those who need further investigation and definitive diagnosis
  - Screening can be primary prevention (preventing onset of disease)
    - Example: strict diet and control of weight in person with a family history of diabetes
  - Screening can be secondary prevention (treating disease in the earliest stages)
    - Example: beginning diet and exercise in patient with mildly elevated fasting blood sugar
  - Screening can be done in several ways:
    - History – family history, past medical history
      - Example: strong family history of heart attacks or stroke
      - Example: past history of rheumatic fever
      - Example: high fat diet and low level of exercise
      - Example: active eczema in a child with a strong family history of asthma
    - Examination
      - Example: blood pressure as screening for hypertension
      - Example: examination of genitals in male infants as screening for undescended testicle
    - Laboratory examination
      - Example: fasting blood sugar as screening for diabetes
      - Serum cholesterol as screening for cardiovascular risk factor
  - Screening always results in false positive and false negative results, as well as true positives and negatives.
    - Those with true disease need to be differentiated from false positives by further testing and diagnosis.

- Example of screening for hypertension: 100 people screened for hypertension by taking one blood pressure reading

	Hypertension	No hypertension
High blood pressure	20	5
Normal blood pressure	10	65

- Note that most people with a single elevated blood pressure reading have hypertension, and most people with a normal blood pressure reading do not have hypertension; but there are also false positives (5) and false negatives (10). Further testing would involve at least taking several more measurements of the blood pressure, on different days.

- Management of problems identified in screening
  - Counseling and advice
    - Example: you ask a 25 year old driver if he wears seat belts when in the car. He says no.
    - Management: Advise the driver that he is 2 times more likely to survive a serious accident if he wears seat belts, and encourage him to develop the habit.
    - Example: 35 year old patient tells of several family members with diabetes, and 2 family members who have died of complications of diabetes
    - Management: counsel patient to control weight by good diet, to keep BMI less than 26. Avoid fats and sugars in diet when possible. Monitor fasting blood sugar at least yearly
    - Example: Blood pressure of 45 year old secretary is 155/92 on several occasions
    - Management: counsel secretary to lose 5 kg, and to walk or exercise 4 times per week for at least 45 minutes each time. Monitor blood pressure at least each month
  - Further diagnostic studies
    - Example: 45 year old male tells of 4 other family members who died of heart attacks before age 55. He is worried
    - Management: test serum cholesterol, (perhaps LDL and HDL if available). Test fasting blood sugar for possible early diabetes. Counsel about low fat diet and regular exercise and to stop smoking
    - Example: routine post-partum examination of a 40 year old woman shows a firm lump in one breast
    - Management: referral to a surgeon for further diagnosis – mammogram and biopsy of the lump

CASE STUDIES AND GROUP EXERCISE

In small group format, discuss the indicated questions for the following health problems:

1. Diabetes Mellitus
   a. What are the long-term effects of this health problem?
   b. How can persons with this problem be identified at the earliest stage (ie. What screening can be done?)

c. What interventions can be done to decrease the long term effects of this problem?

2. Hypertension
   a. What are the long-term effects of this health problem?
   b. How can persons with this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

3. Automobile accidents
   a. What are the long-term effects of this health problem?
   b. How can persons at risk for this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

4. Anemia in women
   a. What are the long-term effects of this health problem?
   b. How can persons at risk for this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Describe the basic elements of family health care?
- List the most significant elements of preventive health care?

Hypertension

HYPERTENSION

LEARNING OBJECTIVES:

- Describe the risks of hypertension and the value of blood pressure control
- Diagnose hypertension correctly
- Develop an effective treatment plan for hypertension
- Communicate to the patient and family necessary steps and messages in the understanding, prevention and control of hypertension

TEACHING STRATEGIES:

- Review technique of measuring blood pressure with practice by trainees on each other. Confirm that blood pressure measurement for each trainee is within 4 mm of trainers measurement
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling, and patient education issues.
- Assign groups of 4-6 trainees to review web-based PowerPoint presentation, follow with small group discussion of teaching points presented

MATERIALS AND EQUIPMENT NEEDED:

- Blood pressure cuffs, one for every two participants – confirm proper operation and calibration before use
- Computer for PowerPoint presentation
- White board or flip chart and markers for summarizing major points

LEARNING POINTS:

Significance of hypertension in cardiovascular disease

- Effect on stroke
- Effect on coronary artery disease
- Effect on heart failure and renal disease

Effect of hypertension with other cardiovascular risk factors.

The morbidity and mortality of hypertension is significantly worse with the following risk factors:

- Age > 50
- Diabetes
- Smoking
- Hyperlipidemia
- Alcohol abuse
- Obesity

Adequate treatment of hypertension (to normal level) can significantly reduce risk of arteriosclerotic disease:

- Stroke reduced by 35 - 40%
- Heart attack reduced by 20 – 25%
- Congestive heart failure reduced by up to 50%

Correct measurement of blood pressure

- Blood pressure should be measured, with the patient in a sitting position using mercury sphygmomanometer.
- When measuring blood pressure particular care should be taken to:-
  - Allow the patient to sit for several minutes in a quiet room before beginning blood pressure measurement.
  - Use a standard cuff with a bladder that is 12-13 cm x 35 cm, with a larger bladder for fat arms and a smaller bladder for children.
  - Use phase 5 Korotkoff sounds (disappearance) to measure the diastolic pressure
  - Measure the blood pressure in both arms first visit if there is evidence of peripheral vascular disease.
  - Measure blood pressure in standing position in elderly subjects, diabetic patients and in other conditions in which orthostatic hypotension is common.
  - Place the sphygmomanometer cuff at heart level, whatever the position of the patient.

Diagnosis of hypertension

- Adequate diagnosis of hypertension requires **2 or more** abnormal blood pressure readings, taken at different times and preferably different settings.

Table 1.

Definitions and Classification of Blood Pressure Levels		
Category	**Systolic**	**Diastolic**
Normal	<120	<80
Prehypertension	120-139	80-89
Stage 1 hypertension	140-159	90-99
Stage 2 hypertension	>160	>100

- Notes on definition of hypertension
  - When a patient's systolic and diastolic blood pressures fall into different categories, the **HIGHER** category should apply.
  - Prehypertension is a new category, which reflects new data that shows that those <50 years of age with BP in this category have a 90% risk over their lifetime of developing Stage 1 or 2 hypertension
  - The category of "Isolated systolic hypertension" has been eliminated. New studies show that systolic blood pressure >140 has the same risks as Stage 1 hypertension, **AT ANY AGE**.

Clinical evaluation in initial diagnosis of hypertension

- Three primary objectives in evaluation of those with documented hypertension
  1. Assess the patient's lifestyle, and identify any other cardiovascular risk factors that may affect the prognosis or guide the management strategy
  2. Identify treatable causes of hypertension (secondary hypertension)
  3. Assess the presence or absence of target organ damage and cardiovascular disease

Table 2

Risk Factors for Cardiovascular Diseases
• Hypertension • Cigarette smoking • Obesity (BMI > 30) • Physical Inactivity • Hyperlipidemia • Diabetes • Hyperalbuminuria or Creatinine clearance <60 ml/min. • Older age (>55 for men, >65 for women) • Family history of premature cardiovascular disease (>55 for men, >65 for women)

Table 3

Identifiable Causes of Hypertension
• Sleep apnea • Drug or medication related • Chronic kidney disease • Primary hyperaldosteronism (Conn's syndrome) • Renovascular disease (renal artery stenosis) • Chronic corticosteroid therapy or Cushings disease • Pheochromocytoma • Coarctation of the aorta • Thyroid or parathyroid disease

Table 4

Target Organ Damage

• Heart
  o Left ventricular hypertrophy
  o Angina or previous myocardial infarction
  o Prior coronary bypass or revascularization
  o Heart failure
• Brain
  o Prior stroke or Transient ischemic attack
• Chronic kidney disease
• Peripheral vascular disease
• Hypertensive retinopathy

Initial Evaluation of Hypertensive Patient

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 pervious levels of high blood pressure, and results and side effects of previous antihypertensive therapy.
  - Past history or current symptoms of chronic heart disease and heart failure, cerebrovascular disease, peripheral vascular disease, diabetes, gout, dyslipidaemia, bronchospasm, sexual dysfunction, renal disease, other significant illnesses, and information on the drugs used to treat those conditions
  - Symptoms suggestive of secondary causes of hypertension, such as:
    - Palpitations, tachycardia
    - Persistent snoring and sleep apnea episodes
    - Rapid weight change
    - History of recurrent kidney stones
  - Careful assessment of lifestyle and factors including dietary intake of fat, sodium and alcohol, amount of smoking and physical activity, and weight gain since early adult life as a useful index of excess body fat
  - Detailed enquiry of intake of drugs or 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, cyclosporin 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 will include careful measurement of blood pressure as described below. Other important elements of the physical examination include:
  - Measurement of height and weight, and calculation of Body Mass Index (weight of kilograms divided by height in meters, squared)
  - Examination of the cardiovascular system particularly for heart size, for evidence of heart failure, for evidence of arterial disease in the carotid, renal and peripheral arteries, and for coarcatation 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 for evidence of cerebrovascular damage. (Consider referral)
  - Evaluation of the thyroid gland and evidence of hyperthyroidism (tremor, palpitations, tachycardia, etc.)

Laboratory investigations

- The laboratory investigation is directed to identifying the most common treatable causes of hypertension, and associated risk factors that could influence the management.
- It should include at the minimum:
  - Urinalysis for blood, protein and glucose and microscopic examination of urine
  - Potassium
  - Creatinine

- o Calcium
- o Fasting glucose
- o Lipid profile (total cholesterol, LDL, HDL)
- o Electrocardiogram

- More extensive laboratory tests are generally not needed during the initial evaluation, but may be done if blood pressure does not respond to initial treatment plan (ie, thyroid studies, epinephrine and metanepherine levels, etc.)

Management Strategy of Hypertension

- Specify goals of therapy
  - o <140/90 in most people
  - o <130/80 in patients with renal disease or diabetes
  - o Must achieve both systolic and diastolic goals
- Promote lifestyle changes in ALL patients

Table 5

Recommended Lifestyle Modifications to Control Hypertension		
Modification	**Recommendation**	**Approx. Systolic BP reduction with modif.**
Stop smoking	Completely stop smoking	Unknown, but reduction of many other risks
Weight reduction	Reduce BMI to <25	5-20 mm reduction per 10 kg. weight loss
Modify diet	Decrease saturated fat Increase fruit, vegetables, non-fat dairy products	8-14 mm. reduction
Restrict dietary sodium	Approx. 2.5 gm sodium (no added salt, low sodium foods)	2-8 mm. reduction
Increase physical activity	Regular aerobic exercise or activity for 30 minutes/day	4-9 mm. reduction
IF alcohol taken: Moderate alcohol consumption	Maximum 90 ml. whiskey (or equiv.), or 300 ml. wine/day	2-4 mm. reduction

- Period of time for trial of lifestyle changes varies with age, associated conditions, initial blood pressure, and other risk factors
  - o Eg, person <50 years of age with BP of 140/94 and no significant risk factors – may try lifestyle measures for up to one year
  - o Eg. Person >50 years of age with initial BP of 160/100 and diabetes – begin drug therapy immediately together with lifestyle measures.

- If lifestyle modifications INEFFECTIVE in reducing blood pressure to goal level, begin drug treatment according to protocol. **(See Protocol – Figure 1)**

- Identify possible COMPELLING INDICATIONS to begin anti-hypertensive therapy, and assist with selection of specific drugs

Table 6

High Risk Compelling Indications for Specific Antihypertensive Drugs						
Compelling Indication	Diuretic (HCTZ)	B-Blocker (atenolol)	ACE Inhibitor (enalapril)	Angiotensin Receptor Blocker (losartan)	Calcium Channel Blocker (diltiazem)	Aldosterone Antagonist (spirono-lactone)
Heart Failure	X	X	X	X		X
Post Myocardial Infarction		X	X			X
High Risk for Coronary Disease	X	X	X		X	
Diabetes	X	X	X	X	X	
Prevention of Recurrent Stroke	X		X			
Pregnancy		X	Avoid	Avoid		

Principles of Drug Treatment

- In most cases, treatment is begun with hydrochlorthiazide (HCTZ) at a dose of 12.5 – 25 mg/day. This has been shown to be very effective, safe, and inexpensive.
- HCTZ can be combined with a potassium sparing drug if necessary (ie, Moduretic), but this should **NOT** be used in combination with an ACE inhibitor (ie, enalapril) because of the danger of hyperkalemia.
- Begin with the lowest available dose of the drug, in an effort to reduce adverse effects. If there is a good response to a low dose of a single drug but the pressure is still not at the **GOAL BP**, it is reasonable to increase the dose of the same drug, provided that it has been well tolerated.
- In Stage 1 hypertension, if HCTZ or another single drug is ineffective in achieving the **GOAL BP**, add a second drug. It is often preferable to add a small dose of a second drug rather than increasing the dose of the original drug. This reduces the probability of side effects. The use of the fixed low dose combinations that are increasingly available in Jordan may be advantageous.
- For Stage 2 hypertension, most patients will require at least 2 drugs simultaneously – generally hydrocholorothiazide plus a second drug. It is acceptable to begin with HCTZ for a short period of time, and add the second drug once maximum benefit has been obtained from the HCTZ.
- The use long-acting drugs providing 24-hour efficacy on a once daily basis. The advantages of such drugs include improvement in adherence to therapy and minimization of blood pressure variability. This may provide greater protection against the risk of major cardiovascular events and the development of target organ damage.

- The dosage of medications should be slowly increased (in addition to promotion of lifestyle changes) until the GOAL BP is reached.

Management of special hypertensive populations.

- Pregnancy
  - Use of methyldopa (Aldomet), B-Blockers, or vasodilators preferred
  - Avoid use of ACE inhibitors or Angiotensive receptor blockers because of risk of fetal defects
  - Monitor patient closely for development of pre-ecclampsia
- Elderly
  - Begin treatment with low doses, such as HCTZ 12.5 mg/day
  - Increase doses very slowly
  - Add second medications according to guidelines for "Compelling Indications", since many elderly patients have one or more compelling indications
  - Systolic hypertension (systolic BP >140) with normal diastolic BP (<80) is common in the elderly, but carries the same risks, and should be treated as hypertension according to the protocol
  - Monitor patient especially for postural hypotension when taking medication – check BP in both sitting and standing positions
- Women
  - Oral contraceptives can increase BP – consider changing method of contraception if woman on oral contraceptives develops hypertension
  - Generally, estrogen replacement therapy does NOT increase BP, so it can be continued during anti-hypertensive therapy when indicated
  - Use of thiazide diuretics (HCTZ) can reduce the risk of osteoporosis in women, which is an added benefit after the menopause.

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Screening for hypertension
  - Age > 20; at every visit to Health Center
  - Positive family history
  - Presence of other cardiovascular risk factors (high cholesterol, smoking, inactivity, alcohol abuse)
  - African descent
- Community participation in hypertension screening
- Salt intake if intake excessive
- Smoking cessation

Patient or Family Counseling

- Hypertension requires permanent, life-long treatment
- Hypertension is usually asymptomatic; symptoms such as headache are rare)
- Stress can contribute to hypertension, but is not the most common cause; a genetic predisposition is the most common factor
- Lifestyle modification to reduce the risk of developing hypertension:
  - Smoking cessation
  - Mild salt restriction
  - Weight loss
  - Limit alcohol intake
  - Increase physical activity

CRITICAL ELEMENTS FOR REFERRAL

- Severe hypertension (Blood pressure persistently >200/120)
- Transient ischemic attack with any degree of hypertension
- Mental confusion or disorientation
- No response of blood pressure to normal doses of at least 2 medications over 1-2 months
- Pregnancy and hypertension

CASE STUDY

Name of Patient	Abdullah
Sex	Male
Date of Birth	[redacted]
Date of Visit	4 May, 1999
Vital Signs	Pulse: 84 Resp.: 16 Blood Pressure: 160/104 Weight: 82 kg.
Medical History	Last week the patient lifted a heavy sack which resulted in severe back pain. It is moderately improved at this visit, but still somewhat painful to flex forward and sideways. There is no radiation of the pain into the posterior thigh, no numbness or weakness in the legs or feet, and no change in the pain with cough or straining. This same pain has occurred several times in the past, and usually resolved spontaneously within a few weeks. Upon questioning, the patient admits being previously told that he has high blood pressure, and has taken medicine for this for up to 2 months in the past. When asked why he stopped the medicine, he said that it was because he felt better. He has not noticed any chest pain, shortness of breath, swelling of the ankles, or change in appetite. He does have several brothers who have been diagnosed as being diabetic.
Physical Examination	The patient walks somewhat stiffly. The throat is pink and clear, the neck shows no adenopathy and carotid pulsations are equal bilaterally. The chest is clear to auscultation, and the heart has no murmers, but the second heart sound is accentuated. There is no peripheral edema.

Topics of discussion regarding case study:

1. What are the major medical problems identified in this patient?
2. What important additional elements of the history should be asked?
3. What additional elements of the physical exam should be done?
4. What is an appropriate plan of management for this patient at this point?
5. What counseling issues would be most appropriate for this patient?

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Correct measurement and recording of blood pressure (physicians and nurses)
- Proper diagnosis and classification of degree of hypertension (physician)
- Appropriate non-pharmacologic and pharmacologic management of hypertension (physician)
- Consideration of additive risks in treatment of hypertension (physician)
- Appropriate patient education regarding hypertension, management plan, and life-style modifications (physician and nurse)
- Knowledge of need for referral (physician and nurse)

Measurement of Blood Pressure

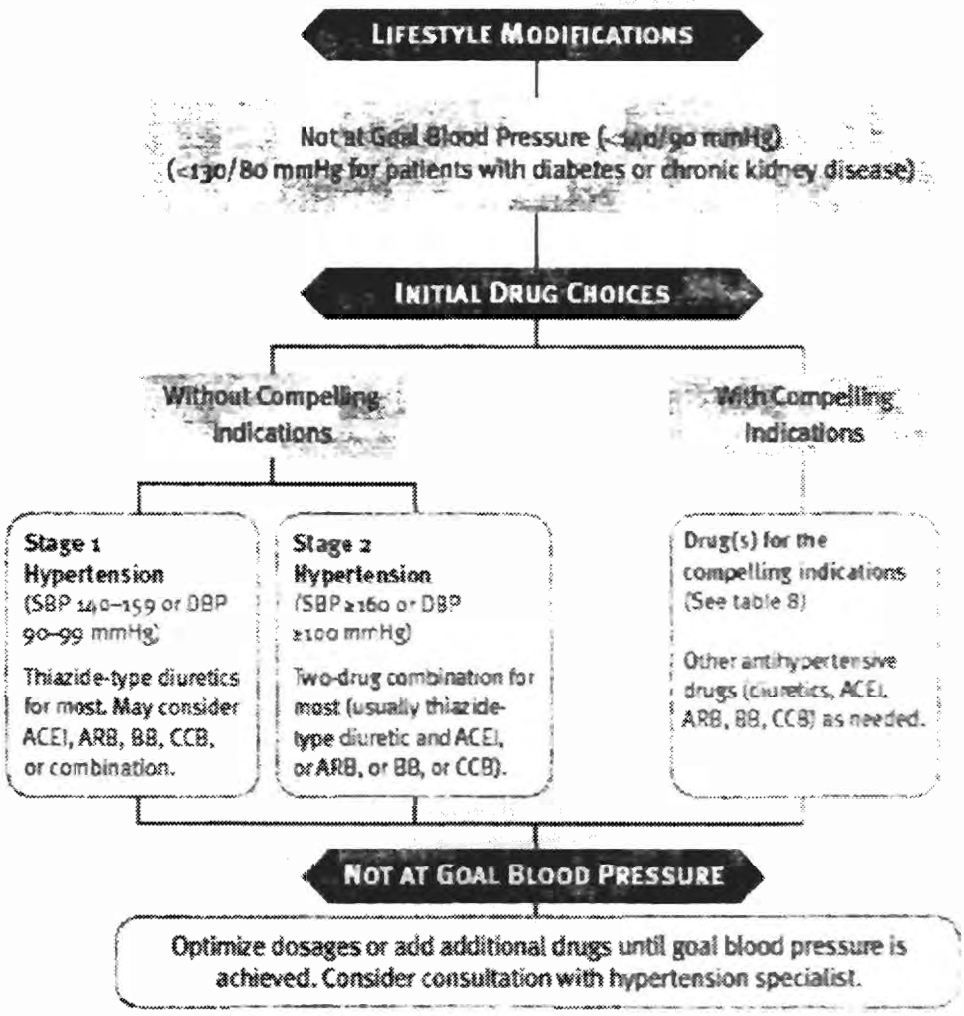
Monitoring Protocol

Name of Trainee _____ Date _____

Name of Trainer _____

Step	Action	Did Trainee Correctly Perform?	
		YES √	NO √
1	Client sitting and comfortable Arm resting at level of heart, supported by a table Sleeve removed completely for blood pressure cuff		
2	Position the sphygmomanometer so that it can be easily seen with the mercury level at your eye level		
3	Place the cuff on the arm at least 2 cm. above the elbow crease Cuff bladder should be centered over the brachial artery Make sure the cuff is proper size for the arm		
4	Be sure that the mercury level is at 0		
5	Stethoscope earpieces should be angled forward in the ears		
6	Place the stethoscope diaphragm over the brachial artery		
7	Close the valve on the bulb, and rapidly inflate to approximately 200, or until radial pulse disappears		
8	Open the valve, let the air slowly escape at approximately 4 mm per heartbeat		
9	Note the reading at which the first pulse beat is heard		
10	Continue letting the air escape, and note the reading at which the pulse beat disappears		
11	Allow all air to escape, with the mercury returning to "0"		
12	Remove the blood pressure cuff, and stethoscope. Clean stethoscope head		
13	Was blood pressure reading within 4 mm. of trainer's reading on both systolic and diastolic?		

Figure 1. Algorithm for treatment of hypertension



DBP, diastolic blood pressure; SBP, systolic blood pressure.

Drug abbreviations: ACEI, angiotensin converting enzyme inhibitor; ARB, angiotensin receptor blocker; BB, beta-blocker; CCB, calcium channel blocker.

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Guidelines for Selecting Drug Treatment of Hypertension

Class of Drug	Compelling Indications	Possible Indications	Compelling Contraindications	Possible Contraindications
Diuretics	Heart failure Elderly patients Systolic hypertension	Diabetes	Gout	Dyslipidaemia Sexually active males
Beta-Blockers	Angina After myocardial infarct Tachyarrhythmias	Heart failure Pregnancy Diabetes	Asthma and chronic obstructive pulmonary disease Heart block[a]	Dyslipidaemia Athletes and physically active patients Peripheral vascular disease
ACE Inhibitors	Heart failure Left ventricular dysfunction After myocardial infarct Diabetic nephropathy		Pregnancy Hyperkalaemia	Bilateral renal artery stenosis
Calcium Antagonists	Angina Elderly patients Systolic hypertension	Peripheral vascular disease	Heart block[b]	Congestive heart failure[c]
Alpha-Blockers	Prostatic hypertrophy	Glucose intolerance Dyslipidaemia		Orthostatic hypotension
Angiotensin II Antagonists	ACE Inhibitor cough	Heart failure	Pregnancy Bilateral renal artery stenosis Hyperkalaemia	

[a] Grade 2 or 3 atrioventricular block
[b] Grade 2 or 3 atrioventricular block with verapamil or diltiazem
[c] Verapamil or diltiazem

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HYPERTENSION

☐ Male ☐ Female

Name of Patient _____ Date of Birth _____ Date Diagnosis Hypertension _____

Standard/Date												
Blood Pressure												
Weight												
Cardiac Exam												
Pulmonary Exam												
Edema?												
Ophthalmoscopic Exam (nl/abnl)												
Med /dose												
Med /dose												
Med /dose												
Medication Side Effects?												
Ed √ Diet												
Exercise												
Med Use												
Smoking												
Referral to:												
Followup												

ECG Date_____ Creatinine_____ Date_____ Urea Nitrogen_____ Date_____

Headache

HEADACHE

LEARNING OBJECTIVES

- Understand the pathophysiology of the most common types of headache
- Accurately diagnose and differentiate between migraine, muscle contraction, and organic headaches, primarily by the patient history
- Effectively treat chronic headache syndromes with a preventive, long term perspective
- Recognize the psychosomatic elements of headache and when to refer
- Recognize the signs of more serious causes of headache

TEACHING STRATEGIES

- Focus on the diagnosis of headache by the history, rather than physical exam, laboratory or X-ray results
- Use the case studies to stimulate discussion of the diagnosis and treatment of different types of headache

MATERIALS AND EQUIPMENT NEEDED

- Overhead projector, transparencies, flip chats
- Case study

LEARNING POINTS

- Migraine headache
  - Common migraine
    - Throbbing, unilateral or generalized, moderately severe, present on awakening, sometimes accompanied by nausea and vomiting, lasts hours to days
  - Classic migraine
    - Throbbing, unilateral, usually preceded by an aura of visual or neurological signs, lasts few hours, may have specific triggers such as foods, lights
  - Cluster headache
    - Severe, unilateral, frequent repetition during period of time, accompanied by ptosis of one eye, unilateral nasal discharge, lasts few minutes to 30 minutes

- Pathophysiology of migraine
  - Thought to be caused by activation of 5HT2 (serotonin) receptors in the brain, with release of inflammatory substances. This inflammation causes both vasodilatation of blood vessels and irritation of nerve fibers
  - Classic migraine aura may be caused by localized, transient vasoconstriction of cerebral blood vessels

- Common triggers of migraine
  Caffeine, stress, hereditary component, drugs (alcohol, vasodilators, nitrates, oral contraceptives, estrogen, progesterone), depression
- Differential diagnosis (exclude by history and physical exam)
  Intracranial (subarachnoid) hemorrhage, intracranial mass or tumor, temporal arteritis in elderly, severe toxicity (drugs, carbon monoxide, lead poisoning), meningitis, prior head injury

- Treatment
  Acute migraine attack
    Pain relief
      Analgesics, anti-inflammatory med, narcotic medication
      Sumatriptan, orally or subcutaneous
    Suppression of nausea and vomiting
      Promethazine, Diphenhydramine, metoclopramide
    Prevention of overtreatment
  Treatment
    Muscle relaxation and massage, anti-inflammatory

- Muscle contraction headache
  Pathophysiology
    Tightness of neck and jaw muscles causes muscle fatigue, compression of small nerve bundles (such as occipital nerves)
  Symptoms of muscle contraction headache
    Occipital-frontal, squeezing pain, begins gradually and slow increase, often "band around head", accompanied by neck pain and tightness, occasionally with nausea and vomiting
  Differential diagnosis (exclude by history and physical exam)
    Sinusitis, intracranial mass or tumor, dental infection or abscess, prior head trauma, neck strain, occipital neuritis
  Psychosomatic elements of muscle contraction headache
    Depression, stress and anxiety
  Treatment
    Muscle relaxation and massage, anti-inflammatories

CLINICAL PROTOCOL

- See attached algorithm

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Headaches can be diagnosed mainly by history and focused physical exam; X-rays, lab, and CT scans only rarely needed
- Recurring headaches can be controlled and decreased, but usually not eliminated – patients must modify their expectations
- First preventive strategy is to eliminate caffeine from diet

- Headache log or diary can be helpful in pinpointing specific triggers or causes of recurring headaches
- Suppressive medications for migraine (propranolol, verapamil) must be taken continuously and daily to be effective; will sometimes diminish but not eliminate migraine headache.

Patient or family counseling issues:
- Keep headache log or diary
- Watch for elements of anxiety, anger, depression and recognize their role in recurring headaches
- Recognize that medication only suppresses headaches, but does not cure them

CRITICAL ELEMENTS FOR REFERRAL ("RED FLAGS")
- Sudden onset of the "worst headache of my life"
- Presence of fever, neck stiffness, or change in level of consciousness
- Headache that awakens patient at night
- Severe hypertension (greater than 200/120)
- Persistent neurological signs such as local weakness, decreased vision in one eye, change in speech or personality

CASE STUDIES
First patient – This is a 46 year old woman who is complaining of a severe headache, which she has had for 4 days. She has had many headaches in the past, often 4 or 5 per month. They usually begin on awakening in the morning, are described as "pounding", are felt throughout the entire head, and she can feel her heartbeat in her head. Occasionally she will become nauseated, and finds that bright light makes the headache worse. The headache today is no worse than her previous headaches, but she wants relief now.

Questions:
1. What type of headache is this?
2. What further questions would you ask, and what elements of the physical exam should be done?
3. What can you give her to help with the immediate pain?
4. What can you offer her to help with prevention of these headaches?

Second patient – This is a 52 year old man who has not had headaches previously, but is complaining of a headache most days for the past two weeks. The headache seems to be worse in the forehead and around the eyes, and is worse when he bends forward. He has had a respiratory infection for the past 3 weeks, and has noticed a thick, purulent nasal discharge for the past week. He has had some fever over the past two weeks.

Questions:
1. What type of headache is this?

2. What further questions would you ask, and what elements of the physical exam should be done?
3. What can you give him to help with this headache?

Third patient – This is a 32 year old woman who has had frequent headaches since she was an adolescent, often as often as 2 or 3 per week. She is accompanied in the interview by her mother-in-law, who treats the patient poorly. The headaches are described as beginning slowly, often in the late morning or afternoon, and as a pressure, squeezing of her head. She does not become nauseated with these, and they usually are improved by the next day. She also notices that her neck and shoulders are tight and painful when she has the headaches.

Questions:

1. What type of headache is this?
2. What further questions would you ask, and what elements of the physical exam should be done?
3. What can you give her to help with the immediate pain?
4. What can you offer her to help with prevention of these headaches?

CRITICAL POINTS FOR EVALUATION OF COMPETENCE

- Recognition of clinical differences between migraine and muscle contraction headache
- Understanding of treatment protocol and sequence for migraine
- Recognition of danger signs of serious cause of headache
- Understanding of psychosomatic elements of headaches

Differential Diagnosis of Headache

Symptom	Migraine	Muscle Contraction
Pain	Throbbing (pulsing), forehead or part of face, often unilateral, worse with light	Steady, squeezing, "band around head", entire head or occipital-frontal
Onset	Early morning, after certain foods (preserved, cheeses, sausage, wine), may be preceded by neurologic aura (classic migraine)	Later in day, gradual onset
Length	Few hours, occasionally last for days	Usually most of day, often many days
Nausea/Vomiting	Frequently	Rarely
Frequency	Often with menstruation, may be irregular	Often frequent – several times per week
Associations	Perfectionism, compulsiveness, women more frequent, positive family history	Stress and anxiety, depression, equally among men and women, muscle tightness of neck and shoulders
Acute Treatment	Sumatriptan (where available), anti-inflammatory, ergot sublingually at onset of aura (classic migraine) Promethazine, metoclopramide for nausea/vomiting Occasionally may need narcotics	Analgesics, anti-inflammatory, neck and shoulder massage, muscle stretching, relaxation exercises
Prevention	Propranolol, verapamil, anti-depressants (amitriptyline)	Muscle relaxation with stress, muscle stretching, anti-depresssant (amitriptyline)

Evaluation of Headache

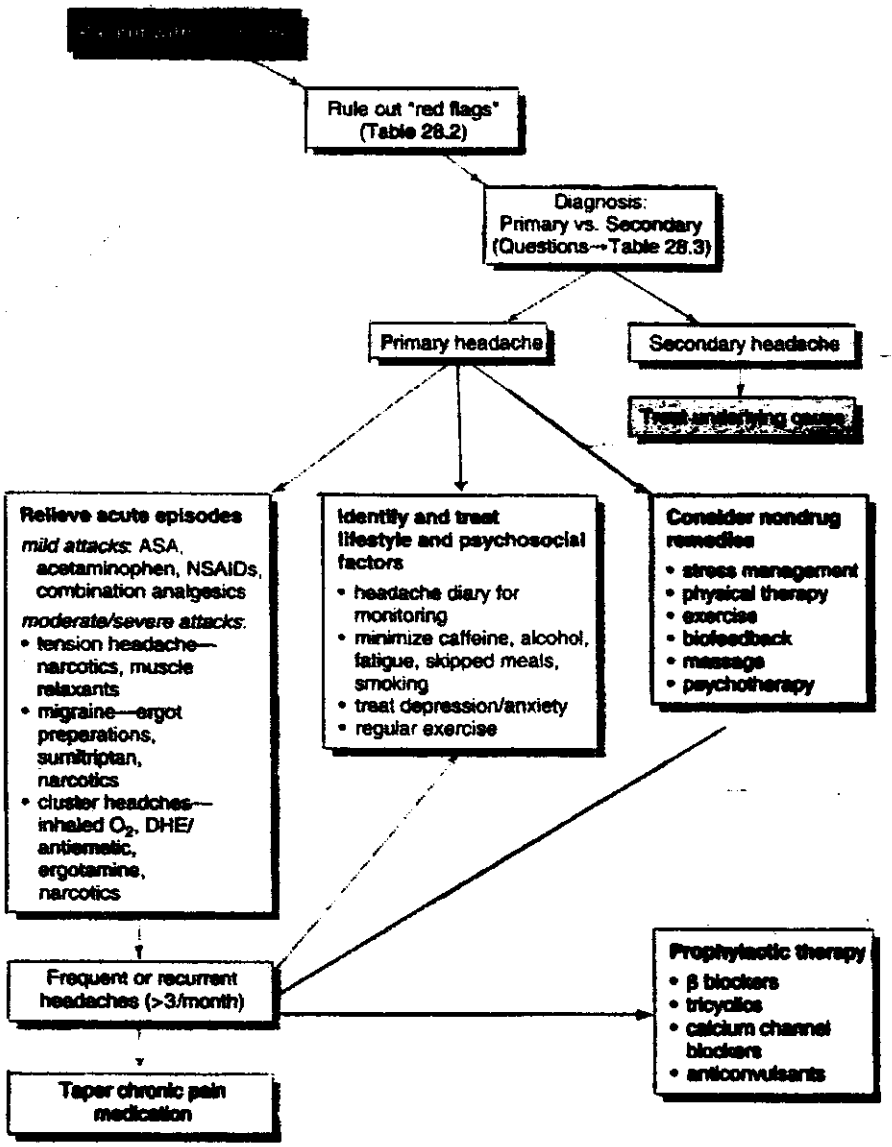


Figure 28.1. ***General approach to the patient with headache.***

(from "Essentials of Family Medicine" 3rd Edition, Sloane, Slatt, et al editors, Williams and Wilkins, 1998)

Chest Pain

CHEST PAIN

LEARNING OBJECTIVES

- Describe the most common causes of chest pain, and the characteristics of each
- Develop a systematic approach to the evaluation and emergency management of chest pain
- Be able to effectively manage and treat the non-life-threatening types of chest pain

TEACHING STRATEGIES

- To diagnose normal ECG and use case studies to stimulate discussion and thinking about the initial evaluation and management of chest pain
- Use lecture or informal presentation for didactic material. small group discussion for prevention, counseling, and patient education issues.

LEARNING POINTS

Common Causes of Chest Pain:

1. Coronary artery disease (Angina, Acute Myocardial Infarction)
2. Pulmonary embolism *(PE)*
3. Acute Aortic Dissection
4. Pleuropericarditis
5. Spontaneous Pneumothorax
6. Musculo-skeletal
7. Gastro-intestinal Tract
8. Psychosomatic Disorders

Clinical Presentation

1. Coronary Artery Disease (Angina, Acute Myocardial Infarction)

   Angina: Pain with angina pectoris is often retrosternal, radiates to the neck, jaw, epigastrium, shoulder, or arm

   a. aggravated by exertion or stress

   b. pain typically lasts less than 10 minutes and is relieved with rest or with nitro-glycerine

   Myocardial Infarction: Patients with (MI) typically complain of sudden onset of substernal pain which may radiate

a. Associated with dyspnea (shortness of breath), diaphoresis, nausea, vomiting, and anxiety.

b. Pain is unrelieved by nitro-glycerine and usually lasts 30 minutes or longer

2. Pulmonary embolism (PE)

Pulmonary embolus is another common cause of pleuritic pain and tachypneoa, tachycardia, shortness of breath and possibly hemoptysis

a. Rales and a pleural rub may be present

b. May progress to acute right failure and pulmonary hypertension

c. Typically associated with risk factors such as immobility and surgery or labor

3. Acute Aortic dissection

Dissecting Aortic Aneurysm: presents with excruciating, tearing, or knifelike pain which is sudden and maximally at onset and lasts for hours

a. Usually pain is located in the anterior chest but may be located in the abdomen and move as the dissection progresses; often radiates to thoracic area of back and lower limbs

b. Signs may include lowered blood pressure in one arm, absent pulses and paralyses

4. Pleuropericarditis

- Stitching or stabbing pain
- Increases wit respiration or movement

May be preceded by history of febrile illness

5. Spontaneous pneumothorax

Spontaneous pneumothorax can cause acute, unilateral, stabbing pain with dyspnea

a. Typically, there is decreased breath and voice sounds over the involved lung

b. Incidence is highest in young men or in older patients with chronic obstructive pulmonary disease

6. Musculo-skeletal

Chest pain due to musculoskeletal factors is variable and may last from few seconds to several days and may be sharp, dull or aching

- Pain is aggravated by movement and cough; the chest is tender on palpation

7. Gastro-intestinal tract

   a. cholecystitis: tender right hypochondria

   b. Gastro-esophageal reflux: relived by antacid

   c. Peptic ulcer disease: pain in epigastrium (frequently misdiagnosed with inferior cardiac ischaemia

8. Psychosomatic disorders

   a. Special type of personality

   b. Usually very prolonged history

   c. Other psychosomatic symptoms

Diagnosis/Evaluation:

History: (Length of history will depend on patient's clinical presentation; rapid history for any patient with a suspected emergency condition such as MI or dissecting aortic aneurysm and pulmonary embolism)

- Determine whether onset was sudden or gradual
- Ask patient to describe the pain: location, region of radiation (to shoulder, inner arm, forearm, neck, back, lower jaw or epigastrium), and duration: (Usually minutes, but if more than 15 minutes, assess for MI)
- Inquire about aggravating factors such as exercise, stress, food intake, movement, coughing, cold weather, smoking.
- Inquire about relieving factors such as use of nitro-glycerine, antacids, intake of food, rest
- Ask about associated symptoms such as dyspnea (shortness of breath), hemoptysis, fever, chills, sputum production, exanthema, diaphoresis (cold sweating), syncope, nausea
- Determine whether patient has a coexistent viral illness or if other members of the household have a viral disease
- Explore stress-related factors in the patient's school, work or home environments
- Ask about risk factors for ischemic heart disease such as smoking, hyperlipidemia, hypertension, sedentary lifestyle
- Explore past medical history
- Inquire about family history of chest pain and cardiovascular disease

Physical Examination:

- Observe general appearance of patient, assessing for level of distress and anxiety, obesity
- Measure vital signs. Take blood pressure in both arms (dissecting aortic aneurysm may present with discrepancy in readings between arms)
- Inspect skin for pallor, cyanosis, jaundice, or herpetic rash
- Examine eyes for jaundice and arcus senilis (circular cholesterol deposits on the cornea)
- Auscultate carotid pulse
- Palpate neck for lymphadenopathy and thyromegaly
- Perform a complete examination of the heart, noting extra heart sounds, murmurs, and clicks
- Examine chest wall for herpes lesions and signs of trauma
- Palpate chest wall noting tenderness and swelling
- Auscultate lungs for equal breath sounds, a pleural rub, and crackles and wheezes
- Auscultate abdomen for bowel sounds and bruits
- Palpate abdomen for tenderness and masses (particularly in the right upper quadrant and epigastrium), organomegaly, bounding pulses, and ascites
- Palpate for femoral pulses (with absent pulses suspect dissecting abdominal aneurysm)
- Assess lower extremities for diminished pulses, unilateral oedema, and other signs of phlebitis
- Patients who present with pain that changes with movement should have a musculoskeletal and neurological exam performed, focusing on focal tenderness, muscular weakness, and motor and sensory deficits

Diagnostic Tests

If MI is suspected, refer patient immediately for emergency care at the hospital. Do not wait to carry out any tests.

Diagnostic tests are based on the information collected in the history and physical examination; not every patient needs a routine chest x-ray and electrocardiogram (ECG). If Diagnostic Tests are not available at the facility refer patient for further investigation.

- Consider ordering an ECG in patients with suspected MI, angina pectoris, pericarditis (ECG may be completely normal in ischaemic cardiac conditions).

- Consider ordering a chest x-ray in the following cases
  a. Suspected chest trauma such as rib fractures
  b. Suspected pulmonary diseases such as pneumonia
  c. Suspected pneumothorax or pulmonary embolus

Plan/Management

1. If considering ischemic chest pain give:
   - NTG and oxygen, if not responding:
   - Narcotic (Morphine 10mg.) and transfer to hospital
2. If suspecting aortic dissection:
   - If blood pressure is elevated, reduce immediately
   - Narcotic for pain
   - Transfer to hospital
3. If suspecting pulmonary embolism:
   - oxygen
   - relief of pain (Not narcotic)
4. If pain is relieved by NTG tablets, advice the patient to go to a specialist
5. Other cause of chest pain will be treated accordingly

PREVENTION ISSUES AND PATIENT EDUCATION

- To avoid cardiac neurosis when no organic causes can be found for the pain, carefully explain to the patient or parents that a through history and physical exam revealed no abnormality
- Allow time for the patient to express concerns and questions
- For Angina

  Educate the patient about the symptoms of angina and when to recognize that he/she has coronary chest pain.

  1. During the attack/pain, patient should stop all activities
  2. Administer Nitro-glycerine 0.4 - 0.6 mg. sublingually
     - This should be taken as soon as the pain is felt (discomfort). Relief is usually within 1-2 minutes. If pain is not relieved, another tablet can be taken after 5 minutes up to a maximum of 3 tablet per one attack.

- The patient can be instructed to take a sublingual tablet before any effort that is known to cause the chest discomfort, e.g. climbing stairs meals etc.
- If the pain lasts longer and is not relieved, the patient should be quickly taken to a hospital for possible unstable angina or acute myocardial infarction.

CRITICAL ELEMENTS FOR REFERRAL

- Suspected myocardial infarction, pulmonary embolism, aortic dissection, pneumothorax, or pericarditis.
- Persistent chest pain that does not respond to usual treatment measures
- Chest pain of any type with severe hypertension or decreased blood pressure, persistent tachycardia, increased respirations or shortness of breath

CASE STUDIES

1. You are seeing an anxious 30 year old woman in your health center. She presents with a complaint of chest pain for a week. She describes the pain as a dull ache in her left chest without shortness of breath, diaphoresis or arm or jaw pain. It occurs at rest and is not worse with exercise. On physical exam, she is afebrile with a BP of 110/70. In general, she is thin and in no apparent distress. Her heart sounds are normal and her lungs on clear. On palpation, she does have some mild pain in at her sternoclavicular joint of her left chest.

   a. What is your differential diagnosis?

   b. Do you need to order an EKG?

   c. What treatment will you initiate for this patient?

2. A 50 year old woman presents with complaint of chest pain for several days. She describes it as a dull ache in her substernal area that comes and goes, sometimes causing diaphoresis and occassionally left arm pain. It is not worse with exertion. Her cardiac risk factors include hypertension, smoking and hyperlipidemia. On one occassion, her pain was so severe that she took her husband's sublingual nitroglycerin and felt better a few minutes later. She is convinced that she is having a heart attack, although she is without pain today. Her physical exam shows a mildly obese woman, with HR 87, BP 132/87, afebrile. Her cardiac exam is normal and her lungs are clear. You order an EKG which is unremarkable.

   a. Besides a cardiac etiology, what could be causing her symptoms?

   b. Do you need to do further testing to evaluate her chest pain?

3. A 30 year old woman presents to the health center for chest pain that started earlier today. She describes the pain as sharp and on her right side, worse with coughing or taking a deep breath. The pain started suddenly. She feels slightly short of breath. Upon asking further questions, she denies any previous medical problems, only takes OCPs and smokes a pack of cigarettes a day. She recently returned from a business trip to the United States. On physical exam, her temperature is 38.5 celsius, pulse is 110, respirations are 16 and BP is 150/100. You listen carefully to her lungs which have trace rales at the bases, however she is unable to take a deep breath secondary to the pain. Her heart sounds are normal except for tachycardia and she has no chest wall pain. You order an EKG and a chest X-Ray.

   a. What do you think is the cause of her pain?

   b. What other tests would you like to order?

   c. What is your next step in managing this patient?

4. You are at the end of a busy day in your health center. The father of one of your patients is sitting quietly in the waiting room, when he suddenly clutches his chest and slumps over. You rush to assess him and find him to be clammy and breathing slow shallow breaths.

   a. What should be the first step in managing this patient?

   b. What other steps should you take at the health center?

   c. What is your differential diagnosis?

Cerebro-Vascular

Accident - Stroke

CEREBROVASCULAR DISEASE AND STROKE

LEARNING OBJECTIVES

- Describe the risk factors and prevention of cerebrovascular diseases
- Evaluation of cerebrovascular diseases
- Understand the initial management of suspected TIA or stroke
- Review the rehabilitation

TEACHING STRATEGIES

- Use interactive lecture
- Small group discussion for prevention and counseling

MATERIALS AND EQUIPMENT NEEDED

- White board , markers for summarizing major points
- Overhead projector

LEARNING POINTS

- Epidemiology
  - 700,000 new strokes each year (out of adult population over 40 years of 110,800,000) (annual incidence of 0.6%) in U.S.
  - 3 million stroke survivors in U.S. (3% of adult population over 40)
- Pathophysiology of stroke
  - 70 – 80% are ischemic (decreased cerebral blood flow) – 20% are hemmorhagic (bleeding into the brain from ruptured vessel)
  - 65% of ischemic strokes are thrombotic (clot forms in place) and 35% embolic (clot from another part of circulation)
  - Common pathophysiology is lack of oxygen to nerve cells and death of nerve cells within minutes
- Transient Ischemic Attack (TIA)
  - Temporary decrease in blood flow and oxygen to brain – reversible symptoms
  - Often associated with small emboli of clot or platelets that rapidly disintegrate
  - Common symptoms – partial paralysis, difficulty with speaking or understanding, confusion or disorientation – ALL SYMPTOMS CLEAR COMPLETELY WITHIN 24 HOURS
  - TIA usually a warning sign of future stroke (8% risk of stroke per year)
- Risk factors for cerebrovascular disease
  - Hypertension
  - TIA
  - Heart disease, especially atrial fibrillation
  - Diabetes
  - Polycythemia
  - Increase in cholesterol
  - Cigarette smoking

- Clinical presentation of TIA or stroke depends on location of decreased blood flow and size of area affected
- Thrombotic stroke
  - Formation of obstruction (plaque) in carotid or cerebral arteries
  - Usually occurs in older people with existing atherosclerosis
  - Often intermittent symptoms which worsen over hours to weeks
  - Common findings – partial paralysis, difficulty with speaking or understanding, confusion and disorientation (same as with TIA, but do not resolve within 24 hours)
- Embolic stroke
  - Onset is usually very sudden
  - Neurologic symptoms may be mild or severe with sudden hemiparesis
  - Symptoms same as thrombotic stroke
- Hemmorhagic stroke
  - Caused by rupture of artery or vein in brain, sudden onset
  - Neurologic symptoms are similar to embolic stroke, however may be associated with:
    - Severe headache
    - Sudden unconsciousness
    - Nausea and vomiting
- Evaluation and Diagnosis
  - History
    - Onset of symptoms – gradual or sudden
    - Associated symptoms (headache, pain, vomiting, change in consciousness, seizure)
    - History of athersclerotic disease or other risk factors
    - Past history of neurologic symptoms
- Physical examination
  - Complete neurological and cardiac, and respiratory assessment
  - Carotid bruit – presence may be important sign of obstruction, but absence not significant
- Initial Management of suspected TIA or stroke
  - Patient with neurologic symptoms suggestive of stroke must be treated as a stroke, not observed for possible TIA – only time can distinguish between stroke and TIA
  - Maintain cardiovascular and respiratory function
  - Support blood pressure with IV saline if patient is hypotensive
  - Reduce blood pressure only if diastolic > 120 or systolic > 220
  - If patient diabetic, give glucose solution IV to avoid hypoglycemia
  - Give Paracetamol by mouth or rectum if patient has a fever
  - Refer as soon as possible to hospital for further evaluation and treatment
  - If patient with an ischemic (thrombotic or embolic) stroke can be evaluated in specialty hospital within 3 hours, use of t-PA (Tissue Plasminogen Activator) can dissolve clot and improve outcome. There is no value to use of t-PA more than 3 hours after onset of stroke.
- Rehabilitation of stroke victim
  - Goal - Return the patient to as much physical, emotional, psychological independence as possible
  - Anticipate some improvement over 1-2 years – little improvement after that

- May require evaluation of the home situation (caretaker of patient, steps, dangers)
- Arrangement for long term rehabilitation – best done in home setting by visiting nurse, occupational and physical therapist, etc.

- Prevention of Stroke
  - Treat hypertension aggressively in all people, regardless of age
  - Control diabetes
  - Stop smoking
  - Identify families with high cholesterol, and lower cholesterol with diet and medication
  - Identify and treat TIA with preventive medications as soon as possible
  - Identify atrial fibrillation and begin anti-coagulation as soon as possible
- Medications used for stroke prevention
  - Aspirin – 325 mg./day – reduces stroke in patients with TIA or risk factors by 25 - 40%
  - Ticlopidine, clopidogrel, dipyramidole – other platelet inhibitors
    - May be marginally more effective than aspirin, but much more expensive
    - Significant rate of potential side effects (leukopenia with ticlopidine)
  - In patients with persistant atrial fibrillation – anticoagulation with warfarin
    - Reduces risk of embolic stroke by 20%
    - Must balance increased risk of intracranial bleeding
  - Carotid endarterectomy – surgical removal of cholesterol plaques in carotid arteries
    - May be effective in patients with > 70% obstruction and history of TIA
    - Significant risk of stroke during surgery, mycardial infarction, etc.

HEALTH EDUCATION MESSAGES

- Stroke can be prevented in many cases with proper attention to:
  - Control of hypertension and diabetes
  - Stopping smoking
  - Control of diet and cholesterol
  - Regular exercise such as walking 2-3 km. daily
  - Taking aspirin 325 mg daily
- Go to the Health Center or Hospital immediately if you notice any of the following in yourself or a family member:
  - Sudden weakness of part of the body
  - Sudden difficulty speaking or understanding
  - Confusion or disorientation
  - Severe headache that you have never had before

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Risk factors for cerebrovascular disease
- Common symptoms and difference between TIA and stroke
- Important elements of history and assessment of suspected stroke
- Important elements of initial management of suspected stroke
- Methods of preventing stroke

Back Pain

BACK PAIN

LEARNING OBJECTIVES

- Describe that the risks factors of developing acute and chronic back pain
- Understand the natural history of uncomplicated low back pain
- Develop effective strategy for diagnosis of back pain, diagnose the urgent case, the serious case, and which need conservative treatment , and when to refer to physiotherapy
- Reduce unnecessarily imaging studies .
- Appropriate nonpharmacological & pharmacological management

TEACHING STRATEGIES

- Stress that the patient history and physical exam is the most important part of diagnostic evaluation
- Lecture discussion for the:
  a. Common causes of back pain, and
  b. How to differentiate between benign and malignant conditions
  c. Preventive care of back

MATERIALS AND EQUIPMENT NEEDED

- Anatomical model for the back, with anatomical structures.
- White board and flip chart and markers.
- Overhead projector and transparency

LEARNING POINTS

1. Determine the risk factor for back pain, including:

Medical	Environmental	Family and Individual
Pregnancy	Long hours of sitting	Depression
Metastatic cancer	Poor job satisfaction	Alcohol abuse
Lymphoma	Transient jobs	Obesity
Multiple myeloma	Truck/auto driving – long periods	Anxiety
Pelvic disease	Improper lifting	Poor aerobic condition
Infections (TB, abcess)		Poor posture

2. Clinical evaluation of the patient with backache

a. Important elements of the history
   - Onset, duration, severity of pain – history of trauma
   - Location and radiation of pain
   - Aggravating and relieving factors

- Associated symptoms (sensation, sphincter control, weight loss, sleep)
- Ability to work

b. Important elements of the physical examination
- Gait, posture, flexibility
- Palpation for tender points and muscle tone and spasm
- Range of movement of joints and spine
- Straight leg raising and confirmatory tests
- Neurologic exam (nerve root specific strength and sensation, DTR)

c. NOTE: X-rays of the spine are not necessary as part of initial evaluation when no neurologic signs are present. May consider referral for X-rays or computerized tomography when conservative treatment fails to resolve pain, or if neurologic signs are present.

3. Musculo-skeletal strain

a. Common elements of history and examination
- Most common cause of acute back pain – 70 – 80% of all cases
- Onset may be gradual or acute, often within 24 hours of a known strain from fall or lifting
- Pain is diffuse across the low back, may radiate into hips or buttocks
- No numbness, weakness, or change in reflexes of lower extremities

b. Pathophysiology of musculo-skeletal strain
- Tearing and injury to paraspinal muscles, ligament attachments over pelvis, or to ligaments of facet joints of lumbar spine
- Reinjury is common, because of insufficient healing before muscles or ligaments strained again

c. Natural history of back pain secondary to strain:
- 90% recover within 6 wks, with or without therapy
- 75% of acute low back pain return to work within 1 month
- 2-3% last more than 6 months
- 1% last more than one year.

4. Lumbar disc disease

a. Common elements of history and examination
- Onset often more acute, related to strain or forward flexion
- Pain markedly worse with cough or strain
- Pain often radiates into posterior thigh of one leg (sciatic radiation), and is worse with stretching of sciatic nerve (straight leg raising sign)
- May be accompanied by numbness, weakness, and loss of reflex of one leg

b. Pathophysiology of disc disease
- Herniation of lumbar disc with compression of one or more lumbar nerve roots
- Usually occurs at L4-5 or L5-S1 level

c. Natural history of disc disease
- Most cases of acute disc herniation resolve with time with conservative treatment

- Only about 10% of all cases fail to resolve, and may require more aggressive management, such as surgery or corticosteroid injection into epidural space

5. **Psycho-somatic issues in back pain**
   a. Risk factors for disability
      - Back pain sustained in an accident in which the other person is perceived to be at fault
      - Back pain in which compensation is pending
   b. Role of psychological factors in low back pain
      - Chronic anger, fear
      - Chronic life stresses
      - Work-related back injury

6. **Differential diagnosis of back pain**
   a. Mechanical causes – herniated disc, spondylolysis, spinal stenosis (elderly)
   b. Neoplasm – primary or metastatic cancer, multiple myeloma
   c. Infectious etiology – infection of disc space (especially in children)
   d. Spondylo-arthropathies – ankylosing spondylitis
   e. Metabolic causes – osteoporosis with vertebral fracture
   f. Extrinsic disease – pelvic inflammatory disease, urinary tract infection
   g. Psychological – suppressed anger or resentment

7. **Conservative management of low back pain, without significant risk factors**
   a. Brief, initial bed rest for 2 –3 days only – only until acute pain improving
   b. Ice pack initially, followed by local heat and gentle massage
   c. Analgesia, anti-inflammatory medication
   d. Mobilization and stretching exercises
   e. Muscle strengthening of abdomen and back
   f. Appropriate use of corset or external support
   g. Management of associated emotional and psychological factors

PROTOCOL FOR BACK PAIN

Non-urgent – Manage with trial of conservative management:
- Mild to moderate pain of recent onset (< 6 weeks, acute)
- Improved with lying down, worse in upright position or stooping
- Absence of:
  a. Bowel of bladder sphincter disorder
  b. Fever
  c. Recent weight loss

Note: Initial presentation of low back pain with sciatic radiation or mild nerve root compression signs can be often treated safely with conservative management and close follow up for improvement

Urgent – evaluate within 24 hrs. and consider referral to specialist:
- Fever 38°C. or greater

- Unrelenting night pain
- Pain with significant distal numbness or weakness of the leg(s)
- Loss of bowel or bladder control
- Progressive leg weakness or loss of sensation
- Anxious patients

CASE STUDIES

1. A 36 year old man noticed immediate pain in the low back on lifting a heavy box out of a truck 2 days ago. He has significant pain with standing or walking, and the pain radiates from the back into the right posterior thigh and calf muscle. It is much worse with coughing or straining. He walks very slowly bent over at the waist. He is urinating and stooling normally, and he does not notice leg weakness.
    a. What is the most likely cause of this pain?
    b. What specific steps in examination can confirm this diagnosis?
    c. Is this an urgent or non-urgent situation?
    d. What should be your recommendations to this patient?

2. A 62 year old woman is complaining of pain in the mid back for the past several weeks. The pain is dull, sometimes worse with long walks, does not radiate to the legs, and sometimes awakens the patient at night. She is somewhat short of breath, and has noticed decreased appetite and some fullness of her abdomen.
    a. What is the most likely cause of this pain?
    b. What specific steps in examination can confirm this diagnosis?
    c. Is this an urgent or non-urgent situation?
    d. What should be your recommendations to this patient?

3. A 42 year old man noticed some low back pain on getting out of bed this morning, and presents to the Health Center asking for a release from work for today and tomorrow. He was unloading a truck of heavy boxes yesterday; he did not notice any significant pain while working. Today, the pain is in the middle of the low back, radiates slightly into both upper legs, and is not worse with a cough. There is no weakness or numbness noticed in the legs.
    a. What is the most likely cause of this pain?
    b. What specific steps in examination can confirm this diagnosis?
    c. Is this an urgent or non-urgent situation?
    d. What should be your recommendations to this patient?

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Concentrate on preventing back trauma and consequent disability
- Pt education, pre-employment physical examination
- if there is a relation of job related back pain
- Measuring strength, and prescribing general fitness exercise job design modification, cessation of smoking
- Correction of obesity
- Aerobic fitness

CRITICAL ELEMENTS FOR REFERRAL

- Suspicion of malignant or infectious cause
- History of significant trauma
- Chronic low back pain more than three months duration
- Presence of any of the following:
  - cauda equina syndrome (loss of bowel, bladder sphincter control)
  - Progressive or significant neuromotor deficit, foot drop or functional muscle weakness such as hip flexion weakness of quadriceps weakness
  - Persistent neuromotor deficit more than 4-6 wks of conservative Rx
  - Presence of bulging disc and severe pain with persistent neurological deficit
  - Failure of response to conservative management (4-6 wks)

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Proper diagnosis and classification of low back pain – urgent and non-urgent case?
- Appropriate non-pharmacological management?
- Role of medications like NSAID, muscle relaxing?
- Appropriate patient education regarding back pain?
- Management plan and life style modification.

Depression

DEPRESSION

LEARNING OBJECTIVES

- Diagnose depression accurately, especially when presented in a hidden form
- Treat depression effectively with counseling and medication as needed
- Understand collaborate treatment of depression between primary care provider team and psychiatrist
- Understand predisposing factors of depression

TEACHING STRATEGIES

- Presentation of didactic material, including DSM criteria
- Lecture discussion

MATERIALS AND EQUIPMENT NEEDED

- Flip charts, white board markers
- Overhead projector and transparency

LEARNING POINTS

- Diagnosis of depression
  - DSM criteria
    - Loss of interest in life
    - Lack of energy
    - Sleep and appetite changes
    - Weight changes (increased or decreased)
    - Feelings of loss of hope
    - Unable to make decisions, even small ones
    - Preoccupation with death and suicide
  - Difference between bipolar and unipolar mood disorder
    - Bipolar – alternating between hyperactivity (mania) and depression
    - Unipolar – persistently depressed
    - Treating bipolar disorder as pure depression may aggravate the mania, and lead to serious consequences
  - Difference between dysthymia and depression
    - Dysthymia – low grade depressive mood that has persisted for over 2 years; not very responsive to treatment
    - Depression – acute depressive mood for at least 2 weeks; very responsive to treatment
    - Implications for management
  - Risk Factors for depression
    - Abdominal malignancies
    - Long term chronic illness
    - Chronic family or situational stress
    - Family history of depression

        - History of childhood sexual abuse
        - Alcoholism in patient or a parent
        - Significant recent losses of close friends or family, especially in the elderly
    - Screening for suicide or homicide potential
        - Suicide several times more likely in depressed patient
        - Patient usually gives indications of suicide intent prior to actual suicide
        - Discussion of thoughts of suicide will not "give patient the idea" – they have already thought of it
        - Ask about specifics of suicide intent – method of choice, when, where
    - Management of suicide potential
        - Refer patient to psychiatrist or mental hospital when possible
        - Alert family members to suicide possibility
        - Take away possible means of suicide (guns, medications, knife, etc.)

- Management and treatment of depression
    - Counseling and cognitive/insight therapy
        - clinical psychologist can be of great help
        - encourage patient to talk with family members and medical staff
    - Assure and help patient to develop support network among family and friends
    - Medications, including effects, common side effects, contraindications, dosing strategies
        - Imipramine and Amitryptiline
          - Common side effects: dry mouth, drowsiness during the day, constipation, weight gain (usually about 2-3 kg.), postural lightheadedness (especially in the elderly), blurred vision
          - Beneficial effects: very effective in acute depression, must be given for at least 3-4 weeks to see beneficial effect, patient must be counseled to continue medication in spite of minor side effects
          - Dosage of medication (imipramine or amitryptiline) – begin with low dose at bedtime (10 mg in elderly, 25 mg. in younger adult), and slowly increase by 25 mg/day every 4-6 days. Maximum dose – 150 – 175 mg./day
        - Fluoxetine, Sertraline and other SSRI – preferred medications when available
          - Common side effects – very few of the side effects of imipramine, occasional nausea, mild tremor or anxiety
          - Beneficial effects: positive effect noticed within 4-6 days, can be slightly activating, so best to be given in the morning to help with lethargy
          - Dosage of Fluoxetine – begin with 5 – 10 mg every morning, increase as needed slowly to maximum of 40 mg. per day
    - Avoidance of use of minor tranquilizers (diazepam, etc.)
        - These often aggravate depression
    - Caution regarding exclusion of bipolar disorder before initiating therapy
    - Use of Electro-Convulsive Therapy (ECP) and indications for referral
        - Used in severe depression in patients who cannot tolerate the medications, or when medications are not effective

- Combination therapy with mood stabilizers (lithium, valproate, etc.)
  - Used in patients in whom a bipolar phase is suspected
  - May increase benefits of anti-depressant
- Follow up of depression
  - Frequent initial visits
  - Listen empathetically more than speak
  - Explore support network of patient, suggest alternatives when necessary
  - Advise of long delay in beneficial medication effect
  - Manage common medication side effects
    - Dryness of mouth – sucking on lemon peel or drops
    - Daytime drowsiness – take medication at bedtime, temporarily lower dose
    - Constipation – daily fiber in diet
    - Slowed thinking – patience; this will improve with time and improvement of the depression

CASE STUDIES

1. A 35 year old woman has come every 10 days to the Health Center with a variety of problems. Most recently she has been complaining of headaches every day, constipation, mild irregular abdominal pains, and loss of appetite. She also complains of numbness in all her fingers and toes. She wants sleeping pills because she has been awakening 2 hours before the call to prayer every day. She is always tired and does not want to do anything around the house. Her sister is helping her to care for her 5 children.
   a. Is this woman depressed? What signs and symptoms point to or away from a diagnosis of depression?
   b. What can you do to help this woman?

2. A 42 year old man comes to the Health Center asking for some medicine for his headaches. They are in his forehead, are squeezing in nature, and improve with acetaminophen. His mother had been very sick for the past 6 months with breast cancer, and just died 2 weeks ago. He thinks of her a lot, but is sleeping without difficulty. His appetite for food and his weight is unchanged. He is still working every day, although he does not enjoy his work.
   a. Is this man depressed? What signs and symptoms point to or away from a diagnosis of depression?
   b. What can you do to help this patient?

3. A 45 year old woman comes to the Health Center for a followup appointment of her depression. She had been examined by you several times in the past month for frequent crying, loss of appetite, difficulty sleeping, and staying in bed most of the day for the past month. You had diagnosed depression in her, and had started her on amitryptiline (Elavil®) 50 mg at bedtime one week ago.
   Today, she tells you that she is sleeping better at night, and that she is not crying as much any more. Because she is sleeping better, she is able to get out of bed for at least 2 –3 hours each day, which is better than a week ago. However, she wants to

stop the medicine because she has a very dry mouth, and she is sometimes dizzy when she stands up suddenly.

a. What should you do with the medication? Should the patient stop the medicine or not?
b. What can you counsel the patient at this time?

PREVENTIVE AND HEALTH EDUCATION MESSAGES

- Avoidance or management of chronic stress
- Management of chronic family and marriage stresses
- Need for empathetic support among family and friends (support network)
- Appropriate expectations of anti-depressant therapy and counseling
- Depression not a weakness or shame – is a medical illness with emotional manifestations and multiple causes

CRITICAL POINTS FOR REFERRAL TO SPECIALIST

- When initial diagnosis of depression obscure or in doubt
- Presence of mania or suspicion of bipolar illness
- Potential for suicide or homicide, especially in early phase of treatment for severe depression
- Failure to improve after 4-8 weeks of initial anti-depressant therapy
- Severe depression with significant withdrawal, refusal to eat, refusal to leave bed, etc.

Diabetes

DIABETES MELLITUS

LEARNING OBJECTIVES

- Describe the pathophysiology and risks of diabetes and the value of blood glucose control.
- Appropriate screening and correct diagnosis of diabetes
- Develop an effective treatment plan for diabetes
- Communicate to the patient and family necessary steps and messages in the understanding, prevention and control of diabetes
- Prevention and management of complication
- Knowledge of need of referral

TEACHING STRATEGIES:

- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling, and patient education issues.
- Role play patient education issues
- Case study

MATERIALS AND EQUIPMENT NEEDED:

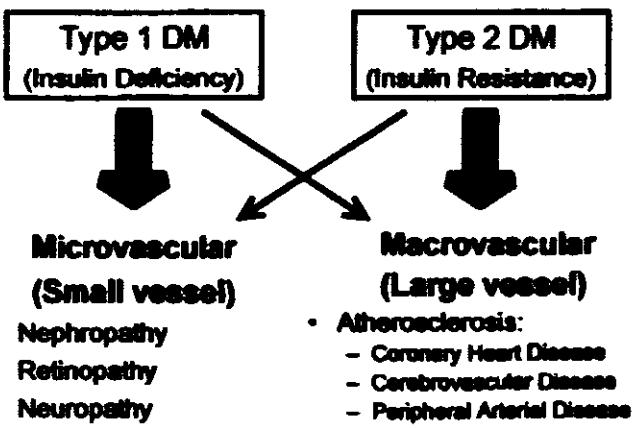
- Overhead projector and transparency
- White board or flip chart and markers for summarizing major points

LEARNING POINTS:

Diagnosis of Diabetes:

- Fasting plasma glucose > 126 mg/dl
- 2 hr. postprandial plasma glucose > 200 mg/dl
- Any random plasma glucose > 200 mg/dl, together with polyuria, polydipsia, weight loss, visual blurring
- Must confirm diagnosis with two abnormal plasma glucose results on separate days

Differentiation of Complications



- Cardiovascular Disease (i.e., macrovascular complications) is the cause of death in 75-80% of patients with Type 2 DM

Diabetes Control Complications Trial (DCCT) ***(N Engl J Med 1993)***

- Intensive insulin therapy in Type 1 DM resulted in DECREASED microvascular complications (neuropathy, nephropathy, retinopathy)

United Kingdom Prospective Diabetes Study (UKPDS 38) ***(Br Med J. 1998)***

- Aggressive Glycemic Control in Type 2 DM had NO STATISTICALLY SIGNIFICANT effect independently on MACROVASCULAR complications (myocardial infarction, stroke, peripheral vascular disease)
- "Strict Blood Pressure Control" (< 150/90 mmHg) resulted in:
  - 21% ↓ in myocardial infarction (p=0.13)
  - 32% ↓ in diabetes-related deaths (p=0.02)
  - 44% ↓ in strokes (p=0.01)
  - 37% ↓ in microvascular end-points (p=0.01)

Clinical evaluation of diabetes:

History

- Symptoms of diabetes (urination, thirst, weight loss, vision change)
- Current medications
- Past medical history
- Family history (focus on diabetes, heart and vascular problems, kidney failure)
- Evidence of current diabetic complications (vision loss, edema, vascular problems in feet, foot ulcers, paresthesias)
- Other risk factors (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

Physical Examination

- Height and weight (calculate BMI)
- Blood pressure
- Ophthalmoscopic exam (visual acuity, fundoscopic exam – refer to ophthalmologist for complete exam)
- Mouth and dental condition
- Thyroid abnormalities
- Cardiac exam
- Abdominal exam
- Peripheral pulses and distal capillary circulation
- Skin condition and edema, especially legs
- Neurological exam (especially distal tendon reflexes, foot pin, vibration, position, temperature sensation)
- Condition of feet and toes

Initial Laboratory Evaluation

- Fasting plasma glucose
- Hemoglobin A1C
- Fasting cholesterol, LDL, HDL, Triglycerides
- Creatinine
- Urine albumin, ketones, and glucose (dipstick)

- Single urine specimen for quantitative albumin – may calculate Albumin/Creatinine ratio (or 24 hr. urine for albumin and creatinine clearance)
- ECG in adults

Referral
Consider initial referral to the following if significant disease is found:
- Ophthalmology – if retinal disease is seen or suspected
- Nephrology – if initial serum creatinine is >1.5
- Neurolgy – if peripheral neuropathy is noted
- Emergency Dept. – if severe hyperglycemia is noted (>400)

Additional risk factors that increase the morbidity and mortality of diabetes:
- Hypertension
- Smoking
- Hyperlipidemia
- Age: Prevalence and risks increases with age
- Obesity and age >40 years
- Hx of gestational diabetes or delivery of large babies > 4kg
- Alcohol or drug abuse

Management of chronic diabetes, Type II
Review correct measurement of blood glucose:
- Timing of measurement
  - Ideal measurement – after fasting for 8-10 hours
  - 2 – 4 hours postprandial may give some information on effectiveness of antiglycemic medication
- Encourage patients to consider purchasing their own glucometer and strips for self-monitoring. Teach patients correct use of machine and recording of results. Advantages include:
    - Greater awareness of relationship between activity, exercise, diet, and medication
    - Greater collaboration in management of disease
    - Improved communication with health care providers

Initial management of chronic diabetes Type II
- Goals of management
  - Maintain fasting plasma glucose of 90-130 mg/dl.
  - Blood pressure < 130/80
  - LDL cholesterol < 100 mg/dl.
- Initial trial of diet
  - Calorie restricted to 1600 – 1800 calories; 50-60% starchy carbohydrates, 20% fats, 20% protein
  - Add daily fiber in form of beans, oats or other whole grains, or fiber product such as psyllium seed (Metamucil) – 8-10 gms/day
  - Main goal of diet is gradual weight loss in obese patients to increase insulin sensitivity and increased fiber to stabilize glucose absorption
- Regular exercise program – daily for 30 minutes continuously
- Monitor and treat blood pressure if > 130/80
- Monitor and treat LDL cholesterol if > 100 mg/dl.

- Evaluate emotional adjustment to diagnosis and management goals; counsel as needed
- If diet, exercise, and weight loss does not achieve goal glucose levels with 2-4 months, begin medication:
  - *Step 1:* glibenclamide – begin at 2.5 mg/day, increase as needed to 20 mg/day
  - If no response to above:
    Step 2: Add metformin – begin at 500 mg/day, increase as needed to 2500 mg/day in two divided doses
  - If no response to above:
    Step 3: Begin insulin therapy, usually by discontinuing oral medications – consider referral for initiation of insulin therapy

- IF patient significantly obese (BMI > 30):
  - *Step 1:* May BEGIN with metformin 500 mg/day, increase as needed to 2500 mg/day in two divided doses
  - If no reponse to this:
    Step 2: Add glibenclamide - begin at 2.5 mg/day, increase as needed to 20 mg/day

Maintenance management of chronic diabetes type II

- Follow flow sheet protocol for visits, usually monthly until well stabilized
- Goals of diabetes management – NOTE that goals for chronic diabetes may be somewhat different for good control, not ideal goals which are normal for a non-diabetic)

Intervention	Ideal (normal)	Acceptable
Fasting blood sugar	<125	< 140
HbA1C	<6	< 7
Blood pressure	<130/80	<140/90
Serum total cholesterol	<200	< 240
LDL cholesterol	<100	<130
Stop smoking	No smoking	No smoking
Decrease weight	BMI <25	BMI < 30
Daily Exercise	Daily 30-60 min.	Daily 30 min.

- Monthly:
  - Blood pressure
  - Weight
  - Fasting glucose
  - Urine albumin
  - Foot exam for lacerations, superficial infections, ulcerations, etc.
  - Neurologic exam (especially lower extremities – temperature, vibration, or position sensation, pin prick sensation)
  - Medication dose review
  - Patient education – may rotate topics discussed
  - Monitor for stress, anxiety, and depression

- Every 3 months
  - Hemoglobin A1C
  - Quantitative albumin/creatinine ratio (request single urine specimen for quantitative albumin, and request serum creatinine)
    - Albumin/creatinine ratio calculated by dividing urine albumin (in mg/l by serum creatinine (in mg/100 ml.) Result is an empiric ratio that correlates with presence or absence of early nephropathy (normal <30, suspected nephropathy >30)
    - Refer to specialist if Alb/Creat ratio >30 for followup. May consider starting daily dose of captopril or enalapril to preserve renal function, even if blood pressure normal or mildly elevated
- Every year (especially after 10 years duration of diabetes or age >40)
  - Refer to ophthalmologist for fundoscopic evaluation
  - Monitor serum cholesterol, HDL, LDL, Creatinine
  - ECG in adults > 40 years

Management of special diabetic populations:

- Hypertension
  - Control BP with lifestyle changes and medications as needed
  - Goal <130/80 (new guidelines)
- Elderly
  - Show increased sensitivity to anti-diabetic medication; reduce initial dosage by 50%
- Renal disease
  - Follow serum creatinine and Alb/Creat ratio regularly; consider adding an ACE inhibitor in consultation with nephrologist
- Pregnancy
  - Refer to Ob/Gyn for management during pregnancy
- Coexisting heart or vascular disease
  - Refer to cardiologist for co-management

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES:

- Screening for diabetes
  - Consider screening all adults over 40 years of age with fasting blood sugar every 2-3 years
  - Begin screening at earlier age with a positive family history, obesity, or symptoms of diabetes
  - Involve the community in diabetes awareness and screening
- Nutrition – Encourage low saturated fat, high fiber diet
- Smoking cessation
- Obesity – encourage weight loss to keep BMI < 30

Patient and Family Counseling:

- Permanent, life-long treatment
- Control of blood sugar to delay appearance of microvascular complications:
  - Kidney disease and failure
  - Eye disease and blindness
  - Neurologic disease with impotence, foot ulcers, and digestive problems

- Control of blood pressure and cholesterol to delay macrovascular complications:
  - Increased atherosclerosis, coronary artery disease and strokes
  - Foot ulcers and infection
  - Skin changes of the lower extremity
- Foot care – See Appendix 1
- Management of hypoglycemic attacks
- Counseling in family planning if appropriate
- Injection techniques (when insulin used) and rotation of sites
- Lifestyle modification:
  - Smoking cessation
  - Diet control
  - Weight loss
  - Physical activity
  - Social and psychological factors

CRITICAL ELEMENTS FOR REFERRAL:

- For persistent fasting hyperglycemia
- Pregnancy and diabetes (either gestional or pre-existing diabetes)
- Diabetic ketoacodosis.
- Serious acute illness in addition to diabetes
- When switching from oral hypoglycmic to insulin
- Problems such as:
  - Chest pain
  - Mental confusion
  - Painful neuropathy
  - New onset of painful neuropathy

CASE STUDY:

Name of Patient: Ali
Sex: Male
Date of Birth: [redacted]
Date of Visit: 24th May 1999
Vital Signs: Pulse: 84
Resp.: 16
Blood Pressure: 130/85
Weight: 102 kg.
Blood glucose: 320 mg./dl. (Random)

Medical History:
Last week the patient felt sore throat and feverish. It is moderately improved at this visit, but still somewhat paintful. This same pain has occurred several times in the past, and usually resolved spontaneously within a few weeks.

Upon questioning, the patient admits being previously told that he has high blood sugar, and has taken medicine for this for up to two months in the past. When asked why he stopped the medicine, he said that it was because he felt better. He has not noticed any chest pain, shortness of breath, frequent urination, unusual thirst, weight loss, general weakness, swelling of the ankles, or change in appetite. He does have several brothers who have been diagnosed as being diabetic.

Physical Examination:
The throat is pink and congested, the neck shows no adenopathy and carotid pulsations are equal bilaterally. The chest is clear to auscultation, and the heart has no murmers. There is no peripheral edema.

Topics of discussion regarding case study:

1.- What are the major medical problems identified in this patient?
2.- What important additional elements of the history should be asked?
3.- What additional elements of the physical exam should be done?
4.- What is an appropriate plan of management of this patient at this point?
5.- What counseling issues would be most appropriate for this patient at this point?

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION:

- Correct measurement and recording of blood glucose
- Proper diagnosis and classification of type of diabetes
- Appropriate non-pharmacologic and pharmacologic management of diabetes, diet, physical activity
- Consideration of additive risks in treatment of diabetes
- Appropriate patient education regarding diabetes management plan, and life-style modifications
- Knowledge of need for referral

APPENDIX 1
Patient Education on Foot Care

- Shoes: Low heeled, made of soft leather, neither tight nor loose, wide toes to avoid pressure, the arch of shoe filling properly with the arch of the foot. Proper arch inserts should be used. Advise patient to look carefully to the inside of shoes before wearing
- New Shoes: Should be neither tight nor loose. Should be worn only for 2 hours on the first day, then increase daily use by one hour until shoes become comfortable
- Stockings and socks: Better made of cotton, thick, and warm with loose garters
- Bare foot walking: Absolutely prohibited whether indoor or outdoors
- Management of dry skin and cracks:
  1 - Dry skin without cracks: Soak feet daily in warm tap water for 10 – 15 minutes, dry gently, and rub with mineral oil or thick moisturizing cream to keep moisture.

  2 - Dry skin with cracks: Rub callus at edges of cracks with file or rough stone. Then soak feet in mild soap water for 10 – 15 minutes. Cover cracks with antiseptic such as neomycin ointment – and rub feet with mineral oil.
- Management of corns and calluses: To remove excess corns or calluses ask patient to soak feet in warm tap water with mild soap for 10 minutes, then rub excess tissues by a file. If not effective consult podiatrist
- Nail care:
- Clean around nails with a wood stick. If nails are long, file them. Filing should be straight and not shorter than the underlying soft tissues of the toes.
- Soak brittle nails for 30 minutes each night in warm tap water
- Care of abrasions and minor trauma and infection
- Patient should consult his physician, even in case of minor injuries. If a physician is not easily accessible at all times, patients should consult with a physician in case of redness, blistering or swelling
- Cover area with sterile gauze fitted by non adhesive plaster. Advise patient not to use limb excessively and to elevate foot while sitting.
- Avoid irritant antiseptics
- Treat infections aggressively

DIABETES MELLITUS

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

Standard/Date												
Blood Pressure												
Weight/BMI												
Glucose (Fast/Random)												
Urine Albumin (dipstick)												
Foot Exam												
Neurologic Exam (foot vib or position)												
Med/dose												
Med/dose												
Med/dose												
Ed √ Use of Meds												
Ed √ Danger Signs												
Ed √ Foot Care												
Ed √ Diet												
HBA_1C												
Alb/Creat Ratio												
Ophthalmoscopic Exam (nl/abnl)												
Cholesterol, HDL, LDL, Creatinine	Cholesterol: Date:	HDL: Date:	LDL Date:	Creatinine Date:								
ECG Results	Date:	Results:										
Referral to:												
Next Followup												

BEST AVAILABLE

BMI Table

BMI Chart

Height cm	Weight kg. 35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110	115	120	125	130	135	140	145	150
140	18	20	23	26	28	31	33	36	38	41	43	46	48	51	54	56	59	61	64	66	69	71	74	77
142	17	20	22	25	27	30	32	35	37	40	42	45	47	50	52	55	57	60	62	64	67	69	72	74
144	17	19	22	24	27	29	31	34	36	39	41	43	46	48	51	53	55	58	60	63	65	68	70	72
146	16	19	21	23	26	28	30	33	35	38	40	42	45	47	49	52	54	56	59	61	63	66	68	70
148	16	18	21	23	25	27	30	32	34	37	39	41	43	46	48	50	53	55	57	59	62	64	66	68
150	16	18	20	22	24	27	29	31	33	36	38	40	42	44	47	49	51	53	56	58	60	62	64	67
152	15	17	19	22	24	26	28	30	32	35	37	39	41	43	45	48	50	52	54	56	58	61	63	65
154	15	17	19	21	23	25	27	30	32	34	36	38	40	42	44	46	48	51	53	55	57	59	61	63
156	14	16	18	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	58	60	62
158	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60
160	14	16	18	20	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59
162	13	15	17	19	21	23	25	27	29	30	32	34	36	38	40	42	44	46	48	50	51	53	55	57
164	13	15	17	19	20	22	24	26	28	30	32	33	35	37	39	41	43	45	46	48	50	52	54	56
166	13	15	16	18	20	22	24	25	27	29	31	33	34	36	38	40	42	44	45	47	49	51	53	54
168	12	14	16	18	19	21	23	25	27	28	30	32	34	35	37	39	41	43	44	46	48	50	51	53
170	12	14	16	17	19	21	22	24	26	28	29	31	33	35	36	38	40	42	43	45	47	48	50	52
172	12	14	15	17	19	20	22	24	25	27	29	30	32	34	35	37	39	41	42	44	46	47	49	51
174	12	13	15	17	18	20	21	23	25	26	28	30	31	33	35	36	38	40	41	43	45	46	48	50
176	11	13	15	16	18	19	21	23	24	26	27	29	31	32	34	36	37	39	40	42	44	45	47	48
178	11	13	14	16	17	19	21	22	24	25	27	28	30	32	33	35	36	38	39	41	43	44	46	47
180	11	12	14	15	17	19	20	22	23	25	26	28	29	31	32	34	35	37	39	40	42	43	45	46
182	11	12	14	15	17	18	20	21	23	24	26	27	29	30	32	33	35	36	38	39	41	42	44	45
184	10	12	13	15	16	18	19	21	22	24	25	27	28	30	31	32	34	35	37	38	40	41	43	44
186	10	12	13	14	16	17	19	20	22	23	25	26	27	29	30	32	33	35	36	38	39	40	42	43
188	10	11	13	14	16	17	18	20	21	23	24	25	27	28	30	31	33	34	35	37	38	40	41	42
190	10	11	12	14	15	17	18	19	21	22	24	25	26	28	29	30	32	33	35	36	37	39	40	42
192	9	11	12	14	15	16	18	19	20	22	23	24	26	27	28	30	31	33	34	35	37	38	39	41
194	9	11	12	13	15	16	17	19	20	21	23	24	25	27	28	29	31	32	33	35	36	37	39	40
196	9	10	12	13	14	16	17	18	20	21	22	23	25	26	27	29	30	31	33	34	35	36	38	39
198	9	10	11	13	14	15	17	18	19	20	22	23	24	26	27	28	29	31	32	33	34	36	37	38
200	9	10	11	13	14	5	16	18	19	20	21	23	24	2[illegible]	26	28	29	30	31	33	34	35	36	38

BEST AVAILABLE

Dyspepsia – Peptic Ulcer

DYSPEPSIA

LEARNING OBJECTIVES

- To describe the varieties of epigastric distress and its diagnosis
- To develop a systemic approach to the evaluation and management of dyspepsia

TEACHING STRATEGIES

- Use case studies or personal experiences to stimulate discussion and thinking about the initial evaluation and management of abdominal pain
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling and patient education issues
- Review and demonstrate the correct method of examining the abdomen on a volunteer (inspection, percussion, gentle palpation of all four quadrants, auscultation)

LEARNING POINTS

- Dyspepsia is upper abdominal pain or discomfort that is episodic or persistent and often associated with belching, bloating, heartburn, nausea or vomiting.
- Reported to occur in approximately 25 percent of population during a year
- Most common causes

- Non-ulcer dyspepsia	over 50%
- Peptic ulcer disease	15-25%
- Reflux esophagitis	10-15%
- Medication related dyspepsia	15-20%
- Gastric or esophageal cancer	<2%
- Parasites, bile duct disease, etc.	<2%

- Non-ulcer dyspepsia
  - Primarily a diagnosis of exclusion of more serious causes
  - Often not specifically associated with food
  - May be related to motility (peristaltic movement) disorders or increased sensitivity to gastric activity
  - Symptoms often irregular, relieved by antacids or H2 blockers, but recurrent

Diagnostic approach to dyspepsia

1. Confirm symptoms of dyspepsia
   a. Epigastric pain – burning, bloating
   b. Persistent or periodic
   c. Accompanied by nausea, vomiting
   d. Relieving factors
   e. Aggravating factors

2. Evaluate for specific common non-ulcer syndromes
   - Gastroesophageal reflux
     - Heartburn – burning in chest region and epigastrium
     - Worse when bending over, full stomach
     - Acid reflux into throat when supine
     - May be associated with sharp, spasm pains in chest
     - Often associated with obesity and fatty foods
   - Irritable bowel syndrome
     - Symptoms very variable, migrate throughout abdomen
     - Associated with intermittent diarrhea or loose stools, constipation
     - Often significant general abdominal bloating and gas
     - Pain is colic like, migrating to various parts of abdomen
   - Gallbladder pain
     - Pain colic like, but localized in right upper abdomen and epigastrium
     - Typically worse after fatty meal
     - Improved with fasting or low fat diet
   - Medication induced pain
     - Check for medications that commonly cause epigastric distress
     - Most common – NSAID, Aspirin, potassium supplements, metformin, erythromycin, corticosteroids
     - Smoking
     - Alcohol use

3. Check for specific risk factors for a serious problem
   - Age > 50 years
   - Difficulty swallowing (esophageal stricture or cancer)
   - Prolonged vomiting (ulcer, gastric obstruction)
   - Anorexia or weight loss (malignancy)
   - Melena or anemia (bleeding ulcer or malignancy)
   - Palpable mass in epigastrium (malignancy)

4. If <u>ANY</u> risk factor present, refer for upper endoscopy as soon as possible

5. If no risk factors present, several diagnostic options possible
   a. Refer for endoscopy
   b. Trial of H2 blocker medication (ranitidine, omeprazole)
   c. Test for *Helicobacter pylori* and give antibiotics if positive
   d. Empirically treat for *Helicobacter pylori*

6. Regardless of which option selected, must continue to follow patient for response to treatment, and refer for endoscopy if not improving

Peptic Ulcer disease

- Impossible to distinguish ulcer from non-ulcer dyspepsia by symptoms alone
- Ulcer disease somewhat more related to food intake, but depends on location of ulcer
- Both ulcer and non-ulcer dyspepsia relieved by H2 blocker therapy

- Both may be associated with *Helicobacter pylori*, although role of *H pylori* somewhat uncertain with non-ulcer disease
- Treatment of peptic ulcer disease:
  - H2 blocker treatment (Ranitidine 150 mg bid, or 300 mg hs., Omeprazole 20 mg qd)
  - Diet not very effective – avoid foods that increase burning
  - STOP SMOKING!!!
  - Avoid alcohol
  - Treat for *Helicobacter pylori* if present or ulcers persistent or recurrent

Treatment for *Helicobacter pylori*

- Multiple treatment options possible – all require multiple antibiotics for maximum effectiveness
- Single antibiotics only promote resistant strains
- Some possibilities:
  - Omeprazole 20-40 mg qd plus Clarithromycin 500 mg bid
  - Bismuth (Pepto-Bismol) 2 tabs qid plus metronidazole 500 mg tid plus amoxicillin 500 mg tid
  - Omeprazole 20-40 mg qd plus metronidazole 500 mg tid plus amoxicillin 500 mg tid
- All *H pylori* treatments should be continued for a minimum of 10 -14 days

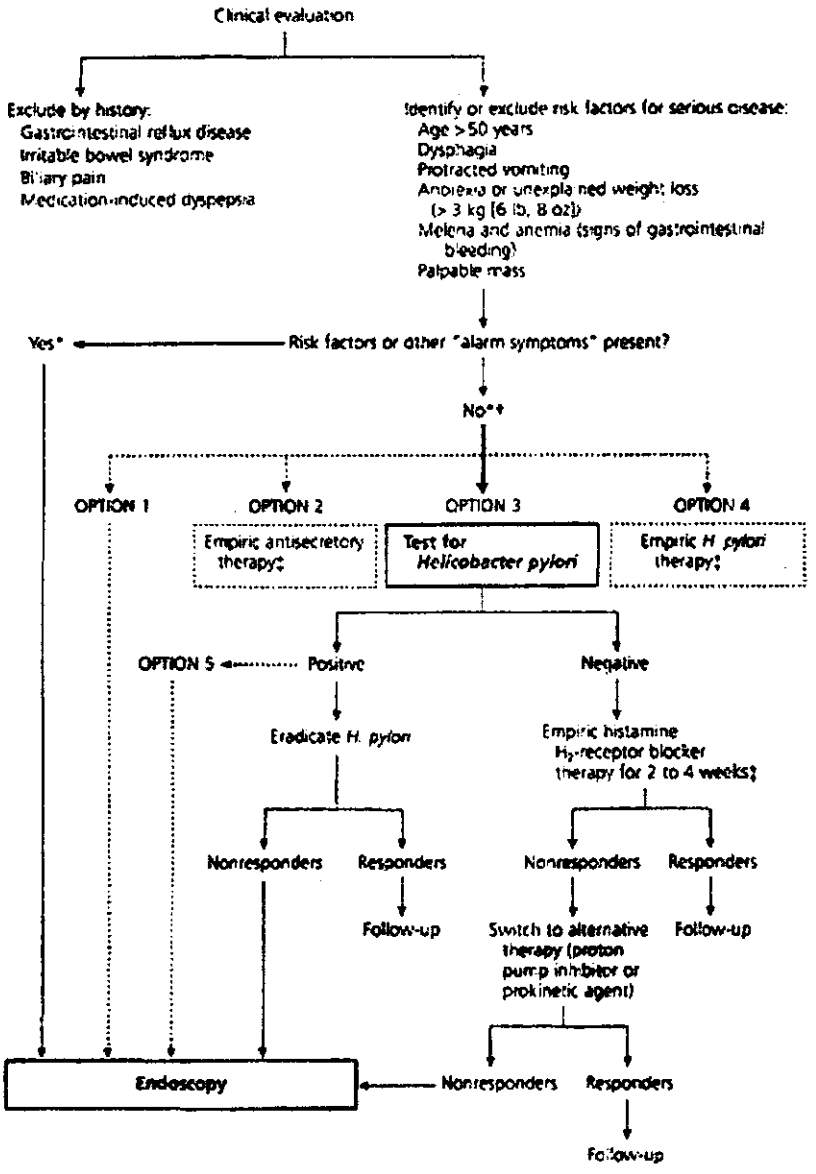
PREVENTION ISSUES AND PATIENT EDUCATION MESSAGES

- Dyspepsia is a chronic, recurrent problem
- Dyspepsia has multiple causes, but most commonly no definite disease if found
- Life-style changes are the first and most effective first steps in treating and diagnosing dyspepsia
  - Stop smoking
  - Avoid alcohol
  - Investigate for relationship to stress
  - Avoid fatty foods
  - Lose weight
  - Take medications with food when possible and no contraindication
- Endoscopy may be needed to diagnose ulcer disease and search for *Helicobacter pylori*

CRITICAL ISSUES FOR REFERRAL TO SPECIALIST

- Presence of any significant risk factor
  - Difficulty swallowing
  - Prolonged vomiting
  - Anorexia or weight loss
  - Melena or anemia
  - Palpable mass in epigastrium
- Failure of symptoms to improve with empiric therapy
- Progressive worsening of symptoms over time

Management of Dyspepsia



*--In all patients, management includes avoidance of ulcerogenic agents, patient reassurance, stress reduction and smoking cessation.
†--See Table 6 for considerations in selecting a strategy for the initial management of dyspepsia.
‡--All empiric drug trials should be stopped after 6 to 8 weeks, and endoscopy should be performed if symptoms return or continue.[7]

FIGURE 1. Proposed model for the evaluation and management of dyspepsia in the primary care setting.

Health Behavior Change

HEALTH BEHAVIOR CHANGE

LEARNING OBJECTIVES:

By the end of this session trainees are expected to:

- understand the stages of health behavior change
- understand the factors that influence health behavior change
- enumerate the main approaches to health behavior change.

TEACHING STRATEGIES:

- Lecture.
- Small groups exercise.
- Case discussion.

EQUIPMENT AND MATERIALS NEEDED

- Flip chart and transparencies
- Overhead projector
- White board and markers

LEARNING POINTS:

- Knowledge and education about behavior related health problem does not necessarily mean that patient will change their behavior
- Actual change of risk behavior dependant on many factors:
  - Knowledge and education regarding risk
  - Family and cultural values
  - Peer attitudes and pressures
  - Relationship with and trust of health care providers
  - Personal self-image
  - Present versus future perspectives
  - Readiness to accept a change in health-related behavior
- Intervention – health provider can identify and help patient think through their willingness to change
- Once patient willing to accept change (Preparation and Action phase) – health provider can help patient set up a realistic, achievable program to change behavior
- Stages of behavior change and health provider strategies (see below tables)

Stages of Health Behavior Change

Stage of Change	Patient Characteristics
Precontemplation	The problem exists, but the patient minimizes or denies it
Contemplation	The patient is thinking about the problem and the advantages and disadvantages of continuing with the problem or try to change it.
Preparation	The patient commits to a time and plan for resolving the problem.
Action	The patient makes daily efforts to overcome the problem.
Maintenance	The patient has overcome the problem and continues to watch for recurrence of the problem.
Relapse	The patient has gone back to the problem behavior on a regular basis after a period of successful resolution.

Stages of Health Behavior Change, and Provider Interventions

Stage of change	Patient Characteristics	Health Provider Strategies
Precontemplation	Denies problem and its importance. Is reluctant to discuss problem. Problem is identified by others. Shows reluctance when pressured. High risk of argument.	Ask permission to discuss problem. Inquire about patient's thoughts. Gently point out discrepancies. Express concern. Ask patient to think, talk, or read about situation between visits.
Contemplation	Shows openness to talk, read, and think about problem. Weighs pros and cons. Dabbles in action. Can be obsessive about problem and can prolong stage.	Elicit patient's perspective first. Help identify pros and cons of change. Ask what would promote commitment. Suggest trials.
Preparation/ Determination	Understands that change is needed. Begins to form commitment to specific goals, methods, timetables. Can picture overcoming obstacles. May procrastinate about setting start date for change.	Summarize patient's reasons for change. Negotiate start date to begin some or all change activities. Encourage to announce publicly. Arrange a follow-up contact at or shortly after start date.

Stage of change	Patient Characteristics	Health Provider Strategies
Action	Follows a plan of regular activity to change problem. Can describe plan in detail (unlike dabbling in action of contemplator). Show commitment in facing obstacles. Resists slips. Is particularly vulnerable to abandoning effort impulsively.	Show interest in specifics of plan. Discuss difference between slip (a single episode of failure) and relapse (repeated episodes of failure) Help anticipate how to handle a slip (single episode of failure) Support and re-emphasize advantages of changing. Help to modify action plan if aspects are not working well. Arrange follow up contact for support.
Maintenance	Has accomplished change or improved through focused action. Has varying levels of awareness regarding importance of long-term vigilance. May already be losing ground through slips or wavering commitment. Has feelings about how much the change has actually improved life. May be developing lifestyle that precludes relapse into former problem.	Show support and admiration. Inquire about feelings and expectations and how well they were met. Ask about slips, any signs of wavering commitment. Help create plan for intensifying activity should slips occur. Support lifestyle and personal redefinition that reduce risk of relapse. Reflect on the long term nature of this stage as opposed to the more immediate gratification of initial success.
Relapse	Consistent return to problem behavior after period of resolution. Begins as slips that are not effectively resisted. May have cycled back to precontemplation, contemplation, or determination stages. Lessening time spent in this stage is a key to making greater progress toward fully integrated, successful, long-term change.	Discuss relapse as a learning opportunity in preparation for next action stage. Ask about specifics of change and relapse. Remind patient that contemplation work is still valid (reasons for changing). Use "when," rather than "if," in describing next change attempt. Normalize relapse as the common experience on the path to successful long-term change.

1. Group Exercise

You realize that smoking causes a lot of illness in your community. As a health care provider you want to try to do something to help people stop smoking. Using the Health Behavior Change Model, discuss how you would approach this problem on an individual basis with your patients.

2. Group Exercise

Fatima is a 30 years old mother of 6 children. Her youngest child is a one year old baby girl. Her neighbor Alia is a 26 years old mother of three children. Alia's youngest child is a one year old baby boy. The two mothers live in a village provided with a primary health care center. Antenatal, family planning (FP), and well-baby clinic services are provided at the

health center in a nearby town. Alia is utilizing the FP services at the town health center while Fatima is not using these services.
Question: Using the Health Behavior Change Model, what are the possible explanations for this discrepancy in behaviors of these mothers towards FP?

3. Group Exercise
Using the Health Behavior Change Model, what are the steps to be taken in designing a "Weight reduction program"?

4. Group Exercise
It seems that our youth are not well educated in the area of reproductive health (RH). As a health educator, you were consulted in designing a education program in RH addressing the youth. How do you use the Health Behavior Change Model in designing this program?

CRITICAL ELEMENTS OF EVALUATION FOR COMPETENCE

- Understand the stages of health behavior change
- Able to identify the stages of health behavior change
- Able to provide interventions for health behavior change

2. EMERGENCY

Poisoning

POISONING

LEARNING OBJECTIVES

- Distinguish the most common types of poisoning
- Know how to properly manage acute poisoning

TEACHING STRATEGIES

- Ask a participant to briefly describe a recent case of poisoning that they treated. Use this case to illustrate the general approach to management of a poisoning victim.
- Bring cans or bottles of the most common items responsible for poisoning episodes for demonstration
- Use lecture/discussion to communicate major points

MATERIALS AND EQUIPMENT NEEDED

- Whiteboard or flipchart and markers
- Overhead projector and previously prepared transparencies
- Cans or bottles of the most common items responsible for poisoning episodes in your area

LEARNING POINTS

- Demography of Poisoning
  - Children under age 6 are at least 50% of all poisoning cases in many countries
  - Adults who are poisoned by ingestion of material most commonly are suicidal
  - Poisoning by inhalation or skin contact most common in agricultural workers, and occasionally in other manufacturing industries
- Most common poisoning
  - Depends on age of patient, availability of poison, social issues
  - Children – most commonly medications found in home, household cleaners and furniture polishes, items in open containers
  - Adults – pesticides and fungicides in agricultural workers, medications or other poisons taken as suicide attempt
- Emergency Management of Poisoning
  - Initial assessment and management should be of Airway, Breathing, and Circulation (A, B, C)
    - Be especially alert for respiratory depression in patients with decreased level of consciousness
    - Patients may be vomiting; take care to avoid aspiration of vomit by placing patient on his side with suction available
    - Begin IV (Ringers Lactate) and O2 in all patients with any change in level of consciousness or potentially serious poisoning
    - Consider that other problems may also be present, such as head injury, stroke (CVA), blood loss
  - Assess level of consciousness and responsiveness
    - If narcotic ingestion suspected, can give naloxone (Narcan) 2 mg. IV every 2-3 minutes up to 10 mg total (0.1 mg/kg in children)

    - If possible, check blood sugar (Accu-Chek machine) immediately. Give 25 grams of glucose IV if glucose decreased, or in any patient in whom immediate blood sugar cannot be done.
- Take history as detailed as possible – from patient (if responsive), friends, family
    - **Who** is patient and why might he be poisoned
    - **What** could patient have taken or been exposed to, how much was taken
    - **Where** did poisoning occur
    - **When** did poisoning most likely occur – how long ago?
    - **Why** might patient be poisoned – intentional (suicide attempt), non-intentional (accidental exposure)
    - **Other** medical problems such as diabetes, liver or kidney disease, heart disease, depression
- Perform targeted physical exam
    - Vital signs (blood pressure, respiration, pulse, temperature)
    - Level of consciousness (responsiveness, hallucinations, speech)
    - Eyes (pupils dilated or constricted)
    - Mouth (retained poison, burns from caustic chemicals, edema)
    - Lungs (fluid in lungs)
    - Heart (tachycardia, bradycardia, arrythmias)
    - Abdomen (tenderness in epigastrium, increased bowel sounds)
    - Neurological (evidence of CVA, weakness, tremor)
    - Skin (dry and hot, cold and clammy, sweaty, rash)
- Lab studies (in equipped CHC)
    - CBC, liver and kidney function studies, urinalysis
    - ECG if any arrythmia or hypotension noted
    - Chest X-ray if vomiting or aspiration suspected or if comatose
- Decontamination of toxin
    - Decision to transfer patient for decontamination (after stabilization of A, B, C) or to perform decontamination in the PHC or CHC depends on severity of patient and transfer time. Consider immediate decontamination if transfer time is greater than 1 hour.
    - Empty stomach (with administration of ipecac or gastric lavage) only if:
        - Patient has not ingested hydrocarbon solvents (like gasoline which can cause severe respiratory distress if aspirated) or corrosive material (acids or alkalais)
        - Ingestion was less than one to two hours previous
        - Patient is responsive and has adequate gag reflex (able to protect airway from aspiration)
    - Syrup of ipecac dosages – 10 ml in children 1-10 years, 15 ml in children 12-16 years, 30 ml in adults. Give with 300 - 600 ml of water to drink.
    - Gastric lavage – use largest NG tube available, lavage with 15 ml/kg in children, 300 ml in adults until lavage fluid clear.
    - Follow gastric lavage with 1-2 gm/kg activated charcoal in water through NG tube, or can give to drink if no NG tube used (add fruit juice, honey, or chocolate powder to improve taste).
    - Follow charcoal with cathartic (magnesia)

- After initial evaluation and stabilization, transfer all cases of poisoning (except most mild) to hospital for further evaluation and observation
- Patients with intentional poisoning should have psychiatric evaluation as soon as medically stable, and careful followup

- Harmless Ingestions
  - Many common household items are relatively harmless if ingested, and patients can simply be observed. Be sure that a suicide intent was not present, even if item was relatively non-toxic.

Commonly Ingested Nontoxic Substances

Personal care products	*Household items*	*Miscellaneous*
Bubble bath	*Thermometers (mercury, --OK; glass, potentially --harmful)*	*Play-Doh®*
Soap	*Ballpoint-pen ink*	*Caps for toy pistols*
Lipstick	*Crayons*	*Teething rings*
Hand lotion	*Chalk*	*Watercolors*
Suntan lotion	*Candles*	
Perfume/cologne --(low alcohol content)	*Pencils/erasers*	
Eye makeup	*Ink marking pens*	
Toothpaste	*Laundry detergent*	
Deodorant	*Fabric softener*	
Other cosmetics	*Household bleach --(<5 % sodium hypochlorite)*	
Shampoo		

- Specific Antidotes
  - Specific antidotes exist to only a few specific intoxications, as seen in the below table:

Antidotes to Common Toxins

Toxin	*Antidote*
Acetaminophen (Paracetamol)	*n-Acetylcysteine (Mucomyst, Mucosil-10)*
Cyclic antidepressants	*Bicarbonate*
Benzodiazepines	*Flumazenil (Romazicon)*
Opiates	*Naloxone (Narcan)*
Calcium channel blockers	*Calcium*
Beta blockers	*Glucagon*
Anticholinergic agents	*Physostigmine salicylate (Antilirium)*

Iron	***Deferoxamine (Desferal)***
Methanol, ethylene glycol	***Ethanol***
Cholinesterase inhibitors	***Atropine***

PREVENTIVE ISSUES AND HEALTH EDUCATION MESSAGES

- Counsel young parents to be sure that all toxic items are beyond the reach of young children
- Properly label all containers of toxic substances – do not put a poisonous substance in another container
- Use proper protective equipment when using toxic pesticides or herbicides in agricultural areas
- Medications from all members of the family should be beyond the reach of young children
- Don't be afraid to ask a depressed patient about their thoughts of suicide – refer to a psychiatrist (or arrange for careful family observation if this is not possible) if patient has a definite plan

CRITICAL ELEMENTS FOR REFERRAL

- Presence of large ingestion, changes in level of consciousness, or other evidence of potential complications
- Suicide intent
- Non-availability of necessary decontamination equipment or medications
- Poisoning with item with severe toxicity (methanol, sedatives, anti-depressants, narcotics, pesticides, paracetamol, hydrocarbon solvents, etc.), even if in small amounts

CRITICAL ELEMENTS FOR EVALUATIN OF COMPETENCE

- Recognize signs and symptoms of acute poisoning
- Emergency assessment and management of Airway, Breathing, and Circulation before detailed assessment
- Proper history and focused physical exam
- Recognition of dangerous and non-dangerous ingestions
- Proper referral of poisoned victims

Bites

BITES

LEARNING OBJECTIVES

- Describe the risks and extent of animal bites for individuals and the community
- Manage animal bites correctly
- Develop an effective treatment plan for animal bites
- Communicate to the patient and family necessary steps and messages in the understanding, monitoring, prevention and control of animal bite injuries

TEACHING STRATEGIES

- Review technique and knowledge of wound care, documentation, and medication use in animal bite injuries.
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling, and patient education issues.

MATERIALS AND EQUIPMENT NEEDED

- Overhead Projector
- Computer for PowerPoint presentation
- White board or flip chant and markers for summarizing major points

LEARNING POINTS

History

A detailed history should be obtained including the following points:

- Type of animal and its status
- Time and location of the event
- Circumstances surrounding the bite
- Whereabouts of the animal, is it observable?
- Prior treatments given for bite

Physical Examination

Points to be considered during the physical examination:

- Distal neurovascular status
- Tendon or tendon sheath involvement
- Bone injury, particularly of the skull in infants and young children
- Joint space penetration
- Injury to deep organ
- Foreign bodies (e.g., teeth) in the wound

General Emergency Care

- Trauma evaluation
  - ABC of resuscitation (Airway, Breathing, Circulation)
- Cleansing and irrigation of the wound
- Debridement of necrotic material
- X-ray for any suspicion of retained tooth or involvement of bone
- Careful inspection of vital structures for associated injury

Suturing

- Suturing can be done for cosmetic or mechanical reasons
- Never suture a wound that is already infected or likely to become infected, such as cat or human bites
- Wounds of the hand should generally not be sutured since a closed space infection of the hand can result in loss of function

Prophylactic Antibiotics

- Dicloxacillin 0.5 g orally four times daily for 3 to 5 days
- Penicillin V 0.5 g orally four times daily for 3 to 5 days

Antibiotics for secondary infection

- Pasteurella multocida is best treated with penicillin or tetracycline
- Other active agents include second and third generation cephalosporins, fluoroquinolones, or azithromycin and clarithromycin

Tetanus and Rabies Immunization

- Give tetanus toxoid or dT immunization if more than 5 years since last tetanus immunization
- Evaluate for need for rabies prophylaxis according to following protocol:

Rabies

Pathophysiology

- Rabies is a viral (rhabdovirus) encephalitis transmitted by infected saliva that gains entry into the body by animal bites or an open wound.
- Skunks, foxes, bats, and raccoons are widely infected. Dogs and cats are infected in developing countries. Generally rats or mice are NOT infected
- Incubation period may range from 10 days to many years, but is usually 3 or more weeks. Rabies is almost uniformly fatal.
- The virus travels in the nerves to the brain, multiplies there, and then migrates along the different nerves to salivary glands.
- The further the bite from the brain, generally the longer the incubation period prior to final encephalitis

Clinical Findings: Symptoms and Signs

- Usually a history of animal bites
- Pain appears at the site of the bite
- Paresthesias at site of bite
- The skin is quite sensitive to changes of temperature
- Painful laryngeal spasm (Hydrophobia)
- Restlessness
- Muscle spasms
- Extreme excitability and bizarre behavior
- Convulsions and paralysis occur
- Large amounts of thick tenacious saliva are present

Laboratory Findings

- Sick or dead animals should be examined for rabies, examine the brain for evidence of rabies virus. Diagnosis made by fluorescent antibody technique.

Prevention of Rabies

- Immunization for household dogs and cats
- Active immunization of persons with significant animal exposure

Local Treatment of Animal Bites and Scratches – Rabies Suspect

- Cleansing
- Debridement
- Repeated irrigations
- Rabies Immune globulin is to be used, around the wound and intramuscularly
- Wounds should not be sutured
- Post exposure treatment includes both passive antibody (Rabies Immune Globulin) and vaccination
- Rabies Immune Globulin
  - Up to 50% of the globulin should be infiltrated around the wound. The rest is administered intramuscularly. If it is not available, equine rabies antiserum, 20 units/kg, can be used after appropriate test for horse serum sensitivity.
- Vaccination
  - Inactive human diploid cell rabies vaccine (HDCV) is given as five infections of 1 ml each, intramuscularly (in the deltoid rather than the gluteal muscle) on days 0, 3, 7, 14, and 28.
  - Local reactions (pruritus, erythema, tenderness) occur in about 25% and mild systemic reactions (headaches, myalgus, nausea) in about 20% of patients.

Pre-exposure immunization

- 3 injections of diploid cell vaccine are recommended for persons at high risk of exposure.
- Alternative is 0.1 ml. intradermally, given at minimum of 10 different sites

Prognosis

Once the symptoms have appeared, death almost inevitably occurs after 7 days. The cause of death is usually from respiratory failure.

Snake Bites

Two major forms of snake venom

- Hemotoxic
- Neurotoxic

Hemotoxic symptoms (Crotalidae species)	**Neurotoxic symptoms (Coral, Cobra, etc.)**
Intense pain	Minimal pain
Edema	Ptosis
Weakness	Weakness
Swelling	Paresthesia (often numb at bite site)
Numbness or tingling	Diplopia
Rapid pulse	Dysphagia
Ecchymoses	Sweating
Muscle fasciculation	Salivation
Paresthesia (oral)	Diaphoresis
Unusual metallic taste	Hyporeflexia
Vomiting	Respiratory depression
Confusion	Paralysis
Bleeding disorders	

Emergency Measures for Snake Bite
Stage One

1. Immobilize the patient. Keep the bitten area in a neutral position.
2. Avoid manipulation of the bitten area.
3. Transport to a medical facility for definitive treatment.
4. Do not apply a tourniquet or ice
5. Incision and suction is generally INEFFECTIVE, and can cause damage to underlying structures.

Stage Two

- Observe for signs of envenomation – 25% of all bites are venom free
- With local symptoms only, give 5 to 10 vials of polyvalent crotalidae antivenin by slow IV drip, 250-500 ml saline
- More serious systemic toxicity (hypotension, coagulopathy) may require 10 to 20 vials.
- Monitor vital signs, renal, hepatic, and blood coagulation factors
- Type and cross-match blood.
- Serum sickness reactions are common after antivenin administration.

Spider Bites

Black widow spider: causes generalized muscular pain, muscle spasms, and rigidity

Treatment

- Parenteral narcotics or muscle relaxant methocarbamol, 15 mg/kg
- Calcium gluconate 10% 0.1 to 0.2 ml/kg IV may relieve muscle rigidity
- Antivenin is rarely indicated

Brown recluse spider: causes progressive local necrosis and on rare occasions, hemolytic reactions

Treatment

- Early excision of the bite site

Burns

- Oral corticosteroids

Scorpion Stings

- Most scorpions cause only local pain
- May cause muscle cramps, twitching and jerking and occasionally hypertension, convulsions, and pulmonary edema

Treatment

There is no specific treatment available. Specific antivenin can be used.

Animal and Human Bite Wounds

- **Dog bites** occur most commonly in the summer months.
- Their victims usually know the biting animals and most biting incidents are provoked by the victim
- Children while playing or fighting usually inflict **human bites.**
- In adults, bites are associated with alcohol use and closed-fist injuries that occur during fights.

Factors for determining infection of bite

- The animal inflicting the bite
- The location of injury
- Type of injury
- **Cat bites** are more likely to become infected than human bites. 30% - 50% of all cat bites subsequently become infected.
- **Bites by adults** become infected in over 50% of all cases.
- Dog bites, become infected only 5% of the time.
- Bites on the head, and neck are less likely to become infected than bites on the extremities.
- Puncture wounds become infected more frequently than lacerations
- Early infections (within 24 hours after the bite) frequently following **dog and cat bites** are most frequently caused by P*asteurella multocida*
    - rapid onset and progression
    - fever
    - chills
    - cellulitis
    - local adenopathy
- Early infection by **human bites** are usually caused by mixed aerobic and anaerobic mouth flora and can produce a rapidly progressive necrotizing infection
- Later infection caused mainly by staphylococci, streptococci and anaerobes

ESSENTIAL INDICATIONS FOR REFERRAL

- Crush injury, tissue loss, extensive or deep lacerations
- Penetrating injury of head, chest, abdomen
- Significant loss of blood
- Significant contamination of wound
- Old or possibly infected wounds
- Human bite wound
- Unable to capture or identify biting animal

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Describe the risks of animal bites for individuals and the community
- Manage animal bites correctly according to site and type of bite
- Communicate to the patient and family necessary steps and messages in the understanding, monitoring, and prevention of animal bite injuries

BURNS, THERMAL

LEARNING OBJECTIVES

- Describe the risks and extent of burns
- Manage minor burns appropriately
- Develop an effective treatment plan for severe burns
- Communicate to the patient and family necessary steps and messages in the understanding, monitoring and prevention of burn injuries

TEACHING STRATEGIES

- Review technique and knowledge of burn wound care, documentation, and medication use in burn injuries.
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling, and patient education issues.

MATERIAL AND EQUIPMENT NEEDED

- Overhead projector
- White board or flip chart and markers for summarizing major points

LEARNING POINTS

- Anatomy:
  - The skin is divided into three layers:
    - Epidermis
    - Dermis
    - Hypodermis
- Age risks (elderly and children at greatest risk, because of physiology and thinner skin)

- History:

  Mechanism of burn injury
  Confinement in fire area
  Duration of exposure
  Tetanus immunization status
  Allergies
  Medications (including over the counter)
  Past Medical History / Previous Illness
  Last meal or beverage consumed
  Events preceding injury

- Pediatric Burns:

  Abuse as a cause of burns in all children is always suspected
  Suspicion pointers include:
  Multiple stories of how injury was sustained
  Injury attributed to a sibling or unwitnessed,
  Injury that is incompatible with the developmental level of the child.
  Pattern burns that suggest contact with an object

Cigarette burns
Stocking glove or circumferential burns
Burns to genitalia or perineum.

- Physical Examination
  Burns are classified by depth, type and extent of injury.
  Burn Depth:
    Partial Thickness (First degree)
    Deep Partial Thickness (Second degree)
    Full Thickness (Third degree)
  Burn Type
    Flame Burns – may be severe, associated with inhalation injury
    Contact Burns – usually small and circumscribed
    Scalds – often partial thickness, but can become full thickness if infected, or in children
    Steam Burns – may be partial or full thickness
    Electrical Burns – often deeper than initially apparent
    Flash Burns – often associated with inhalation injury

  Extent of Burns:
    Surface area involved in a burn
    Only second and third degree burns are measured in calculating the burn area.
    The Rule of Nines to estimate the extent of burn injury in adults (ie. 9% head, 9% ant. chest, 9% ant. abd., 9% thigh, 9% lower leg, etc.)
    Rule of Nines does not apply to children - consult burn table

- Complications:
  - Scarring with cosmetic deformity
  - Burn wound sepsis
  - Respiratory distress
  - Generalized sepsis
  - Death

- Prognosis:
  Varies from excellent to poor, depending on depth of burn, location, and treatment

Management – Initial and Emergency Care

- Remove from burned area
- Evaluate and stabilize Airway, Breathing, Circulation
- Evaluate the surface area and depth of the burn injury
- Stable IV access should be obtained if burned area > 10%
  - Can use Parkland Formula: (4 cc of normal saline) x (% burn) x (body weight in kg) in the first 24 hours
- Evaluate for inhalation injury, especially with burns around the face, or flash (explosion) burns
- Supplemental oxygen if any respiratory distress or tachypnea

- Cool the burn area with sterile, cool compresses
- Constricting objects (rings, bracelets, etc.) should be removed
- Prevent contamination of burn area

Ambulatory Management of Minor Burns

- CLEAN the burned area with mild soap and water
- COOL the burn with cool, sterile compresses
- COVER the burn with sterile dressing. Note that topical antibiotic cream or dressing not needed for intact bullae
- Special caution and possible referral for burns of face, hands, feet, over flexor portion of a joint, or circumferential (completely encircling an entire extremity)
- Intact blisters should NOT be opened debrided
- Apply antibiotic cream or ointment (neomycin, sulfamylon, silver sulfadiazine) and fresh dressing daily
- Tetanus status – give tetanus prophylaxis if more than 5 years since last immunization
- Adequate follow-up in clinic until completely healed

Medication

- Analgesics (Paracetamol or non-steroidal anti-inflammatories)
- Narcotic analgesics for severe pain, especially first 24-48 hours
- Topical antibiotics

Follow-up

- Transfer to Burn Center when appropriate (see referral criteria)
- Measures to be assured prior to transfer:
  - Respiratory Support
  - Circulatory Status
  - Care of the Burn Wound:
  - Physician to physician contact be established
  - Documentation should accompany the patient

CRITICAL ELEMENTS FOR REFERRAL TO A BURN CENTER

- Full thickness (3rd Degree)burns over 5% Body Surface Area
- Partial thickness (2nd Degree) burns over 10% Body Surface Area
- Any full thickness or partial thickness burn involving critical areas (face, hands, feet, over flexor area of a joint)
- Circumferential burns of thorax or extremities.
- Significant chemical injury, electrical burns, lightning injury, co-existing major trauma or presence of significant pre-existing medical conditions
- Presence or risk of inhalational (smoke) injury with any respiratory distress

PATIENT EDUCATION:

- Prevention of burn injuries in the home, especially with small children – fires, fireplaces, stoves, flammable liquids, matches
- Personal – proper storage and handling of flammable liquids, solvents, cleaners, gas cylinders
- Community – access to Civil Defense

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE:

- Understand the risks of burn injury, depending on depth, extent, and location of burn
- Initial evaluation of depth and surface area of burn
- Initial management and stabilization of burn patient
- Correct management of minor burns in the health center
- Knowledge of indications for referral to burn specialist
- Communicate to the patient and family necessary steps and messages in the understanding, monitoring and prevention of burn injuries

Wounds and Lacerations

MANAGEMENT OF WOUNDS AND LACERATIONS

LEARNING OBJECTIVES

- Understand the basic principles of wound healing
- Describe the critical elements of evaluation of a wound
- Describe the critical elements of wound management
- Develop skill in the most common forms of suture closure of an open wound
- Understand which wounds should be referred for specialist management

TEACHING STRATEGIES

- Use simple presentation materials for the didactic portions of the discussion
- Large group discussion can be used to develop key lecture points
- Use small groups to discuss and present the management of the suggested case studies
- Allow at least 90 minutes for a suture workshop, in which participants can practice various forms of suture repair

MATERIAL AND EQUIPMENT NEEDED

- Overhead projector and transparencies of didactic material
- Laceration repair instruments for workshop (minimum of: needle holder, forceps, suture scissors, suture material and needles)
- Material for practice in suture repair (commercial models, beef or lamb tongue, chicken breast or similar raw meat)

LEARNING POINTS

- Types of Wounds (Note that some complex wounds may show elements of more than one type of wound, ie, laceration with superficial abrasions)
  - Abrasion
    - Caused by a scraping or shearing force
    - Loss of epithelium and possibly dermis
    - Deep abrasions can bleed heavily; superficial abrasions bleed lightly
    - Deep abrasions similar to full thickness burns in healing process and management
  - Contusion
    - Caused by a blunt force
    - Injury to the dermis and subcutaneous tissues with intact epidermis
    - Results in collection of blood (hematoma) and edema fluid in subcutaneous tissues
    - May result in injury to important anatomic structures (nerve, ducts, solid organs, etc.)
  - Laceration
    - Injury and separation of epidermis, dermis, and possibly underlying tissues, depending on depth
    - Greatest risk of damage to underlying structures, such as nerve, tendon, bone, ducts, solid organs

- Requires decision on if and how to close wound

- Principles of wound healing
  - 0 – 4 hours
    - Initial vasoconstriction of blood vessels and clumping of platelets to control bleeding
    - Inflammatory response begins with movement of white blood cells and macrophages to site of wound, together with development of vasodilatation and edema
  - 4 – 48 hours
    - Fibroblasts (collagen producing cells) move into wound area, and begin to produce collage fibers
    - New blood vessels begin to form across the space of the wound
    - Epithelial cells from edge of the wound begin to move across the surface of the wound
  - 2 – 10 days
    - Collagen continues to be formed, and collagen fibers begin to contract (shorten)
    - Wound edges begin to be pulled together
    - Strength of collagen begins to increase
  - 10 – 30 days
    - Formation of strong scar
    - Remodeling, shortening, and contraction of fibrous scar tissue

- Essential elements of wound evaluation
  1. First priority – Airway, Breathing, Circulation of resuscitation, even though wounds may be most visible and alarming aspect of presentation
  2. Wound should be covered with sterile bandage until full evaluation and management can be done
  3. History of injury, when possible
     - Circumstances, mechanism of injury
     - Other factors involved (burn, explosion, firearms, medications, alcohol or drug use, etc.)
     - Past medical history, especially previous injuries, current medications, diabetes, hepatitis, HIV infection, medication allergies, etc.
  4. Examination of the entire patient, depending on degree of injury and risk
     - First priority – level of consciousness and mental status
     - Vital signs – blood pressure (including postural changes), pulse, respiration, temperature
     - Entire body should be examined for other wounds or injuries
     - Focus on functional status – use of arms and legs, walking, numbness or paresthesias, local tenderness
  5. Examination of wound
     - Use sterile gloves in examination to protect health care provider, and minimize further contamination of wound
     - Evaluate extent and depth of wound, and degree of tissue missing or damaged
     - Estimate level of bacterial contamination of wound. Bite wounds, embedded dirt or foreign bodies, large irregular wounds, old wounds all tend to have greater bacterial contamination

- Evaluate possible damage to underlying structures – tendon, nerve, bone, solid organ, duct. Use functional tests when possible, ie, check for movement of involved tendons, distal nerve sensation and motor function of involved nerves, X-ray of involved bones
- Be very cautious with penetrating wounds such as knife, gunshot, explosion-related wounds. These often result in much greater internal damage and bacterial contamination than is visible on the surface.

6. Decide whether wound can be managed in Health Center, or should be referred. Consider referral of the following
   - Decreased level of consciousness or change in mental status
   - Possible heavy bacterial contamination of wound
   - Other significant injuries associated with the wound (ie, fractures, burns, smoke inhalation)
   - Evidence of damage to underlying structures such as nerve, tendon, bone, muscle, or solid organs
   - Penetrating injuries such as knife, gunshot, or explosion related
   - Significant loss of tissue, such as large, deep abrasions or avulsed skin or muscle
   - Bite wound of potentially rabid animal

- Essential Elements of Wound Management
  1. Tetanus prophylaxis
     - Clean or lightly contaminated wounds – give tetanus toxoid (or dT) 0.5 ml. IM if more than 10 years since last tetanus immunization
     - Significant bacterial contamination of wound, or deep, old wounds – give tetanus toxoid (or dT) 0.5 ml. IM if more than 5 years since last tetanus shot
     - If patient has never had any tetanus immunizations previously (should be rare), begin tetanus toxoid protocol and give tetanus immune globulin at the same time.
     - Consider referral for rabies prophylaxis with bites of potentially rabid animals
  2. Preparation of the skin
     - Clip (do not shave) hair in areas where hair could interfere with repair or healing (Note that studies have shown that shaving increased bacterial contamination of the skin, compared with clipping of hair)
     - Clean wound area and wound edges with antiseptic solution such as dilute 1% povidone-iodine
  3. Give local anesthesia when appropriate
     - Even cleansing of wound can be painful, and anesthesia makes procedure more comfortable
     - Most commonly inject 1% - 2% lidocaine (with epinephrine unless on finger or toe or tip of nose) into wound margins. Use smallest gauge needle possible and sterile technique for injection
     - Can use local nerve block when appropriate (ie, base of finger)
  4. Debridement and Irrigation
     - Remove obviously dark or dead tissue, and any foreign bodies. Use sharp dissection (scalpel) when possible to minimize tissue trauma
     - May need to mechanically remove dirt or embedded material with sterile gauze scrubbing

- Irrigation under pressure with large volume of saline is the most effective way to reduce bacterial contamination and remove foreign material. Use large sterile syringe and 18 – 20 G needle for irrigation. Many studies show that irrigation is much more effective than cleaning wound with antiseptic solution for reducing wound infections.
- Large or contaminated wounds may need 1 –2 liters of irrigation for effective cleaning.

5. Close wounds with proper suture and technique, when appropriate
   - DO NOT CLOSE the following wounds – most animal or human bites, heavily contaminated wounds, wounds older than 4-6 hours
   - Wounds with little tension can be closed with tape strips
   - Significant subcutaneous laceration should be closed with few absorbable sutures (chromic, Dexon, Vicryl, etc.) using buried knot technique
   - Skin should be closed with nylon rather than silk. Many studies and experience shows fewer stitch infections and better healing with nylon suture. Use 5 knots in each stitch to prevent loss of sutures
   - Bring skin edge to edge - Use mattress type suture in areas where skin is thin or could become inverted.
   - Skin sutures should only bring skin edges to touch – do not overly tighten sutures to avoid loss of circulation to skin edge
6. Dressing of the wound should prevent further contamination, and absorb discharge
   - In areas of edema, mild compression (compressive bandage) may reduce edema
   - Dressing should be sterile, and should be changed every 24 – 48 hours in general.
   - If there is significant bleeding or oozing of fluid, dressing may need to be changed more frequently to prevent infection
   - Dressing of abrasions requires more frequent attention – sterile Vaseline on gauze helps prevent sticking of dressing to wound, change dressing every 12-24 hours. Do not allow thick eschar (crust) to form on abrasion
7. Give patient appropriate wound care instructions.
   - Should be instructed when to return for a dressing change, or should be taught how to do it in a correct, sterile manner.
   - Instruct in danger signs, such as spreading inflammation or increased pain of infection, purulence, persistent bleeding
   - Advise against use of home remedies to prevent scarring or infection.
   - Answer questions patient may have.
8. Remove sutures in 5 – 10 days
   - Sutures can be removed early (5 days) in areas of good vascularity such as the face
   - Sutures should be left for 7 – 10 days in areas of tension (over joints) or on lower extremities
9. Promote rehabilitation
   - Encourage patient to use injured area as normally as possible, with possibly some protection such as a simple dressing on exposed wounds for another 1-2 weeks
   - Warn patient that scar will continue to mature over next 2 years – initially raised and red, will eventually flatten and become white

- If patient has formed keloid scars (large, fibrotic, hypertrophic scars extending beyond the wound) in the past, consider referral for prevention or reduction of keloid. This is more common in those of African origin.

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- The best method of treating a wound is to prevent it. Encourage family and community efforts to clean hazards from the environment, such as broken glass, nails, construction materials, unused equipment, etc.
- Encourage safe use of work equipment and tools
- Encourage patients to come to the Health Center or hospital as soon as possible for evaluation and management of a wound.
- Discourage use of home remedies to "prevent" scarring of a wound, such as Vitamin E, creams, ointments, or application of other materials. Most of these only increase the bacterial contamination and infection rate of the wound.

CASE STUDIES

I. A 15 year old boy is thrown off his bike because of a flat tire at a high speed. He suffers large abrasions of his elbows and forearms, knees, and forehead, but does not lose consciousness and is able to walk into the Health Center. There is a large amount of dirt embedded in the abrasions.

a. How would you further evaluate this patient?
b. How would you manage these wounds?
c. What instructions would you give this patient?

II. A 31 year old woman cuts her thumb deeply with a sharp knife while preparing taboule. It bleeds heavily for 5 minutes, but the bleeding decreases with firm pressure of a towel. In the Health Center, examination shows a 2 cm. laceration over the back of the proximal thumb, and she does not (or cannot) move the thumb.

a. How would you further evaluate this patient?
b. How would you manage this wound?
c. What instructions would you give this patient?

III. A 45 year old farmer is injured while trying to extinguish a fire in his equipment shed. While pouring water on the fire, the roof of the shed collapses on him, trapping him under some large beams of burning wood. He is pulled out by a friend, and brought to the Health Center. On examination, he smells of smoke, and is coughing heavily. BP is 95/60, pulse is 120, respirations are 24 with frequent coughing. He has several burns on his legs, and the right lower leg is swollen and very painful to move. He has a 6 cm. deep laceration of the scalp which is still bleeding, a 4 cm laceration of the forehead, and several abrasions of the right arm. He repeatedly asks where his son is, and appears somewhat confused.

a. What are the primary problems of this patient, and possible injuries?
b. How would you further evaluate this patient?
c. How would you manage this patient and his wounds?

CRITICAL ELEMENTS FOR REFERRAL

- Decreased level of consciousness or change in mental status
- Possible heavy bacterial contamination of wound
- Significant blood loss with evidence of postural changes in blood pressure or rapid pulse
- Other significant injuries associated with the wound (ie, fractures, burns, smoke inhalation)
- Evidence of damage to underlying structures such as nerve, tendon, bone, muscle, or solid organs
- Penetrating injuries such as knife, gunshot, or explosion related
- Significant loss of tissue, such as large, deep abrasions or avulsed skin or muscle
- Bite wound of potentially rabid animal

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Describe the critical elements in evaluation of a wounded patient
- Describe the most important steps in management of an open wound
- Demonstrate the most common forms of suture closure of a wound, including subcutaneous closure with a buried knot, simple interrupted suture, running continuous suture, vertical mattress suture
- List the situations or conditions in which a wounded patient should be referred

Trauma Management

MANAGEMENT OF MAJOR TRAUMA

LEARNING OBJECTIVES

- Understand the importance of prompt and effective emergency treatment in major trauma
- Describe the A,B,Cs of initial management of a trauma victim
- Understand the components of the primary and secondary survey of a trauma victim
- Diagnose and effectively manage the most common problems seen in trauma patients
- Understand how to stabilize a trauma patient for transfer to a referral center

TEACHING STRATEGIES

- Use case presentations to stimulate discussion, and to illustrate important points in the management of trauma
- Ask participants to present their own cases of trauma for discussion in small groups, then present the major points of management for each case
- Use volunteer to help demonstrate important points, such as stabilization of neck or proper transfer of injured patients
- Review essential emergency techniques by demonstration, such as starting an IV infusion or insertion of Foley catheter or NG tube

MATERIALS AND EQUIPMENT NEEDED

- Overhead projector and transparencies
- Whiteboard or Flipchart and markers
- Demonstration materials for IV infusion, Foley catheterization, and NG insertion (may construct simple model from plastic bottle)

LEARNING POINTS

- Introduction
  - Accidental injury very common in both developed and developing countries, and a major cause of death and disability.
  - Head injury was most common reason for ICU admission in some African countries.
  - For every death from trauma, two people suffer permanent disability
  - In Jordan, motor vehicle accidents are a major cause of death and disability, especially among the young
- Mortality from trauma
  - First peak of death - time of the injury. Usually from irreversible damage to major organs or vessels
  - Second peak - from the end of this first period to several hours after the injury. Death can be prevented by avoidance of a secondary injury due to hypoxia or hemorrhage.
  - Third peak of death - days or weeks after the injury. Often caused by sepsis and multiple organ failure. Initial management on admission will reduce morbidity and mortality during this period.

- Preparation for trauma management
  - Effective trauma management requires a predetermined plan of action, even in the smallest health centers
  - Essential elements of advance preparation include:
    - Designated area for necessary supplies, medications, and equipment. These should be labeled, rotated to ensure freshness, sterility of sterile items periodically checked, and controlled by a master list of supplies and equipment
    - Necessary supplies should include items such as:
      - Ambu-bag and mask
      - Endotracheal tubes and laryngoscope if someone available who is skilled in insertion of ET tubes
      - IV fluids, tubing, tape, and needles and catheters of various sizes
      - NG tube for child and adult
      - Foley catheter of at least two sizes
      - Dressings and bandages
      - Splint material
      - Basins and sterile water for washing
      - Strong scissors for removal of clothing
      - BP cuff and stethoscope
      - Gloves, gowns, and if necessary, face protection
      - Box of emergency injectable drugs
    - Predetermined plan of action, with a designated team leader and decision maker, nurse, and someone to assist with supplies and keep records
- Essential elements of trauma management
  - Primary survey (assessment) and resuscitation
  - Secondary survey
  - Definitive treatment
  - Any life threatening condition identified during assessment must be treated immediately before proceeding to the next phase.

Primary Survey

- A, B, Cs
  - **A**irway control with cervical spine protection
  - **B**reathing
  - **C**irculation and control of hemorrhage
  - **D**isorders of the central nervous system
  - **E**xposure of the whole body
  - During the primary survey, any deterioration in the patient's clinical condition should be managed by reassessing from the start of the protocol, as a previously undiagnosed injury may become apparent.
- Airway
  - Ensure that a clear and unobstructed airway is present – lift chin if necessary
  - Protect the cervical spine if patient has neck pain or is unconscious
  - If patient can answer questions appropriately - unlikely that there is any immediate threat to the airway

- Noisy, laboured respiration, or paradoxical respiratory movements (when movements of the chest and abdomen are out of phase) are evidence of obstruction
- Any patient with a possible cervical spine injury should have their neck immobilized in a neutral position to prevent further damage as shown in Figure 1.

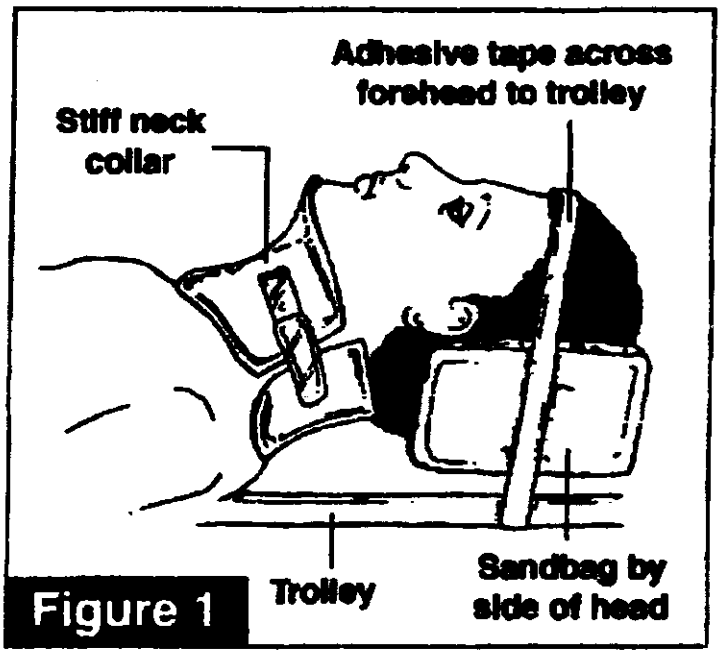


Figure 1

- Breathing
  - Trachea should be checked for deviation and both sides of the chest for expansion
  - Lungs auscultated and respiratory rate noted.
  - Observe for possibility of:
    - Tension pneumothorax
      - suggested by a rapid respiratory rate, mediastinal (and tracheal) shift away from the affected side, and hyper-resonance and reduced breath sounds on the affected side
      - should be treated as emergency by needle decompression of the pleural cavity at the second intercostal space in the mid clavicular line
    - Massive haemothorax
      - suggested by reduced breath sounds, dullness to percussion and a shift of the mediastinum away from the affected side often accompanied by cardiovascular instability
      - should be treated with formal pleural drainage
    - Flail chest
      - part of the chest wall is able to move independently to the remainder and occurs when ribs are fractured in at least two places
      - can be recognized when the flail segment falls during inspiration as the rest of the chest rises

- always associated with significant pulmonary contusion resulting in hypoxia
  - Open chest wound
    - needs covering and sealing on three sides immediately (*figure 5*). A one way valve is formed by the flapping motion of the free edge of the dressing and this prevents air being sucked into the pleural cavity from the outside.

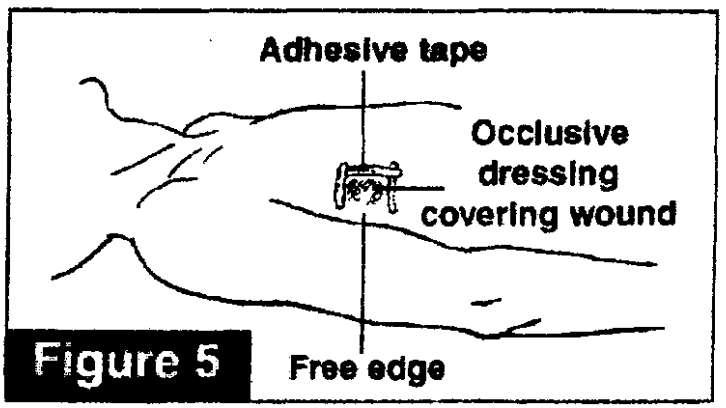


Figure 5

- Circulation and hemorrhage control
  - Rapid assessment of the cardiovascular system includes:
    - pulse rate
    - skin color
    - capillary refill (the time taken for color to return to a finger pad after it has been briefly compressed >2 seconds is abnormal)
    - level of consciousness
    - blood pressure.
  - Any major hemorrhage should be controlled by direct pressure
  - Do not use tourniquets
  - Penetrating implements should be left open for formal surgical exploration
- Disorders of the central nervous system
  - Central nervous system should be quickly assessed by ascertaining:
    - level of consciousness – eye opening and motor responses
    - spinal cord function – movement of all four extremities
    - pupillary response to light.
- Exposure
  - All multiple injured patients should be completely undressed for examination
  - Clothes are cut off if necessary
  - Should not be allowed to become hypothermic - keep covered when possible
- **During the course of the primary survey, the four most important rules to remember are:**

  1. The patient should be repeatedly reassessed, particularly if clinical signs change.
  2. Any immediately life threatening condition diagnosed should be rectified without delay.

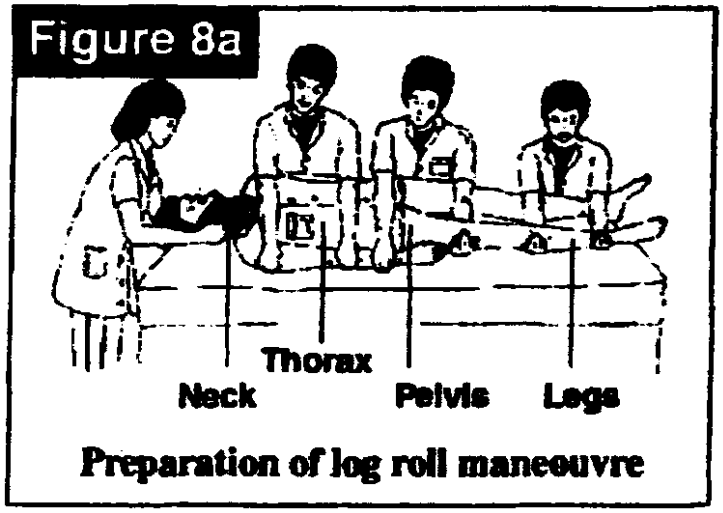
3. Penetrating wounds and implements must be left for formal surgical exploration.
4. Any external bleeding should be stopped by using direct pressure.

- Initial management of trauma
  - Regular reassessment of the patient's condition is required and the treatment should be monitored with an electrocardiograph.
  - One to two large (14 gauge) IV cannulae should be inserted (antecubital fossae is often the easiest site)
  - Begin administration of Ringers Lactate, at least 20 ml/kg over 30 – 45 minutes.
  - Increase IV fluid rate of administration depending of blood pressure response
  - Insert NG tube into stomach if significant abdominal distention present, or patient persistently vomiting
  - Consider urethral catheter to monitor urine output if there is a significant delay in transportation

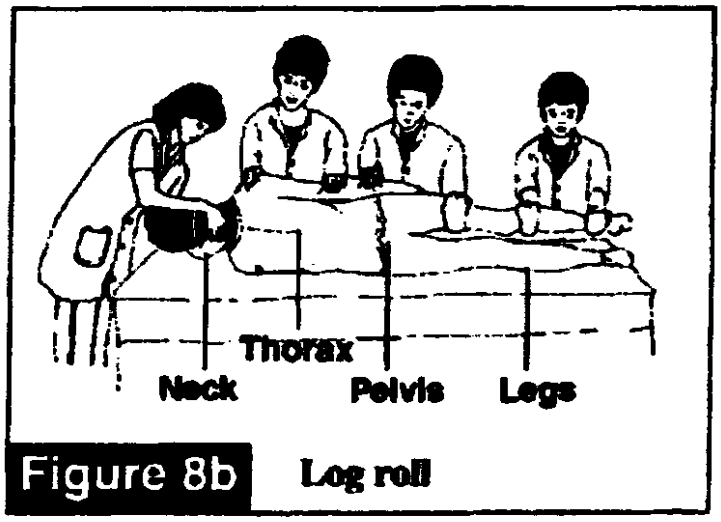
Secondary Survey

- Performed only after A,B,Cs evaluated and stabilized
- Patient examined from head to foot in a detailed manner
- Tetanus immunization and prophylactic antibiotics can be administered if necessary
- Secondary history obtained
  - May need to interview accompanying family members
  - More detailed history is obtained
- Essential elements of history
  - Allergies
  - Medications and tetanus immunity
  - Previous medical history
  - Last meal
  - Events leading to the injury
- Radiographs of the lateral cervical spine, chest and pelvis are taken if immediately available (in Comprehensive Health Centers)
- Keep the patient covered unless examination or procedure is being carried out
- Risk factors for significant injury
  - Road Traffic Accidents:
    - where speeds were in excess of 40 mph
    - where the victim was ejected from the vehicle
    - where other victims were killed
    - where there was severe disruption of the vehicle passenger compartment
  - A fall of greater than 3 meters
  - Gunshot wounds
- Secondary Examination

- Head
  - record Glasgow Coma Scale (Table 3) score
  - palpate scalp for fractures, lacerations and other deformities
  - observe for injuries around eyes
  - Blood or cerebrospinal fluid coming from the ears or nose also indicates basal skull fracture.
- Neck
  - patient should be asked if they have any neck pain
  - With an assistant performing in-line immobilisation, examine neck for lacerations, swellings, tenderness or deformity
  - lateral X-ray of the cervical spine must show all the vertebrae including the body of the 1st thoracic vertebra. Traction downwards on the arms should help to obtain a good film.
- Thorax
  - entire chest must be examined for signs of injury.
  - palpate for fractures of the clavicles and ribs and the presence of subcutaneous emphysema.
- Abdomen
  - abdomen must be inspected for signs of injury and the presence of free intra-peritoneal fluid.
  - urethral catheter should be inserted, and the presence of any obvious or microscopic haematuria sought.
  - rectal examination should be done to check for anal tone (lax anal sphincter may indicate that spinal cord injury has occurred)
  - NG tube inserted if significant abdominal distention present
- Extremities
  - Fractures, wounds and discoloration should be noted
  - Check pulses in all limbs even if no fracture is suspected.
  - Fractures compromising circulation must be reduced to prevent distal ischemia.
  - If possible, sensation in the limbs is assessed.
  - Fractures should be splinted to reduce pain and the risk of fat emboli.
- Spine
  - hypotension with bradycardia may suggest spinal cord damage in a patient with a history suggestive of spinal injury.
  - Other indicators of cord damage are:
    - acute urinary retention
    - diaphragmatic respiration
    - priapism (persistent abnormal penile erection)
    - lax anal sphincter
    - flaccid paralysis of the limbs.
  - The patient must be log rolled (*figure 8*) and the entire spine examined for deformities or injuries.



Preparation of log roll maneouvre



Log roll

Definitive treatment

- Further treatment of the patient depends on the injuries detected during the primary and secondary examinations
- **Most critical element is safe transportation of patient to appropriate hospital, once A,B,Cs are evaluated, managed, and stable**

CASE HISTORY

A 12 year old boy fell 30 feet from a tree onto his head. He was initially confused and then became quiet as his parents carried him to the Health Center. The doctor there started his assessment with the airway and immediately noted noisy respirations with very little airflow. Recognizing that there was a possibility of neck injury he carefully lay the boy on his back, placed the head in the neutral position and performed a jaw thrust maneuver whilst holding the head immobilized. The airway obstruction was immediately relieved and he asked the nurse to place an oxygen mask over the face and to find a semi rigid collar. This was carefully placed round the boy's neck, after which tape was applied to ensure immobilization. Shortly afterwards the patient recovered consciousness and began to breathe well without airway support. Only then did the doctor let go of the child's head. He went on to assess the breathing and circulation. Having excluded other injuries and having stabilized the child's condition the doctor accompanied the child to a hospital 60 kilometers away in the back of an ambulance equipped with resuscitation apparatus. Simple airway maneuvers often lead to an improvement in the head injured patient. It was found later that this child did not have a neck injury, but the possibility could not be excluded and the precautions were essential. The boy had cerebral edema and made a recovery over 10 days. He is now back at school.

Issues for discussion:

1. What are the warning signs of serious head injury in a child?
2. How did the doctor act to minimize the risk of a neck injury?
3. Were there other activities that might have been done to properly manage this child?

HEALTH EDUCATION ISSUES

- Remember that accompanying family members need to be informed during or immediately after the evaluation and resuscitation process
- Discuss the use of seat belts with your patients – they can prevent many serious injuries in motor vehicle accidents

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Describe the A,B,Cs of emergency trauma management
- Describe the elements of the primary and secondary survey, and the role of each
- List the most important elements of the secondary history and physical exam

Table 3: Glasgow Coma Scale

Eyes open:	Score	*Best verbal response:*	Score
Spontaneously	4	Orientated	5
To speech	3	Confused	4
Te pain	2	Inappropriate words	3
Never	1	Incomprehensible sounds	2
		Silent	1

Best motor response:	Score
Obeys commands	6
Localises pain	5
Withdrawl from pain	4
Abnormal flexion	3
Extends to pain	2
No response	1

Glasgow Score – Total of Score of: Eyes + Motor + Verbal

Maximum Score - 15

Common Fractures and Sprains

COMMON FRACTURES, STRAINS, AND SPRAINS

LEARNING OBJECTIVES

- Understand the mechanism of injury of the most common presenting musculo-skeletal injuries
- To be able to distinguish between injury to tendon, muscle, ligament, and bone; or combinations of these
- Describe the management and treatment of the most common musculo-skeletal injuries
- Understand when to refer an injury to a specialist for more definitive diagnosis and treatment

TEACHING STRATEGIES

- Use didactic, lecture-style teaching for only the basic elements of the topic
- Use case presentations (ideally presentation of personal cases) to highlight significant learning points
- Emphasize the proper examination technique and evaluation of an injury
- Demonstrate on a participant or willing patient the proper examination of the joint or area involved

LEARNING POINTS

- Definition of sprain and strain
  - Sprain – injury to ligament around a joint
  - Strain – injury to muscle, tendon, or muscle-tendon unit (includes tendonitis)
- Overuse injury
  - Generally chronic or subacute
  - Caused by repetitive, forceful movements that overstress capacity of muscle, tendon, and occasionally bone
  - Repeated microtears of tendon tissue, with inflammatory attempts to repair tears
  - Results in chronic inflammation, fibrous tissue, susceptibility to repeated injury
- Principles of Treatment (applicable to most all)
  - Identify and modify overuse or traumatic movement
  - RICE (Rest, Ice, Compression, Elevation)
  - Anti-inflammatory medication (NSAID)
  - Occasionally physiotherapy
  - Occasionally local injection of dilute corticosteroid
  - Suspected fracture should be splinted until seen by specialist or definitive treatment

Upper extremity

- Overuse and degenerative injuries

  Elbow - Lateral epicondylitis
  - Examination of elbow - demonstration
  - Mechanism – repeated extension of elbow and supination of wrist (tennis players, forceful use of screwdriver or hammer

- Micro-trauma to extensor carpi radialis brevis at insertion on lateral epicondyle
- Symptoms – most painful in early AM (on extension of arm), with resisted supination
- Painful for months, with remissions – average 7 – 10 months
- Recent studies show no single treatment is curative – many treatments suppress symptoms until natural resolution occurs
- Treatment – RICE, anti-inflammatory medication (NSAID), local steroid injection around insertion

Elbow - Medial epicondylitis
- Similar to lateral epicondylitis, but different muscles and mechanism
- Overuse of flexors of fingers and wrist, found in forceful gripping motions (use of hammer or carrying of heavy loads)
- Natural history and treatment same as for lateral epicondylitis

Shoulder - Rotator Cuff
- Examination of shoulder - Demonstration
- Most common upper extremity problem of older age
- Mechanism – repeated, forceful abduction and rotation of shoulder
- May begin with fall, minor trauma, or forceful lifting, but persists with normal daily activity
- Most common tendon injury to supraspinatus, under acromion
- Pain with abduction – "catch" at 45 degrees
- Supraspinatus tendon may become calcified, thickened – inflammation may extend into shoulder bursa (bursitis)
- Occasionally inflammation noted also in long head of biceps (bicepital tendonitis)
- Treatment – RICE, anti-inflammatories
- Mobilization exercises of shoulder (wall crawling, pendulum) very important to prevent gradual fibrosis of capsule and "frozen shoulder"

- Upper Extremity Traumatic Injuries

  FOOSH (Fall on Outstretched Arm)

  Wrist – fracture of carpal navicular (scaphoid)
  - Examination – demonstrate wrist and snuffbox exam
  - Most common injury of FOOSH in young people
  - Pain in anatomic snuff box is hallmark
  - Most important – initial X-rays may not show fracture until 10 – 14 days later
  - Should generally be referred to specialist for followup
  - Must treat with thumb spica cast until X-ray negative at 10 – 14 days, or if fracture apparent, until complete healing (minimum of 3 months)
  - Danger of not immobilizing immediately is non-union of navicular bone, with secondary severe osteoarthritis of the wrist.

  Forearm – fracture of distal radius
  - Very common fracture in elderly (osteoporosis) and in young boys

- Often requires reduction because of dorsal angulation of distal radius
- Should be referred for reduction and casting
- Often results in stiff wrist in elderly patients – they do not regain full wrist flexion

Elbow – dislocation of radial head in young child
- Common problem in children less than 4 years of age
- Caused by pull or lifting of child by hand – causes dislocation of radial head at elbow because of immature development of radius
- Child does not use arm, holds it with hand in pronation
- Can be easily reduced at PHC, especially within first 1 – 2 days by forceful supination of wrist with extension of elbow
- Demonstrate reduction maneuver

Shoulder – Acromio-clavicular separation
- Examination – demonstrate clavicle and acromio-clavicular exam
- Caused by fall directly onto shoulder with tear of acromio-clavicular ligament and coraco-clavicular ligament
- Partial tears very common – cause pain but no instability
- Even complete A-C separations may not cause pain unless patient is heavy physical laborer
- Can be treated at PHC, unless patient is heavy laborer or athlete
- Treat with sling for 4 – 8 weeks

Shoulder – fracture of clavicle
- Very common fracture in young children (sometimes seen in difficult deliveries in neonates)
- Tender over fracture site – usually middle or distal part of clavicle
- Usually good healing with complete remodeling – will have prominent lump at fracture site for several months
- Can be treated at PHC
- Treat with figure-8 bandage for 3 – 4 weeks – parents should be instructed to watch for numbness of hand, circulation changes

Lower Extremity

- Overuse and degenerative injuries

  Foot – Heel pain
  - Pain in bottom or sides of heel
  - Worse on first standing in AM, and after long walking during day
  - Generally caused by inflammation at insertion of plantar fascia on calcaneus (heel) - acutely tender to palpation at this point
  - Treatment – foam heel pad (to protect), soft-soled shoes (running shoes), anti-inflammatories (NSAID)
  - Most important part of treatment – gradual stretching (without further tearing) of plantar fascia
  - Demonstrate stretching exercise

  Ankle – Achilles tendonitis

- Pain in posterior calf and ankle
- Generally seen in runners or athletes in training, especially jumpers (basketball)
- Tender to palpation at insertion of Achilles tendon on calcaneus
- Treatment – RICE, anti-inflammatories (NSAID)

Knee – Patello-femoral pain
- Pain in knee, often on arising after sitting, or going down stairs or hills
- Multiple causes – may be related to micro-strain of patellar tendon, inflammation of patellar cartilage, or sometimes old meniscus injury inside knee
- Often related to relative inactivity with bursts of leg activity, and to tight leg muscles
- More common in young women, overweight older women, athletes who jump a lot
- May be tender at patellar tendon insertion, on compression of patella
- Knee exam is stable
- Treatment – RICE, anti-inflammatories (NSAID), stretching exercises

Knee – Osgood-Schlatter syndrome
- Seen most commonly in early adolescence, especially in those who run or jump a lot
- Pain and swelling over insertion of patellar tendon (anterior tibial tubercle)
- X-rays show a pulling away of bone chip at insertion of patellar tendon
- Important – will heal spontaneously with simple rest and reduction of running and jumping activities – no other treatment or referral needed!
- Generally resolves when epiphyses fuse, around 14 – 16 years of age
- Only residual may be a slightly prominent anterior tibial tubercle
- Most sensitive test of pathology – pain on internal rotation

Hip – pain on walking
- Differential diagnosis of limping child by age and associated condition:
  - Fever – septic arthritis (emergency!), transient synovitis
  - Night pain – tumor
  - Age 1 – 3 years – CDH, septic arthritis
  - Age 4 – 10 years – CDH, aseptic necrosis of femoral head (Legg-Perthes), juvenile rheumatoid arthritis, transient synovitis
  - Age 11 – 16 years – Slipped capital femoral epiphysis, overuse strain of tendons
- Because of multiple causes – most children with persistent limp should be referred for evaluation by specialist

- Traumatic Injuries to Lower Extremity

  Ankle - Ankle sprain
  - Examination – demonstrate examination of ankle

- Commonly caused by inversion and plantar flexion of ankle
- After acute injury, should ask about immediate swelling and ambulation
    - No immediate swelling and able to ambulate initially – Grade I or mild Grade II sprain
    - Immediate swelling and unable to ambulate initially – severe Grade II or Grade III sprain or possible fracture
    - Always palpate distal fibula – some severe sprains can be associated with fracture of fibula (lateral malleolus)
- Lateral ligament injury should be graded:
    - Grade I sprain – no instability of lateral ligaments
        - Minimal edema and bruising
        - Minimal pain with ambulation
        - Requires only simple protection (rest) for 5 – 7 days
    - Grade II sprain – moderate lateral ligament injury, but no instability to ankle
        - Moderate bruising and edema
        - Often unable to ambulate, especially after 24 hours
        - Tender over lateral and often fibular-talar ligament
        - Treated best with temporary immobilization (stiff boot, crutches, walking cast) for 7 – 14 days, then gradual mobilization
        - May be treated at PHC
    - Grade III sprain – complete tear of lateral ankle ligaments
        - Severe bruising and edema
        - Ankle feels "loose" and unstable
        - Inversion test is positive, often anterior drawer is positive
        - Treated with cast (may be walking cast after first 5 – 7 days) for 6 – 8 weeks minimum, then protection in stiff boot.
        - Should generally be referred for treatment

Knee – Knee sprain

- Generally result of twisting injury or blow to anterior or lateral knee
- When possible, most valuable examination is immediately after injury, before swelling and inflammation
- Ask about "Pop" or "snap" sound with injury -- highly suggestive of torn ligament, especially anterior cruciate
- Examine knee for stability of collateral and cruciate ligaments – demonstrate examination
- Can be graded I, II, or III as before
- Evidence of instability – probable torn ligament (Grade III sprain) – refer for specialist treatment
- No apparent instability – probably injured ligament (Grade I or II sprain) – may be treated in PHC
- Treatment of Grade I and II sprains – RICE, immobilization (splint in extension) for 5 – 14 days.

- Follow immobilization with mobilization exercises, work toward full flexion and extension
- If still painful with activity after treatment and attempted mobilization, consider unrecognized torn ligament or damaged meniscus – refer for specialist evaluation

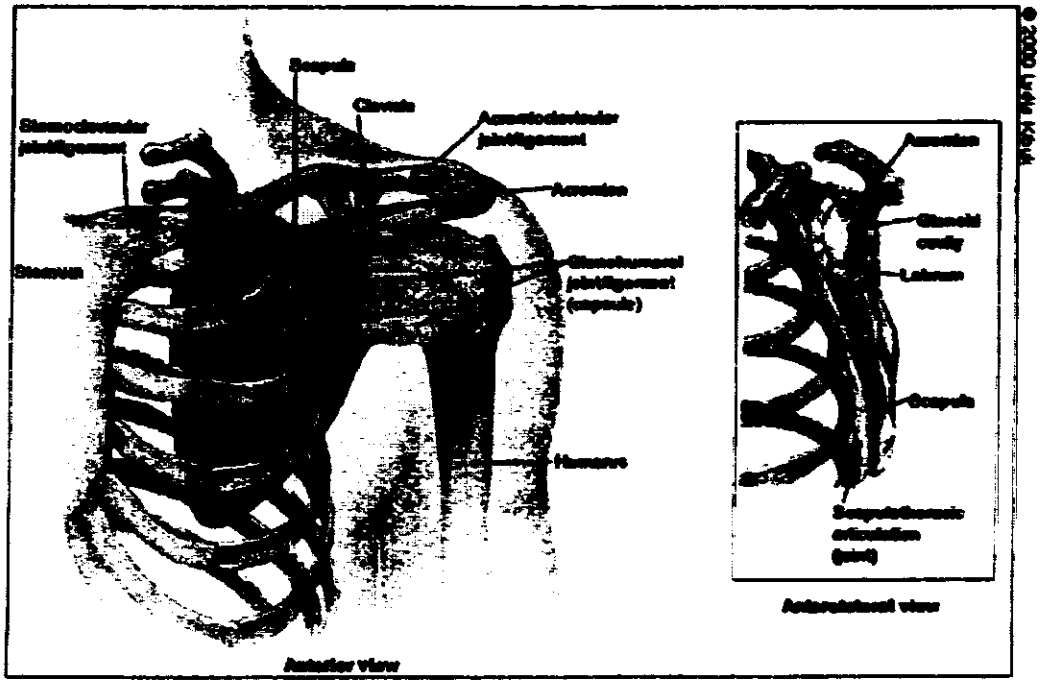
CRITICAL ELEMENTS FOR REFERRAL

- Overuse injury that does not respond to simple therapy and time (may be several months)
- Trauma with suspected fracture (other than toe, rib, clavicle)
- Grade III sprain of ankle or knee, with suspected or evident instability of ligaments
- Any child with a persistent limp or pain of the hip
- Night bone pain

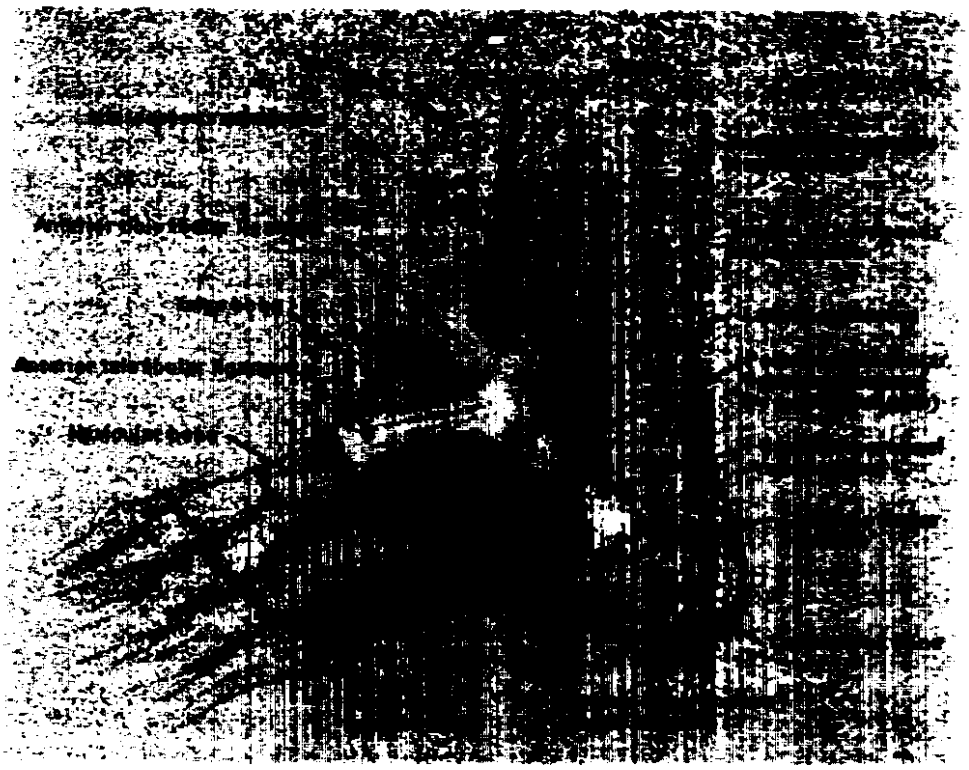
CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Demonstrate the proper examination of the wrist, elbow, shoulder, ankle, knee and hip
- Describe the mechanism of injury of the most common presenting musculo-skeletal injuries, both overuse and traumatic
- Describe the differences between Grade I, II, and III sprains
- Describe the management and treatment of the most common musculo-skeletal injuries, both overuse and traumatic
- Understand when to refer an injury to a specialist for more definitive diagnosis and treatment

Shoulder Anatomy



Ankle Anatomy - lateral



Medial

BEST AVAILABLE

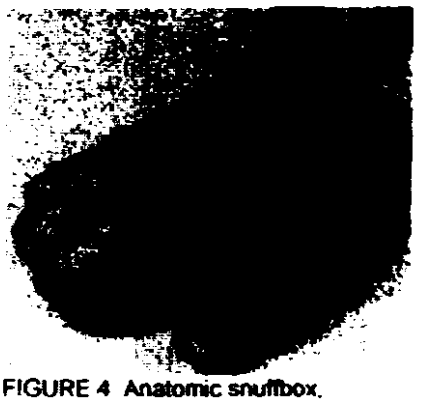


FIGURE 4 Anatomic snuffbox, bordered medially by the tendon of the extensor pollicis longus, and laterally by the tendons of the extensor pollicis brevis and the abductor pollicis longus

FIGURE 5. Radiograph showing fracture of the scaphoid (arrow)

BEST AVAILABLE

Cardio Pulmonary Resuscitation

CARDIOPULMONARY RESUSCITATION

LEARNING OBJECTIVES

- Describe the definition and priorities in CPR
- Understand the management of airway obstruction
- Describe the technique of CPR in both a witnessed and unwitnessed collapse
- Be able to correctly interpret cardiac fibrillation and apply defibrillation
- Understand the modifications to CPR necessary in resuscitation of infants and children
- Use properly the basic medicines available for CPR

TEACHING STRATEGIES

- Combine didactic teaching with demonstration of CPR techniques – try to give no more than 15 minutes lecture before each demonstration
- Break participants into smaller groups to practice CPR techniques on manikins or each other

MATERIALS AND EQUIPMENT

- Overhead projector and transparencies
- Chalkboard or Whiteboard
- Demonstration manikins for CPR – adult and infant
- Alcohol solution or other disinfectant for cleaning manikins after each use

LEARNING POINTS

- Causes of anoxia and cardiac arrest
  - Foreign body, especially while eating, or in small children
  - Drowning
  - Bronchospasm or laryngospasm, as in severe allegic reaction or severe asthma
  - Trauma to chest or neck
  - Myocardial infarction
  - Pulmonary embolism

- Airway management and ventilation
  - Airway clearing – Heimlich maneuver
  - Airway positioning – jaw thrust, neck extension (except in head or neck injury)
  - Mouth to mouth – adult; mouth to face/nose in children
  - Bag/mask

- Resuscitation Protocol – unwitnessed collapse - 1 and 2 rescuers
  - Proper technique – 1 rescuer
    a. Attempt to arouse patient (shake and shout) – confirm unconsciousness
    b. Clear and Open airway (jaw thrust, neck extension)
    c. Confirm absence of breathing – give 2 breaths by mouth-to-mouth or mask/Ambubag
    d. Check carotid pulse, confirm absence – begin chest compressions

e. Position of rescuer's body
f. Position of hands on chest
g. Correct compression (straight down 2-3 cm.) at 60/minute
h. Ratio chest compression to respiration – 15:2 in adult (1 rescuer)
i. Check for ventricular fibrillation and defibrillate as soon as possible

- Resuscitation Protocol – 2 rescuers
  a. Attempt to arouse patient (shake and shout) – confirm unconsciousness
  b. Clear and Open airway (jaw thrust, neck extension)
  c. Confirm absence of breathing – give 2 breaths by mouth-to-mouth or mask/Ambubag
  d. Check carotid pulse, confirm absence – begin chest compressions
  e. Position of each rescuer's body (opposite sides of patient, 1 providing respiration, 1 providing chest compression)
  f. Position of hands on chest
  g. Correct compression (straight down 3-4 cm.) at 60/minute
  h. Ratio chest compression to respiration – 5:1 in adult (2 rescuers)
  i. Alternate positions frequently to avoid fatigue
  j. Check for ventricular fibrillation and defibrillate as soon as possible

- Resuscitation Protocol – witnessed collapse
  - Same as Unwitnessed protocol, but add strong blow to chest before beginning chest compressions

- Risks to patient of cardiac massage
  - Fracture of ribs
  - Pneumothorax
  - Damage to liver or spleen with hemorrhage
  - Need for proper technique to minimize risks

- Medications used in CPR in the health center
  - IV fluid – Ringers Lactate at 200 – 250 ml/min, also used to give medication
  - Epinephrine – for improved contractions, fine fibrillation, asystole – 1 mg. IV (10 ml. of a 1:10,000 solution)
  - Sodium Bicarbonate – only given in resuscitation efforts lasting longer than 20 minutes – 50 meq. IV
  - Calcium – asystole or electro-mechanical dissociation (ECG activity with no pulse) – 5 ml. of a 10% solution IV
  - Atropine – for bradycardia <40/min. – 1-3 mg. IV
  - Lidocaine – for ventricular fibrillation, arrythmia - 1 mg/kg or 50-100 mg IV for adults

- Defibrillation
  - Recognition of ventricular fibrillation, ventricular tachycardia, asystole, electromechanical dissociation
  - Knowledge of defibrillator machine (how to turn on, how to charge paddles, correct placement of paddles)
  - Correct dosage of joules – increasing strength and protocol
    - Begin with 200 joules, then 200 again, then 360

- Pediatric resuscitation
  - Infants and children most often have only respiratory arrest, may only need mouth-to-face or mask/Ambubag ventilation for recovery
  - Initial confirmation of collapse same as for adult:
    - Shake and shout to confirm unconsciousness
    - Clear and open airway (clear foreign bodies, neck extension and jaw thrust) **Especially important in drowning, foreign body choking in children**
    - Confirm absence of spontaneous breathing – give 5 breaths
    - Check carotid pulse, confirm absence – begin chest compressions
    - Use 2 fingertips (infant) or palm of 1 hand (child)
    - Compress chest 1-2 cm.(infant) to 2-3 cm. (child)
    - Ratio of compressions to breaths – 5:1
  - Airway management – mild neck extension, jaw thrust forward
  - Foreign body – Back blows alternating with Heimlich maneuver (lower chest compression)

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Consider holding basic CPR instruction classes for members of the community
- Encourage community vigilance for potential hazards such as unprotected cisterns or other bodies of water, electrical hazards, etc.
- Use every opportunity to promote reduction of risks for coronary artery disease, such as avoidance of smoking, low fat diet, regular exercise.

PATIENT OR FAMILY COUNSELING ISSUES

- When possible, inform family members of CPR activities and explain process
- Deal sympathetically with emotional responses of family members
- Understand that anger and confusion may be an initial response by some family members to a CPR situation – counsel staff members to not over-react to this

CRITICAL POINTS FOR REFERRAL

- ALL patients who are successfully resuscitated with CPR should be transferred to an appropriate hospital as soon as vital functions have been stabilized

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Correct application of A,B,C of resuscitation
- Demonstration of correct technique in managing airway obstruction
- Demonstration of correct technique of CPR – witnessed and unwitnessed, one and two rescuer
- Correct identification of ventricular fibrillation, ventricular tachycardia, asystole, and electro-mechanical dissociation
- Proper application and use of the defibrillator
- Demonstration of correct technique of CPR for infants and children

RESUSCITATION PROTOCOL - SUMMARY

	Child	Adult – 1 Rescuer Unwitnessed Collapse	Adult – 2 rescuers Unwitnessed Collapse
1	Confirm unconsciousness (shake and shout)		
2	Call for help if available		
3	Open airway (neck extension, jaw thrust)		
4	Confirm lack of breathing (look, listen, feel chest)		
5	Check for and clear foreign bodies		
6	Give 5 breaths (mouth-to-mouth or mask/AmbuBag)	Give 2 breaths (mouth-to-mouth or mask/AmbuBag)	Give 2 breaths (mouth-to-mouth or mask/AmbuBag)
7	Confirm continued absence of respirations and absence of pulse – feel carotid artery		
8	Begin chest compressions (2-3 cm at 100/min.) with one hand. Continue respirations at rate of 5 compressions/1 respiration	Begin chest compressions (3-4 cm at 60/min.) with two hands. Continue respirations at rate of 15 compressions/2 respirations	Begin chest compressions (3-4 cm at 60/min.) with two hands Continue respirations at rate of 5 compressions/1 respiration
9	Check for ventricular fibrillation and defibrillate as soon as possible (200 – 200 – 360 – 360 joules for adult)		
10	Begin IV and Ringers Lactate Give epinephrine IV (0.01mg/kg for a child; 1 mg for adult) Give other medications as appropriate to situation		
	Re-evaluate situation every 5 minutes	Re-evaluate situation every 5 minutes	Alternate positions frequently. Re-evaluate situation every 5 minutes

Abdominal Pain

ABDOMINAL PAIN

LEARNING OBJECTIVES

- To describe the most common causes of abdominal pain, and the characteristics of each
- To develop a systemic approach to the evaluation and emergency management of abdominal pain
- To be able to effectively manage and distinguish the non-life-threatening types of abdominal pain

TEACHING STRATEGIES

- Use case studies to stimulate discussion and thinking about the initial evaluation and management of abdominal pain
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling and patient education issues
- Review and demonstrate the correct method of examining the abdomen on a volunteer (inspection, percussion, gentle palpation of all four quadrants, auscultation)

LEARNING POINTS

Common Causes of Abdominal Pain and Clinical Presentation:

1. Peptic Ulcer Disease
    a. Typically presents as burning pain in the epigastric area
    b. Pain of gastric ulcers usually improves with food
    c. Symptoms may improve with antacids or H-2 antagonists
    d. If bleeding develops, patient may present with melena
    e. Predisposing factors may be:
        - Medications (anti-inflammatories, aspirin, antibiotics like erythromycin)
        - Stress
        - Alcohol use or overuse
        - Smoking

2. Gastroenteritis
    a. Very common cause of abdominal pain
    b. Usually viral etiology
    c. Typically diffuse and crampy
    d. Commonly associated with diarrhea, may also have nausea

3. Irritable Bowel Syndrome
    a. Intermittent, recurring symptoms over months to years
    b. May have either mild diarrhea or constipation, often alternating
    c. Pain is cramping, variable, not consistently localized

d. Pain is often temporarily relieved with passing gas or bowel movement
e. Often associated with chronic anxiety or tension

4. Peritonitis
   a. Etiology is a ruptured viscus
   b. Sudden-onset of pain
   c. Physical exam diagnostic – findings include rebound, involuntary guarding
   d. Upright abdominal films may show free air under the diaphragm
   e. Requires immediate surgical intervention

5. Appendicitis
   a. Classically periumbilical pain, migrating to RLQ, but may be mid or RUQ
   b. Fever, leukocytosis, nausea, vomiting
   c. Anorexia is a classic sign
   d. On physical exam, look for signs of appendiceal inflammation adjacent to muscle, e.g. Psoas sign (pain on extension of right thigh), Obtrurator sign (pain on internal rotation of right thigh)

6. Acute Cholecystitis
   a. Pain in RUQ and epigastrium
   b. Colicky, then steady aching pain
   c. Nausea and vomiting, low-grade fever, leukocytosis
   d. Usually worse after meals, or with greasy foods
   e. Examine RUQ for Murphy's sign (pain in RUQ on deep palpation with inhalation)

7. Small Bowel Obstruction
   a. Usually mechanical etiology, e.g. adhesions, tumor, hernia
   b. Symptoms include sudden onset of diffuse pain, distention, vomiting
      and obstipation
   c. Physical exam remarkable for distention, diffuse tenderness and high-pitched bowel sounds
   d. Requires surgical evaluation, and usually immediate surgical intervention

8. Abdominal Aortic Aneurysm
   a. Sudden onset of knife-like pain suggests perforation
   b. On physical exam, look for pulsatile abdominal mass
   c. Size > 5cm by ultrasound has significantly higher morality
   d. With rupture, patient may become rapidly hemodynamically unstable – immediate surgical intervention is required!

9. Pancreatitis
   a. Knife-like epigastric pain, usually sudden onset
   b. Usually radiates to the back
   c. Usual etiology is gallstones or alcohol abuse

10. Ectopic pregnancy
    a. Classic triad of fever, abdominal pain and vaginal bleeding
    b. Any woman of childbearing age presenting with abdominal pain should be asked about her last menstrual period
    c. Pain is usually in lower quadrants and severe
    d. If rupture has occurred, peritoneal signs and hypotension may be present
    e. On physical exam, classic finding would be a tender adnexal mass
    f. Usually requires surgical removal for definitive therapy

Diagnosis/Evaluation:

History:

The area of the pain, including its origin and pattern of radiation, time of onset, nature, and associated symptoms will frequently make the diagnosis. A menstrual history should be obtained

Questions to Ask:

1. Type of pain – diffuse or generalized?

2. Location of pain – which quadrant? Is it perumbilical? Did it start periumblical and shift to RLQ? (can be indicative of appendicitis)

3. Quality of pain – severe, sharp or cramping, persistent or constant, periodic and changing intensity over minutes (colicky?)

4. Time pattern – sudden onset, awaken at night, recurrent, occurs after meals, occurs during menstruation?

5. Radiation – to the back (could be pancreatitis), right shoulder blade (could indicate cholecystitis), to the groin, buttocks or legs?

6. Aggravating factors, e.g. worse with position, eating or drinking, alcohol, greasy foods (could indicate cholecystitis), stress, milk, straining?

7. Relieving Factors, e.g. after food or bowel movements, antacids.

    A. **Associated symptoms.**

        1. Weight loss, which might indicate malignancy or malabsorption.

        2. Vomiting as with a small bowel obstruction or volvulus (obstruction especially if fecal).

        3. Diarrhea and constipation, which might indicate inflammatory bowel disease, cancer, obstipation, malabsorption.

4. Melena or blood per rectum: check with Hemoccult. If negative consider foods (colored drinks, beets) or medicines (iron).

B. **Jaundice.** Consider pancreatic cancer (painless), hepatitis, hemolysis (sickle cell, G6PD deficiency, transfusion reaction), alcoholic hepatitis, choledocholithiasis, primary biliary cirrhosis, etc.

C. **Urinary symptoms.** Dysuria, frequency, urgency, hematuria. Renal problems often present as a complaint of abdominal pain. Consider urolithiasis, UTI, testicular torsion, etc.

D. Sexual activity, last period, birth control, history of venereal disease, vaginal discharge, spotting or bleeding. Consider ectopic pregnancy, PID, ovarian torsion, ruptured ovarian cyst, etc.

E. Past medical history including other major illnesses, prior surgeries, prior studies performed for evaluation of abdominal problems, family history of any similar complaints.

F. **Medications.** Especially digoxin, theophylline, steroids, tetracycline (esophageal ulcers), analgesics, antipyretics, antiemetics, barbiturates, diuretics, alendronate (esophageal ulcers).

I. Physical Examination

Vital signs. Observe for signs of shock, elevated temperature, signs of dehydration noted with dry mucous membranes and decreased skin turgor.

Abdominal exam.

1. **Inspection.** Scaphoid appearance or distention, point of most severe pain, hernia, scars.

2. **Ausculation.** High-pitched bowel sounds are suggestive of an obstructive process. Absent bowel sounds are suggestive of an ileus.

3. **Palpation and percussion.** Muscle rigidity (voluntary/involuntary), localized tenderness, masses, pulsation, hernias, peritoneal irritation (rebound: cough or jumping also may elicit "rebound"), involuntary guarding, obturator sign (pain on internal and external rotation of hip), psoas sign (pain on straight leg raising by using obturator muscle, may indicate abscess, etc.), Murphy's sign (RUQ pain when breathing in and pressing over the liver), liver dimension and spleen dimension.

4. **Tenderness of the costo-vertebral angle (over kidneys)**

5. **Pelvic exam in women.**

6. **Rectal exam.** To rule out GI bleeding, prostatitis, etc. The absence of rectal tenderness does not preclude the diagnosis of

appendicitis nor does it make the diagnosis of appendicitis. The rectal examination should be used to add to your entire clinical picture.

CHARACTERISTIC PHYSICAL FINDINGS IN THE ACUTE ABDOMEN

Peritonitis

Generalized guarding, tenderness, rebound tenderness, hypoactive or absent bowel sounds

Appendicitis

Right lower quadrant tenderness, guarding and rebound, discrete tenderness at McBurney's point, peak age 10-20.

Acute cholecystitis

Right upper quadrant tenderness and guarding, positive Murphy's sign, may radiate to right scapula.

High Small Bowel obstruction

Severe vomiting, dehydration, no distention

Low Small Bowel obstruction

Distention, hyperactive and high pitched bowel sounds, vomiting.

Bowel Infarction

Pain out of proportion to tenderness, rectal bleeding if venous infarction.

Ruptured aortic aneurysm

Pulsatile tender mass, hypotension, back pain

Pancreatitis

Steady, severe, LUQ and epigastric pain radiating to the back; pain less when sits forward; decreased BS; diffuse tenderness.

II. **Laboratory**

. CBC with differential, platelet count, and urinalysis routinely done on most cases of abdominal pain.

A. Electrolytes with vomiting or diarrhea.

B. Liver function tests and liver enzymes; amylase and lipase for upper abdominal pain.

C. Other studies as indicated: chest radiograph (upright) for pneumonia or free air (best radiograph for free air). Abdominal flat plate and upright for bowel obstruction, ileus, free air, abnormal calcification. Ultrasonography to look for peritoneal fluid. ECG for acute MI, ischemia, or arrhythmias. Paracentesis may be important with fluid in the abdomen or in evaluation of abdominal trauma. Culdocentesis (nonclotting blood for ruptured ectopic pregnancy).

D. Pregnancy test on **all reproductive-age females** unless status post hysterectomy. Sexual history is often unreliable in the emergency setting.

III. Management of Abdominal Pain Syndromes

1. Peptic Ulcer Disease
   a. Dietary modification – avoid spicy and fatty foods
   b. Stop smoking!!
   c. Avoid alcohol drinks
   d. Investigate stress in life
   e. Medications
   f. Begin with simple antacid or H2 blocker (cimetidine or ranitidine)
   g. Carafate often effective in reducing symptoms of gastric ulcer
   h. If no response to above, switch to omeprazole, or other proton pump inhibitor
   i. If symptoms recurrent, consider testing for *Helicobacter pylori*, or simply treat with three medications (omeprazole, amoxicillin, metronidazole) for 10 – 14 days.

2. Non-ulcer Dyspepsia
   a. Often responds to dietary change such as avoiding milk or fatty foods
   b. May try antacids or anti-spasmodics

3. Gastroenteritis
   a. Maintain hydration, occasionally needs IV rehydration
   b. May benefit from anti-emetic (phenergan, etc.) if other causes excluded
   c. Reassure patient that symptoms are usually short lived
   d. If diarrhea prominent, avoid dairy products and fatty foods for several days.

4. Acute Cholecystitis
   a. Avoid fatty foods
   b. Maintain hydration if vomiting or diarrhea
   c. Antispasmodics (atropine, hyoscine, etc.) useful for pain

d. If recurrent or severe or elderly patient, consider referral for surgery

5. Irritable Bowel Syndrome
   a. Explore relationship with stress and tension in patient's life
   b. May benefit from high fiber, milk and fat free diet
   c. May need antispasmodics (atropine, hyoscine) periodically
   d. Maintain hydration when diarrhea severe

6. Pancreatitis
   a. In mild cases, maintain hydration
   b. If pain or vomiting severe, may need referral for hospitalization and hydration

7. Ectopic pregnancy
   a. When diagnosis suspected, refer for definitive diagnosis and treatment

Initial Treatment for Severe Abdominal Pain

. Decide whether to admit and observe, discharge, operate. Serial examinations may clarify the diagnosis.

A. Allow no food or fluids by mouth until diagnosis is clear.

B. IV fluids: Decide on expected fluid losses and current level of hydration.

C. NG tube for vomiting, bleeding, or obstruction.

D. Foley catheter to monitor fluids.

E. Pain medications will often help clarify the diagnosis.

F. Serial labs may be helpful, especially CBC, cardiac enzymes.

PREVENTION ISSUES AND PATIENT EDUCATION MESSAGES

- Provide education to patients and families about signs and symptoms of life-threatening, surgical or serious abdominal pain and when to seek immediate medical evaluation

- Provide education to patients and families about signs and symptoms of abdominal pain of benign etiology, and when to defer medical evaluation

- Provide advice for simple steps at home to manage abdominal pain that does not seem surgical:
    - Avoid food until symptoms improve
    - Clear liquids for rehydration if significant diarrhea is involved
    - Avoid analgesic pain medications if possible
    - Consider a trial of antacids or H-2 blockers

CASE STUDIES

1. A generally healthy woman of 30 years old complains of moderately severe abdominal pain of 2 days duration, mainly in the right lower quadrant of the abdomen. She feels like she has a slight fever and some nausea. She does not have any vomiting, diarrhea, urinary urgency or pain, or pain in the back. She takes not medications regularly. Her menstrual cycles are irregular, and her last menstruation was 5 weeks ago.
    a. What are the most likely possibilities that could be causing this pain?
    b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?
2. A 42 year old female presents to the Health Center complaining of intermittent abdominal pain for the past several years. The pain is generally in the upper abdomen, described as a fullness, bloating, and occasionally cramping. It is sometimes worse after eating, especially after mansaf. She has occasional loose stools, and occasional constipation, but no consistent diarrhea. She has not had fever.
    a. What are the most likely possibilities that could be causing this pain?
    b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?
    c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?
3. A 50 year old man comes to the Health Center with severe burning pain in his upper abdomen for the past 12 hours. He has vomited two times, and the last time it appeared to have some dark material like coffee. He has had similar episodes of pain occasionally for the past several years, and has not eaten spicy foods for several years. He also has some arthritis, and one month ago was given diclofenac, which has decreased the arthritic pain significantly.
    a. What are the most likely possibilities that could be causing this pain?

b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?

c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?

4. A 62 year old man is brought to the Health Center with a 24 hour history of increasingly severe abdominal pain and recurrent vomiting. The pain began in the mid abdomen very mildly, but progressively increased. There has been no diarrhea, and no stools for the past 12 hours. His only past history was a hospitalization for a perforated appendicitis 20 years ago. He takes only medication for his blood pressure. On examination, his abdomen is distended and appears full of gas.

   a. What are the most likely possibilities that could be causing this pain?

   b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?

   c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?

CRITICAL ELEMENTS FOR REFERRAL

- Any patient that is hemodynamically unstable, e.g. hypotensive, diaphoretic, short of breath, tachycardic
- Any patient with suspected surgical etiology e.g. appendicitis, peritonitis, acute cholecystitis, small bowel obstruction, ectopic pregnancy, ruptured abdominal aortic aneurysm
- Any patient with significant dehydration e.g. from vomiting or diarrhea associated with the abdominal pain, should be considered for hospital admission
- Any patient with abdominal pain that is not readily explained by a thorough history and physical, and basic diagnostic testing and could benefit from further procedural evaluation

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Able to correctly evaluate by history and physical exam patients who present with abdominal pain, and distinguish serious from non-serious causes of pain, and likely surgical etiologies that require immediate medical attention
- Understand initial management of abdominal pain and stabilization of the patient, if necessary
- Clear understanding of when to refer patient with abdominal pain for further evaluation and management

3. CHILD HEALTH

Neonatal and Infant Screening

NEONATAL AND INFANT SCREENING

LEARNING OBJECTIVES:

- Describe importance of screening
- Identify problems which can be screened at the primary care level
- Describe criteria for successful screening
- Integration of screening into existing primary health care services
- Recommendation on screening of the newborn, infants & children

TEACHING STRATEGIES:

- Use lecture or informal presentation to give the knowledge needed, small group discussion for parents education
- Brainstorming and group work and discussion
- Demonstrate the skills needed for clinical screening
- Involve trainees in practical work
- Problem solving and role playing in fieldwork

MATERIALS AND EQUIPMENT NEEDED:

- Audiovisual aids
- Growth charts, Snellen charts
- Health education pamphlets
- White board or flip chart and markers

LEARNING POINTS:

- Significance of early detection in diagnosing asymptomatic health or developmental problems
  - Timely intervention is more possible
  - Makes best use of limited resources
  - Can begin process of education and support of families
  - Discussion of parent's suspicions and fears of "something wrong"
  - Beginning discussion of long-term strategies of the family
  - Early detection of symptomatic conditions
  - Early referral of child for confirmation and development of management strategy
- Criteria for deciding whether or not to use health screening
  - Is the condition of public health importance?
  - Are there preventive or curative measures?
  - Is early detection sufficient to permit timely intervention?
  - Are the screening procedure, diagnosis and interventions acceptable to the population?
  - Are resources adequate for screening?
  - Will the screening program strengthen society development?
  - Is the cost warranted, given all previous items?
- Significance to family and society of disabled child
  - Strain on family relationships (divorce more common)

    - Strain on family economy (mother not able to work, increased costs)
    - Lost income and productivity of disabled child
    - Increased costs to society (medical care, special schooling and equipment
- Integration in the well-child care and immunization programs
    - Screening can easily be performed at routine well-child and immunization visits
    - Provides an opportunity to educate and counsel parents about preventive measures
    - Health workers should be trained how to tell parents about a concerning or suspicious result of screening
        1. Development screening is preliminary investigation, not definitive
        2. Emphasize that this is only a screening; referral and further testing is necessary to confirm the result
        3. If a problem is confirmed, in most cases a treatment plan can be developed to help with the problem
        4. Avoid discussing long-term prognosis or management until developmental diagnosis confirmed
    - Diagnosis and management of childhood disabilities is a continual team effort of PHC team and specialists
    - All suspicions of abnormalities need to be confirmed by qualified pediatrician or developmental specialist
- All suspected abnormal screening results must be referred for confirmation and evaluation
    - Most can be referred to MOH Center of Developmental Disabilities - Amman
    - Emphasize courtesy and confidentiality in order to increase public acceptability of the screening services

- **Conditions of the newborn which may be screened**
    - Low birth weight/ pre-maturity
    - Developmental abnormalities
    - Maternal/ houshold psychosocial & socioeconomic risks
    - Undescended testis
    - Congenital hypothyroidism
    - Congenital dislocation of the hip
    - Abnormal head circumference
    - Asymptomatic heart abnormalities
    - Eye abnormalities

- **Conditions of infants and children which may be screened**
    - Immunization status
    - Monitoring of physical growth
    - Developmental abnormalities
    - Mental, neurological & psychosocial development
    - Congenital dislocation of the hip
    - Asymptomatic heart abnormalities
    - Visual problems
    - Hearing problems

- Undescended testis
- Anemia
- High blood pressure
- Oral health problems

CLINICAL PROTOCOL
(see attachments)

CASE STUDIES
Nader is a 4-month old boy who was brought to the health center for vaccination. He was not feeding properly and a quick screening showed an infant who could not support his head, with weak muscle tone and poor sucking reflex.

1. What additional information would you request regarding:
   a. Prenatal history
   b. History to the present
   c. Family history
   d. Physical examination

2. How would you proceed with a referral? (where would you refer?, to whom?, when?)

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES
- The value of screening and early detection through the media and community organizations
- Very limited use of medications in early pregnancy, except those absolutely essential for health of mother or fetus
- Limited use of X-rays during pregnancy
- Treat maternal diseases which can increase risk of malformations and disabilities (folate deficiency, anemia, Rh disease, alcoholism, diabetes mellitus, hypothyroidism or hyperthyroidism)
- Avoid smoking and alcohol use during pregnancy
- Advise maternal immunization (Tetanus, Rubella)
- Counsel about consanguineous marriages
- Advise antenatal care and counseling beginning early in pregnancy

HEALTH EDUCATION AND COUNSELING
- Lifestyle modification
- School and education
- Iron rich diet and supplementation
- Social and psychological factors

CRITICAL ELEMENTS OF REFERRAL
- Confirmation of suspicious or positive results
- To develop a treatment plan to prevent further progression of the problem
- Test other family members for the same disease.

Care of the Newborn

Immediate Assessment – (Conducted in the hospital within first 24 hours)

1. Keep the infant warm and dry during the examination.

2. Review the birth record.

3. Look at the infant's general appearance; take note of whether or not the infant is small or large, fat or thin, tense or relaxed, active or still; is the infant's body and mouth blue or pink.

4. Listen to the infant's cry (high, piercing cry can be a sign of illness).

5. Check the rate of breathing, heart rate, and temperature (especially important during the first six hours):
   - Breathing should be without difficulty; normal rate is 30-60 breaths per minute.
   - Heart rate should be between 120-160 per minute (place two fingers over the infant's heart or use a stethoscope).
   - Temperature usually between 36.5-37.2°C when taken under the arm. Hypothermia is temperature below 36.5°C. It is very important to prevent heat loss after delivery; dry and cover the infant especially its head, and by keeping the infant close to the mother.

6. Weigh the infant (usually between 2.5 and 4.0 kg). Tell the mother and family the infant's weight.

7. Inspect the infant's body:
   - Head – Note the sizes of the fontanelles (soft spots), suture, and molding
   - Eyes – Clean the eyes and place 2 drops of antibiotic eye drops in each eye
   - Mouth – Look at the formation of the lips, feel the inside of the mouth; check suck reflex
   - Spine – Note swellings or depressions
   - Limbs – Note their ability to move and number of fingers and toes
   - Reflex – look for the infant's "startle" reflex (arms open normally when you clap your hand)

8. Watch the infant breastfeed. The nipple and areola should be in the infant's mouth.

9. Administer Vitamin K and antibiotic eye drops.

Danger Signs[1]

Refer to a doctor if an infant has any of these signs:

- Poor feeding or sucking
- Sleeping all the time
- Fever or hypothermia
- No stool by third day
- Blueness of the lips or skin
- Jaundice (yellow skin)
- Persistent vomiting; vomiting with a swollen abdomen
- Difficulty establishing regular breathing
- Eye discharge
- Watery or dark green stools with mucus or with blood

Early Assessment (at 1st week)

1. Take a history from the mother about her newborn. Ask the mother about the following:
   - Breastfeeding – How many times has the infant fed since sunrise? How many times during the night?
   - Sleep – How much does the infant sleep?
   - Urination – How often does the baby wet?
   - Stool – What color is the stool and how often?
   - Cord – Has there been any discharge from the cord? Is there any smell?

2. Examine the infant and explain findings to the mother. Normal findings should include:
   - General appearance – active when awake
   - Breathing – easily, 40-60 breaths per minute
   - Temperature – skin warm to touch, temp. 36.5-37.2°C
   - Weight – a newborn may lose some weight within the first few days after birth (10% of birth weight). By day three or four, the baby should begin to gain weight again and should regain the birth weight by the end of the week.
   - Head – "soft spots" not depressed or bulging
   - Eyes – no discharge
   - Mouth – check sucking by observing the infant breastfeeding; mucous membranes moist
   - Skin – not yellow or blue
   - Cord – no discharge or foul smell (the cord stump should fall off by two weeks after birth)

3. Counsel Mother about Infant Immunization Schedule
   - BCG to prevent tuberculosis given 5 to 30 days following birth (New MOH policy; practice initiated August, 2001) only given at selected health centers. Provide information to the mother about where her baby can receive BCG injection and when to take the baby.
   - **Oral polio vaccine** at two month visit.

[1] Source: *Healthy Mother and Healthy Newborn Care: A Reference for Caregivers* (1998), ACNM, 198-203.

- **DPT and Hepatitis B** (quadrivalent) vaccine at two month visit.
- **HIB vaccine**

Eight Weeks after Birth: Assessment and Immunizations

1. Take a history from the mother by asking her about the following:
   - Breastfeeding
     - How often does the infant feed? (Usually every two to four hours, including during the night).
     - How often does the infant wet?
     - Is the infant taking anything besides breastmilk?
   - Sleep – How much does the infant sleep at night and during the day?
   - Stool – What color is the stool; how often does the infant have stool?
   - Immunizations – Has infant received BCG, oral polio, and Hepatitis B?

2. Examine the infant and explain finding to the mother. Normal findings should include:
   - General appearance – active when awake
   - Breathing – easy
   - Temperature – skin warm to touch, temperature 36.5-37.2°C
   - Weight – more than at birth
   - Head – "soft spots" not depressed or bulging
   - Eyes – no discharge
   - Mouth – check suck by watching the infant breastfeed
   - Skin – not yellow or blue or dry
   - Cord – off by second week after birth; no redness, no discharge, or odor[2]

3. Administer infant first dose of oral polio vaccine and DPT and hepatitis B immunization.

[2] Adapted from *Healthy Mother and Healthy New born Care: A Reference for Caregivers* (1998), ACNM.

Screening of Newborn (0 – 2 months of age)

Condition to be screened	Frequency of Screening	Method of Screening
Low Birth Weight/Prematurity	1st well child visit (0-2 weeks)	Weight and height
Developmental abnormalities	1st well child and each immunization visit	Developmental screen
Household psychosocial and economic risks	1st well child and each immunization visit	History and observation
Undescended testicle	1st well child and each immunization visit	Palpation of testicles in males
Congenital dislocation of hip (CDH)	1st well child and each immunization visit	Barlow's and Ortolani's maneuver
Asymptomatic heart problems	1st well child and each immunization visit	Auscultation of heart and lungs (murmer or pulmonary edema) Poor feeding and growth
Abnormal head circumference	1st well child and each immunization visit	Head circumference measurement and graphing on growth chart
Eye abnormalities	1st well child and each immunization visit	Presence or absence of red reflex

Screening of Infants and Children (2 months – 5 years of age)

Condition to be screened	Frequency of Screening	Method of Screening
Immunization status	Each immunization visit	Review immunization sheet
Developmental abnormalities	Each immunization visit	Developmental screen appropriate for age
Household psychosocial and economic risks	Each immunization visit	History and observation
Undescended testicle	Each immunization visit until 18 months	Palpation of testicles in males
Congenital dislocation of hip (CDH)	Each immunization visit until 18 months	Assessment of hip abduction
Asymptomatic heart problems	Each immunization visit	Auscultation of heart and lungs (murmer or pulmonary edema) Poor feeding and growth
Abnormal head circumference	1st well child and each immunization visit until 18 months	Head circumference measurement and graphing on growth chart

Eye abnormalities	Each immunization visit to 18 months	Normal eye fixation and following of object
Visual problems	Yearly after age 3	Simple eye chart appropriate for age
Hearing problems	Before 6 months and yearly	Response to noise Speech development
Anemia	Age 6 – 12 months	Hemoglobin level
High blood pressure	Age 5 years	Blood pressure measurement with child cuff
Oral health problems	Each visit after age 2	Inspection of teeth

Table 1. Developmental Screening Chart for the use of MCH

Id. Number: **Date of Birth:**

1-2 weeks Screening **Date:**

A. Muscle Tone:
1. Normal
2. Hypertonic
3. Hypotonic

B. Reflexes (Moro, Sucking, Grasp)
1. Normal
2. Abnormal
3. Notes

C. Red Light Reflex:
Present Absent

D. Malformation, Handicap, Acute or chronic important disease:

2 Month-Screening **Date:**

A. Muscle Tone:
1. Normal
2. Hypertonic
3. Hypotonic

B. Reflexes (Moro, Sucking, (ATNR)
1. Normal
2. Abnormal
3. Notes

C. Eye Movements/Fixation
1. Normal
2. Abnormal

D. Smiles at mother
1. Yes
2. No

E. Makes sounds 1. Yes 2. No

F. Malformation, Handicap, Acute or chronic important disease:

5 Month-Screening **Date:**

A. Moro/Grasp reflexes gone
1. Yes
2. No

B. Traction test
1. Bends arms and legs slightly. No head lag
2. Straight arms but no head lag
3. Straight arms and head lag

C. Turns the head towards sound
1. Yes
2. No

D. Catches things consciously
1. Yes
2. No

E. Laughs loudly 1. Yes 2. No

F. Malformation, Handicap, Acute or chronic important disease:

9 month-Screening **Date:**

A. Can sit without support
1. Yes
2. No

B. Pincer grasp
1. Yes
2. No

C. Double-cooing like Baba, Mama 1. Yes 2. No

D. Presence of defense reflexes (Parachute reflex)
1. Yes 2. Partial 3. No

E. Malformation, Handicap, Acute or chronic important disease:

18 Month Screening **Date:**

A. Can stand and walk without help 1. Yes 2. No

B. Can build a tower with 2-3 bricks 1.Yes 2. No

C. Can drop a pearl or small stone in a bottle 1. Yes 2. No

D. Can, on request, go away and bring well known objects 1. Yes 2. No

E. Can speak simple words
1. More than 8 words
2. Less than 8 words
3. No words at all

F. Can point at nose, eye and mouth
1. Yes
2. Unsure
3. Definitely not

G. Can feed himself 1. Yes 2. No

H. Malformation, Handicap, Acute or chronic important disease:

Anemia in Children

ANEMIA IN CHILDREN

LEARNING OBJECTIVES:

- Correct differential diagnosis of anemia using the MCV
- Common causes of iron deficiency anemia
- Effective treatment and followup of anemia
- When to refer
- Appropriate counseling of parents with an anemic child

TEACHING METHODS:

- Lecture presentation
- Discussion of case studies

MATERIALS AND EQUIPMENT:

- Flipcharts and markers
- Whiteboard and markers

LEARNING POINTS:

- Definition of anemia
  - Hemoglobin <9 gm/dl, or hematocrit < 28%

- Classification of anemia, and common pathophysiology
  - Defined by MCV (mean corpuscular volume)
  - Microcytic anemia MCV< 85
    - Iron deficiency
    - Thalassemia
  - Macrocytic Anemia MCV> 105
    - Vit B12 deficiency
    - Folic acid deficiency
  - Normocytic Anemia MCV 85-100
    - Most commonly seen in chronic diseases, such as:
    - Renal failure
    - Malignancies
    - Rheumatoid arthritis (Still's disease in children)

- Iron Deficiency Anemia – most common cause of anemia in children
  - Diagnosis – highly suspected in all cases of microcytic anemia
  - History –
    - Infants - ask about birth weight and prematurity, breast feeding, supplemental feeding, growth curve, diarrhea, family history of anemia, anemia in mother during or between pregnancy
    - Children – ask about nosebleeds, melena, weight loss, diarrhea, diet, fatigue or tiredness, dyspnea on attempted exertion, family history of anemia
    - Adolescents – ask about diet, attempted or spontaneous weight loss, melena, diarrhea, menstrual periods in females, fatigue, dyspnea on attempted exertion
  - Physical Examination

        - Infants and children – growth curve, pallor of conjunctiva, abdominal masses, hepatomegaly, splenomegaly, adenopathy, joint swelling or pain
    - Laboratory Evaluation of microcytic anemia
        - Confirm hemoglobin < 9 gm/dl, and MCV < 85
        - Serum ferritin for confirmation of iron deficiency (< 10 mg/dl for females, < 20mg/dl for males)
            - Confirmed by hemoglobin electrophoresis to exclude thalassemia if necessary
        - Test 3 stool specimens for parasites and occult blood
        - Other lab investigations necessary only if there is no response to iron supplementation therapy
    - Common causes of iron deficiency
        - Diet – poor iron intake
        - Cow's milk diet in infants
        - Premature or low birth weight birth
        - Chronic blood loss (from parasites such as hookworm, bleeding Meckels diverticulum, peptic ulcer disease, chronic NSAID or aspirin use, recurrent nosebleeds)
        - Malabsorption syndromes (chronic giardiasis, chronic diarrhea, Celiac disease, etc.)
    - Management of iron deficiency anemia
        - Correct diet with foods high in iron content
            - Beef, lamb, liver, green vegetables such as broccoli, iron fortified cereals
            - Decrease cow's milk intake if excessive for age
        - Iron supplementation
            - Must be given daily for minimum of 3 months to restore iron reserves
            - Should see improvement in hemoglobin within 2-4 weeks
        - When anemia corrected, child should be seen every 6 – 12 months to be sure anemia is not recurring, and to confirm proper diet

PREVENTION AND HEALTH EDUCATION

- Identify and treat anemia in pregnant women
- Begin iron supplementation within first three months in premature or low birth weight infants, even if not anemic at the time
- Encourage full time breast feeding for the first 6 months of life
- Counsel mothers about appropriate foods when child begins to take solids – avoid excessive or exclusive milk diet
- Encourage parents to provide iron rich foods for their children when possible
- Screen all children for anemia with hemoglobin or hematocrit at 9-12 months of age
- Screen any child for anemia if any evidence of fatigue, pallor, poor performance in school, hepatomegaly, splenomegaly, chronic or recurrent diarrhea, weight loss, or poor diet

CRITICAL ELEMENTS FOR REFERRAL

- No response to iron supplementation after 4-6 weeks
- Evidence of non-iron deficient anemia (thalassemia, macrocytic or normocytic anemia, pancytopenia)
- Presence of chronic illness, such as renal disease or congenital heart disease

Diarrhea

DIARRHEA

LEARNING OBJECTIVES:

- Etiology and diagnosis of diarrhea
- Clinical management of diarrhea
- Preparation and administration of O.R.S
- Health education and preventive measures

TEACHING STRATEGIES:

- Group discussions and role-plays to reinforce certain skills and share insights among participants.
- Exercises in case management to participants to complete independently.

MATERIALS AND EQUIPMENT NEEDED:

- Wall chart: Management of the Patient with Diarrhea.
- ORS packets (for demonstration).
- Containers and water for preparation of ORT.
- Health education pamphlets for prevention, feeding etc....
- White board or flip chart and markers.
- Videotape: Assessment of Dehydration in a Child with Diarrhea.

LEARNING POINTS:

- Epidemiology and Etiology of Diarrhea
  - Mode of transmission – fecal/oral, contaminated food or water, hand to mouth
  - Risk factors for acute diarrhea
    - Young age – infant or small child
    - Poor hygiene in family (lack of handwashing, lack of hygiene in cooking or storing food)
    - Absence of sanitary facilities
    - Lack of clean water supply
    - Malnutrition
  - Seasonal factors – usually more frequent during summer months
  - Etiologic agents – most common are viruses such as rotavirus, but bacteria and protozoal parasites are also a factor
  - Invasive diarrhea and secretory diarrhea (dysentery)
    - Often caused by bacteria (enterotoxigenic E. coli, Salmonella, Shigella, Yersinia, Bacillus cereus, Vibrio cholera and parahemolyticus) or by parasites (such as Entamoeba hist. or giardia)
    - Often cause more severe diarrhea and dehydration than viral illness
    - Often associated with fever, toxicity, more severe illness, blood in stools
    - Clinical course may be shortened in some cases by identification and appropriate use of antibiotics or antiparasitic agents, HOWEVER – assessment and treatment of dehydration is the same as for all diarrheas
  - Other causes of diarrhea
    - Diarrhea alternating with constipation may be irritable bowel syndrome, or fecal impaction in young child

        - Malnutrition
        - Food intolerance such as cow's milk or gluten (wheat or oat products)

- Principles of Clinical Management of Acute Diarrhea
    - Definition of diarrhea
        - Passage of loose or watery stools, at least three times in a 24-hour period (Note: it is the watery consistency and total volume of the stools rather than the number that is most important. Frequent passing of formed stools is not diarrhea)
    - Diarrhea and dehydration
        - Dehydration occurs when loss of water and electrolytes (sodium, potassium, chloride, bicarbonate) in diarrheal stool is greater than the oral replacement of these losses
    - Formulation of Oral Rehydration Solution (ORS solution)
        - WHO formulation:

Ingredient	Grams/L
Sodium Chloride	3.5
Trisodium citrate dihydrate	2.9
Potassium Chloride	1.5
Glucose	20.0
Water	1 liter

        - ORS is a balanced solution of salts, glucose and water that allows for absorption of necessary electrolytes and water, even in secretory diarrheas. As glucose is passively absorbed in the bowel, both water and salts are absorbed also.
    - Effectiveness of ORS solution
        - In most studies, ORS solution alone was as effective in restoring hydration as IV fluids, except in cases of severe shock and hypotension.
    - Advantages of Oral Rehydration Therapy (ORT) over IV therapy
        - As effective in treating dehydration as IV fluid in most cases
        - Requires less equipment and nursing observation
        - ORT is non-invasive and non-painful
        - Can be administered by non-medical person, such as mother or other care-giver
        - Satisfies natural thirst of child
    - Reasons for failure of ORT
        - Giving insufficient quantity of ORS for degree of dehydration
        - Giving child too much ORS at one time
        - Stopping ORS because child is vomiting or reluctant to drink
        - Failure to consistently encourage child to take ORS in small, frequent amounts

- Treatment of Diarrhea in the Health Center – Setting up an ORT Corner
    - Select location for the ORT corner. This should have the following characteristics:
        - Be close to staff, for frequent observation. However, it should not be in a crowded passageway
        - Be near a source of water
        - Be near a toilet and washing facilities
        - Be pleasant and well ventilated

- Arrange furniture in the ORT corner, with:
  - A table for mixing ORS solution
  - A bench or chairs with a back for the mother to hold the child
  - A small table for the cups of ORS solution
- Organize supplies in the ORT corner
  - ORS packets (at least 60/month)
  - 3 bottles of 1 liter each
  - 3 cups
  - 3 spoons
  - 2 droppers
  - Mother's instruction cards for how to care for a child with diarrhea
  - Soap for handwashing
  - Waste basket
  - Log sheet
- Display posters and other information about treatment of diarrhea

- Management of Diarrhea
  - Assessment of the patient and degree of dehydration

1. Assess the Child ▪ 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	*Thirsty, drinks eagerly	* Drinks poorly or not able to drink
2. Feel skin pinch	Goes back quickly	* Goes back slowly	*Goes back very slowly
3. Decide on level of dehydration	The patient has no signs of dehydration (0 – 5%)	If patient has two or more sings, including at least one *sign* there is some dehydration (5 – 10%)	If patient has two or more signs including at least one *sign* there is severe dehydration (>10%)
4. Treat	Use plan A ▪ Weigh the patient ▪ Early home treatment of diarrhea to prevent dehydration	Use plan B. ▪ Weigh the patient ▪ Begin ORS solution in Health Center ▪ Reassess after approx. 4 hours	Urgently use plan C ▪ Weigh the patient ▪ Begin IV fluid replacement in Health Center ▪ Consider referral

- **Plan A** – Two Rules for home treatment for no or mild dehydration (0 – 5%)
  - Rule 1 - Give the child more fluid than usual to prevent dehydration – at least 25 – 50 ml/kg in first 4 hours
    - What fluids to give – recommended home fluids:
      - Suitable fluids ; Normal contain salt: (add salt about 3g/l), such as ORS, salted rice water, yogurt , chicken soup .
      - Not containing salt; plain water, unsalted rice water, yogurt, weak tea (unsweetened).
      - Unsuitable fluids: drinks sweetened with sugar
    - How much fluid to give – the general rule is to give as much fluid as the child wants until diarrhea stops.

  - Rule II - Continue to feed the child to prevent malnutrition
    - Breastfeeding should always be continued.
    - What foods to give: This depends on the child's age food preferences and pre-illness feeding patterns, cultural practices
    - Foods are the same as those required by healthy children
    - Milk (Formula) for the non-breastfed child.
    - Recommended foods should be culturally acceptable, readily available, energy rich food and contain adequate amount of essential micronutrients.
    - Use frequent small feedings
    - Continue giving the same food for at least two weeks after the diarrhea stops.
  - <u>Note</u> : If the child will be given ORS solution at home , show the mother how to prepare and how much (ORS) to give her enough packets for two days .

- **Plan B** – Health Center treatment for some dehydration (5 – 10%)
  - Weigh child as baseline for monitoring rehydration
  - Give 50-100 ml/kg of ORS in first 4 hours
  - Using a clean spoon or cup.
  - Feeding bottle should not be used for babies - use a dropper or syringe
  - Give ORS solution teaspoonful every 1-2 minutes for the child under 2 years, frequent sips from a cup for an older child
  - If child vomits, wait 10 minutes then continue giving ORS slowly
  - Continue breast-feeding even during ORT as appropriate
  - Monitor the progress of therapy regularly and record findings every 1-2 Hrs, then reassess the child fully after 4 hrs and decide what treatment to give next, following the guidelines of plan A, or B or C
  - If child is now hydrated and alert, teach mother how to treat her child at home with ORS and food (plan A)
  - Instruct mother in signs for which she should bring the child back
  - <u>Note</u>: If the mother must leave before completing treatment plan B give her enough ORS packets to complete rehydration for two days.

- **Plan C** – IV rehydration for severe dehydration (>10%)
  - Begin IV fluid immediately at health center, as follows:

	First give Lactated Ringers:	Then give Lactated Ringers:
Infants (under 12 months)	30ml/kg in 1 hour	70ml/kg in 5 hours
Older children (> 12 months)	30ml/kg in 30 minutes	70ml/kg in 2 - 3 hours

- If can not give IV should be referred to hospital within 30 minutes. May give (ORS) solution by nasogastric tube as an interim measure
- Continue to give ORS if the patient can drink until the drip is completed
- IV should be administered until radial pulse perfusion and mental status returns to normal, then can take fluids by mouth
- Assess patient's progress periodically and record findings every 1-2 hrs until patient is rehydrated.
- After 6 hrs for infants (or 3 hrs in older patients) reassess the patient and choose what the plan should be conducted to continue treatment (Plan A, B, continue C, or refer to hospital)
- Be sure that the mother is taught how to continue caring for her child at home

- Treatment of dysentery and persistent diarrhea
  - Acute bloody diarrhea (dysentery)
    - Request stool study for leukocytes, parasites and bacterial culture, when possible
    - While waiting results of stool studies, treat as outpatient for 5 days with oral antimicrobial recommended for shigella (shigella causes many episodes of bloody diarrhea in children)
    - Teach the mother to feed the child as described in plan A.
    - See the child again after 2 days if:
      1. Under 1 year old
      2. Initially dehydrated
      3. There is still blood in the stool.
      4. Not getting better.
    - Change to a second oral antimicrobial recommended for shigella for another 5 days if the child is not improving
    - If still no improvement after giving the second oral antimicrobial for 2 days should be referred to hospital.
  - Persistent Diarrhea
    - Continue to give appropriate fluids to prevent or treat dehydration, if it is present .
    - Give antimicrobial to treat diagnosed infection.
    - Encourage a nutritious diet that does not cause diarrhea to worsen (attachment 3)
    - Supplementary vitamins and minerals (attachment 3)
    - Most children with persistent diarrhea can treated at home with careful follow-up to ensure they are improving
    - Children should be re-evaluated after seven days .
    - Children (especially less than 6 months of age) with persistent diarrhea, or with moderate or severe malnutrition, or with serious systemic infection (such as pneumonia) and should be treated in hospital

- Successful treatment of persistent diarrhea characterized by:
    1. Adequate food intake
    2. Weight gain
    3. Fewer diarrheal stools
    4. Lack of fever .

- Antimicrobials and other drugs
    - An antimicrobial should not be given routinely with diarrhea – give only when bacterial or parasitic infection suspected or proven by stool studies
    - Follow guidelines for use of antimicrobials (attachment 4)
    - Antidiarrhea drugs (diphenoxylate, Imodium) have no practical benefit and never indicated for treatment of acute diarrhea in children

PREVENTION AND HEALTH EDUCATION MESSAGES

- Breastfeeding
- Improved weaning practices
- Use of plenty of clean water
- Hand-washing
- Proper disposal of diapers of young children
- Measles immunization
- Convince mother to use ORT, even if child is vomiting or uncooperative
- Teach mother home management of next diarrheal episode (nutrition and fluids)

CRITICAL ELEMENTS FOR REFERRAL

- Evidence of malnutrition
- Severe dehydration
- Persistent vomiting or severe, watery diarrhea
- No improvement in 3 days
- Blood in the stool

CASE STUDY

Sami is a 10-month old boy who presented to the health center with watery diarrhea and vomiting for the last 16 hours. On examination, his temperature was 39^0 C., his eyes were sunken, skin pinch goes back slowly, his mouth and tongue were dry and he drinks eagerly.

Topics of discussion:

1. Assess the degree of dehydration
2. Discuss the need for referral to the hospital
3. How would you begin and continue ORT therapy?
4. What would you do to treat the fever?
5. What would you do if he continues to vomit?

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Proper assessment of the degree of dehydration
- Recognition of associated problems like fever, dysentry and malnutrition
- Proper preparation and use of ORS solution
- Education of parents in prevention and management of diarrhea

Attachment 3

Give a Nutritious Diet

This is essential treatment for all children with persistent diarrhea.

The normal diet of children with persistent diarrhea is often inadequate . They should be given a diet appropriate for their age , but with a limited content of lactose . In either situation the goal is a daily intake of at least 110 calories / kg .

Feeding of children at home:

The following feeding recommendations should be given :

1- Continue breastfeeding
2- If yogurt is available give it in place of any animal milk (yogurt contains less lactose and is better tolerated .
3- Limit animal milk to 50 ml/kg/day .
4- Give other foods that are appropriate for the child's age (as described in plan A).
5- Give enough energy to ensure an adequate caloric intake .
6- Give frequent small meals at least six times a day .

For older infants and young children, use standard formulas prepared from local ingredients . Two diets are described:

1. The first diet is reduced lactose – contains no more than 3.7 g lactose /kg /day , and provide at least 10% of calories as :
   - Full fat dried milk 11 g (or whole liquid milk 85 ml)
   - Rice 15g
   - Vegetable oil 3.5g
   - Cane sugar 3g
   - Water to make 200m
2. The second diet is lactose free with reduced starch prepared from the following :
   - Whole egg 64g or cooked chicken meat 12g
   - Rice 3g
   - Vegetable oil 4g
   - Glucose 3g
   - Water to make 200ml

This diet provides 70 calories per 100g . Also with this diet 145ml/kg provides 110 calories/kg

Give supplementary multivitamins and minerals

All children with persistent diarrhea should receive supplementary vitamins and minerals each day for two weeks. As a guide, one recommended daily allowance (RDA) for a child aged one year is:

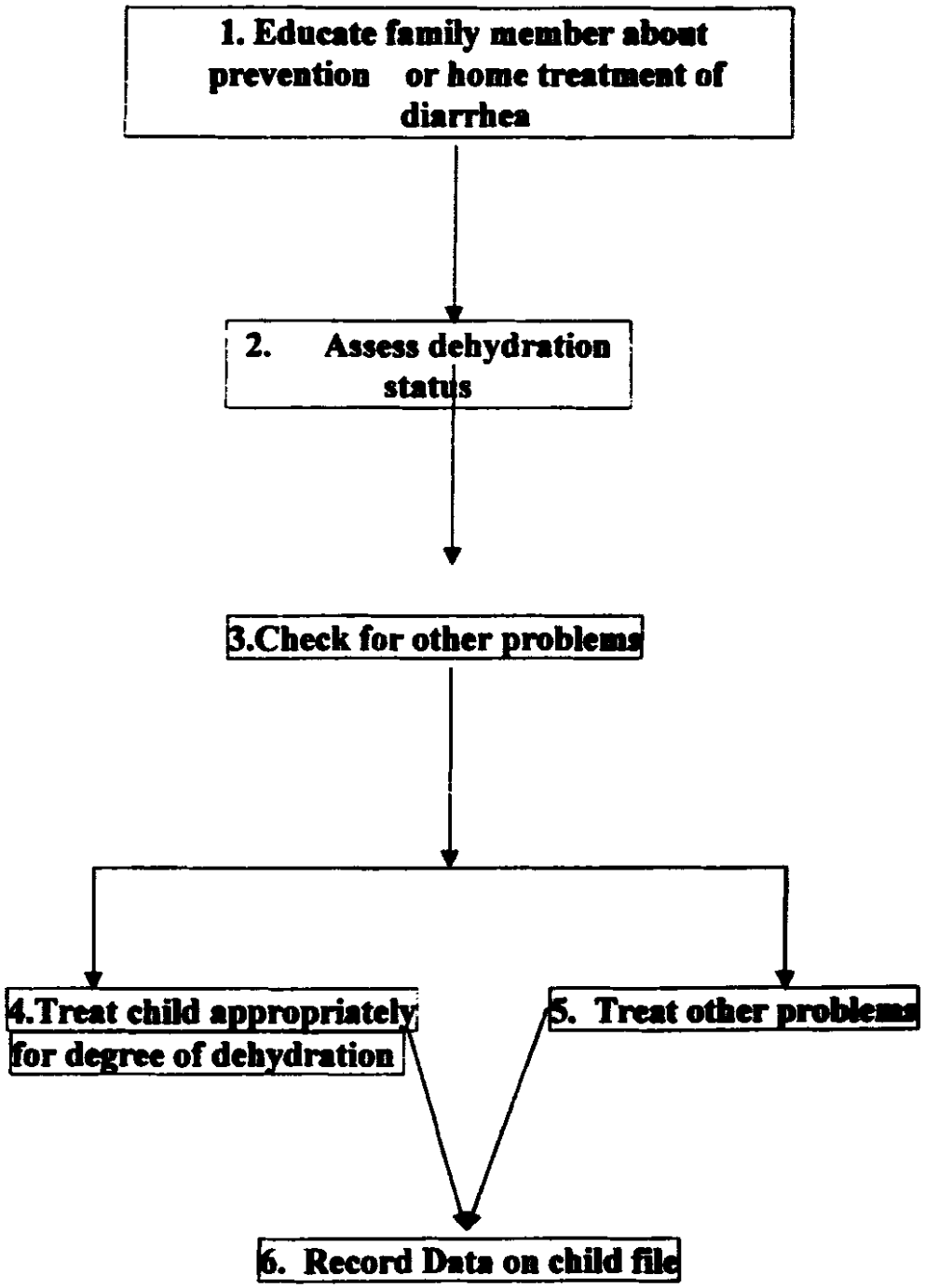
- Folate 50mg
- Zinc 10mg
- Vitamin A 400mg.
- Iron 10mg
- Copper 1 mg
- Magnesium 80mg

Attachment 4

Antimicrobials used to treat specific cause of diarrhea

Disease	Anti-microbial	Children	Adult
		Doses /Frequency / Duration	
Shigella Dysentery	Trimethoprim (TMP) + Sulfamethoxazole (SMX)	5MG/KG+ 25MG/KG Twice/day x 5 days	160mg+800mg twice a day x 5 days
	Nalidixic Acid	15mg/kg 4 times x 5 days	400mg 4 time a day x 5 days
	Ampicilllin	25mg/kg 4 times x 5 days	1g 4 times a day x 5 days
Amoebiasis	Metronidazole	10mg/kg 3 times a day x 5 days for severe case	750g 3 times a day x 5 days
Giardiasis	Metronidazole	5mg/kg 3 times a day x 5 days	250mg/kg 3 times a day x 5 days

Steps to treat Diarrhea



Fever

FEVER in a CHILD

LEARNING OBJECTIVES

- Understand the definition and pathogenesis of fever
- Develop an effective plan to identify the cause of fever
- Describe the clinical management of fever in special group
- Communication to the patient and the family regarding the understanding, control and treatment of fever
- Know indications for referral of febrile child

TEACHING STRATEGIES

- Review the proper measurement of temperature and the mistakes that can occur.
- Use lecture or informal presentation for material
- Use small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- Oral and rectal types of thermometers for demonstration
- White board or flip chart and markers for summarizing major points.

LEARNING POINTS

- Definition and pathogenesis of fever
  - Definition –Core body (rectal) temperature >38, or oral temperature >37.5
  - Caused by changes in "set-point" of hypothalamus to higher temperature
    - Bacteria, viruses, toxins, or other agents are phagocytosed by leukocytes
    - Interleukin-1 and other chemical mediators (endogenous pyrogens) are produced and activate the production of prostaglandins
    - Pyrogens and prostaglandins act on the thermoregulatory mechanism in the hypothalamus and upwardly readjust the body's thermostat
    - Raising the hypothalamic set-point initiates the process of heat production and conservation by:
      - increasing metabolism and glucose production
      - causing peripheral vasoconstriction in arms and legs, central vasodilatation in major organs
      - occasionally causes shivering which increases heat production from the muscles
  - Recent studies show fever helps to boost immune system response – helps to fight viral or bacterial infections
  - Fever, even fevers of up to 40.5, do not cause brain damage, and do not harm the child
  - Must distinguish fever (altered hypothalamic set-point) from hyperthermia (elevated temperature)
    - Hyperthermia (apparent fever) can be caused by:
      - Hot environment, such as heat exhaustion
      - Overwrapping of children, especially infants
      - Hot drinks immediately prior to taking temperature

- Endocrine abnormality such as hyperthyroidism (increased metabolism)

- Fever and febrile convulsions
  - Approximately 3% of all children < age 6 may have brief convulsion associated with fever
  - Clinical characteristics:
    - Usually occurs at beginning of fever, often before parent aware that child has a fever
    - Usually brief, less than 30 seconds
    - Usually a generalized convulsion, occasionally may be repeated or focal
    - Generally no evidence of toxicity, stiff neck or other signs of meningitis
    - The tendency to febrile convulsions should disappear by age 6
  - First febrile seizure (especially in child less than 3 years of age) should generally be investigated to rule out possibility of meningitis or encephalitis or tumor
  - Recent studies show that children with febrile convulsions have no abnormalities in development, school performance, IQ, or other measures
  - Known febrile convulsions do not need anti-convulsant treatment – attempted treatment with anti-convulsants is usually not effective
  - MOST IMPORTANT – vigorous treatment of a high fever may not prevent febrile seizures!
  - Parents of children with febrile seizures should be reassured that this does not cause harm or indicate severe illness.

- Clinical evaluation of fever
  - Important elements of history
    1. Inquire about onset, duration, and pattern of fever
    2. Inquire about associated symptoms such as changes in activity, appetite, chills, headache, nasal congestion, earache, sore throat, cough, abdominal pain, vomiting, diarrhoea, painful urination
    3. Explore hydration status by asking about amount of fluid intake and frequency and amount of fluid output
    4. Ask about conscious level of patient
    5. Explore possibilities of heat illness (heat stroke) or from other types of environmental exposure
    6. Ask whether patient started any new medications or had a recent immunisation
    7. Ask whether other household members are ill or have fevers
    8. Inquire about last dosage of an antipyretic and other self-treatment measures
    9. Past medical history should include a list of medications currently being used, discussion of previous illnesses and diseases, particularly any cardiac or chronically debilitating disorders
    10. A complete review of systems may be needed to uncover source of fever and to determine severity of debility due to elevated body temperature

- Important elements of physical examination
    1. Assess vital signs
    2. Observe general appearance in both adults and children looking for subtle signs such as changes in alertness
    3. Observe skin for color, rashes, petechiae or purpura
    4. Assess for signs of dehydration such as skin turgor and capillary refill
    5. Assess neck for rigidity
    6. Check for lymphadenopathy
    7. Assess for swollen joints
    8. Often need to do complete physical examination to find localized infection such as otitis media, pharyngitis, sinusitis, meningitis, cervical adenitis, or pneumonia

- Appropriate Laboratory investigations
    - In the majority of cases, the history and physical examination will uncover likely causes of the fever and suggest selective diagnostic tests, such as a throat culture, urinalysis, or chest X-ray
    - If no apparent cause of fever is found, especially in a young child, may consider the following tests for further diagnosis:
        - Blood count (WBC and differential)
        - Urinalysis
        - Liver function studies (SGOT, bilirubin, etc.)
        - Test for mononucleosis
        - Brucella and Salmonella antibody titers
        - Chest X-ray
    - Fevers without a known cause which last longer than 10 days are called fevers of unknown origin (FUO) and require specialist consultation and an extensive diagnostic evaluation.

- Management of fever in special group of children
    - Newborn and Infant < 3months
        - Must consider sepsis, meningitis, urinary tract infection, pneumonia
        - Should generally be hospitalized for evaluation, observation, and antibiotics until definitive cause found
    - Splenectomized patients
        - Very susceptible to certain bacterial infections, especially streptococcus pneumoniae
        - Should receive high doses of penicillin and be referred to hospital if any suspicion of pneumococcal infection
        - Should receive pneumococcal vaccine following splenectomy if at all possible
    - Immune compromised child
        - Very susceptible to generalized sepsis
        - Should receive prophylactic antibiotics if feverish, or in any situation where bacterial infection is a risk (influenza, severe URI, surgical procedures, dental extractions, etc.)
    - Cystic Fibrosis patients
        - Very susceptible to respiratory infections
        - Should receive prophylactic antibiotics with any moderately severe respiratory infection

- Consider referral to specialist if respiratory infection not resolving

- **Treatment**
  - Antipyretics – used only to help child feel more comfortable
    - Paracetamol 10-15mg/kg/dose every 4-6 hours
    - Aspirin 10-15mg/kg/dose every 4-6 hours for adults only (generally should not be given to children because of slight risk of Reye's Syndrome)
    - Ibuprofen 2.5 10mg/kg/dose 6-8 hours
    - Give more fluid to avoid dehydration
    - Take off excessive clothes
    - Do not overheat the room
    - Sponging with water at room temperature may may child more comfortable
    - Identify and treat the underlying cause of fever

HEALTH EDUCATION AND PREVENTION

- MOST IMPORTANT – Fever helps to fight infection! Fever does not damage the child, cause brain damage or other problems!
- Teach when to administer antipyretics and the correct time and dose, to make child more comfortable
- Instruct to ovoid overdressing.
- Encourage giving of extra fluids to prevent dehydration from fever
- What to do in case of child with febrile seizures

CASE STUDY

Name Fatima
Sex Female
Age 3 months

Present History: This infant was doing well until 2 days ago started to be warm. She has runny nose with mild cough.

Physical Exam: R.Rate 30/min pulse 120/min Temp. 38.7 C rectally. Congested throat and normal ears. Clear chest. The rest of examination was normal apart from mild irritability.

Topics of discussion regarding case study:

1. What important additional elements of the history should be asked?
2. What is the most probable diagnosis?
3. What important element in the examination should be mentioned?
4. What investigations might be helpful?
5. What is your management for this case?

CRITICAL ELEMENTS FOR REFERRAL

- Presence of signs of meningitis.
- Patients with altered level of consciousness
- Fever lasts more than 5-7 days

- Toxic looking patients
- Fever in special group children

CRITICAL ELEMENTS OF EVALUATION FOR COMPETENCE

- Proper evaluation and examination of a child with fever
- Appropriate non-pharmacologic and pharmacologic management of fever
- Appropriate patient education about fever and its management plan.
- Knowledge of need for referral and hospital admission

Immunization

IMMUNIZATION

LEARNING OBJECTIVES:

- Identify immunopreventive diseases
- Understand the principles of passive and active immunization.
- Understand the national strategy and plans for immunization
- Describe the risks of diseases and the advantage of immunization
- Describe the common side effects and contraindication of vaccines used
- Parent counseling and education in vaccination
- Demonstrate technique for vaccination route

TEACHING STRATEGIES:

- Review the national strategy of immunization in Jordan
- Use of lecture or informal presentation for material
- Use small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points
- Sample syringe, needle, cotton and alcohol, disposal equipment for demonstration of vaccination

LEARNING POINTS:

- Significance of vaccination
  - Reduce the mortality and morbidity of infectious diseases
  - Eradication of certain diseases, such as smallpox, polio
  - Decreased transmission of other diseases such as pertussis, measles, hepatitis B
  - Improvement in national economy – less health care cost caring for sick children, less time off work of parents
- Forms of immunization
  - Active immunization
    - development of sensitized lymphocytes and active antibodies by giving viral/bacterial protein, killed viral particles, or changed virus/bacterial particles
    - protects for many years
    - Examples – polio, tetanus, diptheria, pertussis, measles
  - Passive immunization
    - Giving preformed antibodies, from animal or human origin
    - Protects for short period, usually months only
    - Examples – gamma globulin for hepatitis or measles protection, tetanus immune globulin, rabies immune globulin
  - Live virus immunization
    - Uses live, but modified, non-pathogenic (attenuated) virus/bacterial particles
    - Generally must be refrigerated to preserve potency

    - Examples – oral polio, measles, varicella, oral typhoid fever
  - Toxoid immunization
    - Uses modified version of toxin that causes disease
    - Examples – tetanus, diptheria
- Review the national Program of vaccination – See Attachment for Schedule

Vaccines currently part of the national immunization program

- BCG vaccine
  - Protects against tuberculosis, primarily in children
  - Given by intradermal injection in arm – usually produces an inflammatory reaction and small scar
  - 60 – 80% effective in preventing TB in infants, but protection decreases significantly after 2-3 years. Much less effective in adults.
  - Adverse effects
    - local reaction of inflammation
    - regional lymphadenopathy
- Triple Vaccine – DPT
  - Protects against diptheria, tetanus, and pertussis
    - Diptheria – severe bacterial pharyngitis with production of a toxin that can affect the nerves, heart, and cause paralysis
    - Tetanus – infection of *Clostridium tetani*, usually in deep wounds, that produces toxin that affect nerves and cause severe muscle contractions
    - Pertussis (whooping cough) – Bacteria that causes bronchitis and pneumonia; can also cause seizures and encephalitis in children
  - Require minimum of three doses and one booster for full immunization
  - Adverse effects:
    - Fever and malaise – up to 30% of children – rarely lasts more than 48 hours
    - Swelling at injection site – can be minimized by using longer needle (>35mm.) for deep IM injection
    - Rarely – convulsions, prolonged crying, unresponsiveness
- Oral Polio
  - Protects against polio, which is a viral infection, begins in GI tract, that eventually lead to permanent damage to long nerves of the body and complete or partial paralysis
  - Live, attenuated (weakened) virus in vaccine
  - Requires minimum of three doses and one booster for maximum public immunity
  - Given by oral administration
  - Adverse effects - very rare incidence of vaccine-related polio (<1 per million children)
- Measles vaccine (also MMR)
  - Protects against measles; MMR against measles, rubella, and mumps – all viral diseases
  - Measles – 10 day course with rash, conjunctivitis, cough. Can lead to pneumonia or encephalitis, occasional death. Mortality up to 1 in 300 children, higher in Africa
  - Rubella – 5-6 day course with rash and mild fever. Main problem is transmission of rubella to pregnant female in early pregnancy, which can cause many birth defects in fetus.

- Mumps – acute viral infection of exocrine glands (parotid, ovaries, testicles) that causes inflammation and swelling of these glands. Can lead to decreased fertility and encephalitis
- Measles vaccine given in two doses, at 9 – 12 months, and again at 18 months. In some countries revaccination required at 4 – 12 years of age
- MMR now given instead of single measles vaccine – main issue is increased cost
- Adverse effects
  - Slight pain or swelling at injection site
  - Faint rash 5-8 days after injection, with fever to 39
  - No added adverse effects with combination MMR

- Hepatitis B Vaccine
  - Protects against hepatitis B, but not against other forms of hepatitis (ie, A, C, D, toxic)
  - Requires total of 3 doses, first two one – two months apart, and 3rd at least 4 months later
  - Protection is usually lifelong
  - Adverse effects
    - Mild fever and soreness at injection site
- Hemophilis B (Hib) vaccine
  - Protects against *Hemophilis influenzae* type B infection – one of more common and serious bacterial infections of children <5 years of age
    - Common cause of otitis media, sepsis, epiglottitis, meningitis in children
  - Most effective when given prior to period of maximum risk (6 – 36 months of age) – ie, beginning at age 2 months
  - Requires minimum of 3 doses and one booster for maximum immunity
  - Not a live virus, but a portion of bacterial capsule recognized by immune system
  - Adverse effects
    - Occasional pain and swelling at injection site, fever
- Tetanus Toxoid for pregnant women
  - Protects against tetanus of newborn child (called in some countries the "7th Day Disease" because many children died at one week of age with neonatal tetanus)
  - Primary goal is to increase level of anti-tetanus antibody in mother, which is then passively transferred to the fetus
  - If mother never immunized against tetanus, must receive at least 2 doses (0.5 ml of tetanus toxoid) during pregnancy (beginning with 4th month of pregnancy), with subsequent doses after delivery
  - With previous tetanus immunizations, give single booster dose with each pregnancy
  - No known adverse effect of tetanus toxoid on developing fetus

Other vaccines available, but not currently part of national immunization program

- Meningitis Vaccine
  - Protects against the most common forms of meningitis cause by *Niesserria meningiditis*, which is spread through droplet contact in the air
  - Sporadic infections are endemic, but can be epidemic in some African countries and during the Haj

- Not a live virus, but a portion of bacterial capsules recognized by immune system
- Single dose (0.5 ml subcut.) protects against 4 of most common types
- Duration of immunity at least 3 years, appears to decrease after that
- Currently given in situations of high epidemic risk, not routinely
- Adverse effects limited to minor local pain and swelling at injection site, rarely fever

- Pneumococcal Vaccine
  - Protects against infection with most common types of ***Streptococcus pneumoniae*** (currently 7 strains for children, 23 strains for adults)
  - Pneumococcus is common cause of otitis, sinusitis, pneumonia, sepsis, meningitis, and death in both children and adults
  - Pediatric vaccine (7 strains – PCV) requires total of 4 doses for maximum immunity.
  - Child & Adult pneumococcal vaccine (23 strains) given for high risk individuals (>50 years old, COPD, diabetes, loss of spleen, liver disease) – usually single dose with booster at age 65
  - Adverse effects – only slight pain at injection site
- Varicella vaccine
  - Protects against varicella (chicken pox)
  - Is a live virus (weakened)
  - Primary benefit is reduced time off work for parents who must care for child with varicella
  - Also decrease secondary complications of varicella – herpes zoster, encephalitis, otitis media, secondary skin infections
  - Given as single dose 15-18 months of age; should not be given prior to one year of age
  - Contraindicated in patients with
    - immune disorder, HIV disease, tuberculosis, pregnant, immunosuppressive drugs, high fever
    - also should not be given to children who have a household family member with any of the above.
  - Should not take aspirin for at least 6 weeks after varicella immunization to prevent rare occurance of Reyes syndrome
  - Adverse reaction limited to local soreness at injection site and rarely, a varicella rash
- Hepatitis A vaccine
  - Protects against development of hepatitis A (not other forms of hepatitis)
  - Not a live virus, but antigenic portion of virus
  - Given in two doses approximately 6 months apart
  - Most effective in regions where hepatitis A is not commonly seen in children, ie, more developed countries
  - Can be given at any age, but most commonly in adult travelers going to areas of high prevalence, or those who work with children
- Influenza vaccine
  - Protects against currently circulating strain of influenza A and/or B
  - Is a killed virus vaccine, not live
  - Because strain of influenza changes from year to year, vaccine must be reformulated each year, based on "best guess" of strains of influenza likely

- Given in single dose each year to patients at high risk of complications from influenza (age>65, immunosuppressed, HIV infection, COPD, diabetes, chronic heart disease, sickle cell disease)
- Children less than age 9 require two doses of 0.25 ml., approximately 30 days apart, for maximum immunity
- Usually given at start of "flu season" in October (northern hemisphere)

- Postponing vaccination to later time:
  - Moderate illness with fever >38
  - Note that simple URI or other minor infections are NOT a contraindication to vaccination

- Vaccination of special group
  - Immuno-compromised children – should not receive live virus vaccines, such as measles, oral polio, varicella. May receive inactivated virus vaccines (DPT, injected polio vaccine, hepatitis B) or passive immunization (gamma globulin)
  - Splenectomised children or adults – need pneumococcal vaccine as soon as possible after surgery
  - Sickle cell anemia – need pneumococcal vaccine; should have yearly influenza vaccine
  - High risk for meningitis (ie, Haj travelers, preschool or nursery children and adult attendants) – may require meningococcal vaccine as well as antibiotic prophylaxis (rifampicin)

- Future vaccines currently in development
  - RSV vaccine – to protect against respiratory infections caused by the Respiratory Syncitial Virus
  - Rotavirus vaccine – to protect high risk infants and children against the diarrhea caused by rotavirus

HEALTH PROMOTION AND PATIENT EDUCATION ISSUES

- Parents may need to be reminded of the value of immunization of children
  - to protect them against serious diseases
  - to protect the family and community against these diseases
- Counsel parents about common potential side effects of vaccinations – mild fever, pain or soreness at injection site, delayed fever or rash with measles immunization.
- Give specific suggestions for dealing with adverse reactions of vaccination –
  - acetaminophen dose for fever or fussiness of child
  - observe rash for disappearance in 2-3 days
  - cold compress to injection site if swollen or sore
- Inform parent of time of next scheduled immunization

DISCUSSION QUESTIONS and ACTIVITIES

- Can single antigen preparations for measles and rubella vaccines be mixed together?
- What groups of people is influenza vaccine recommended?
- What is the schedule for meningoccal vaccine and how is it administered?

- My patient received dose #1 of hepatitis B vaccine 3 years ago. Do I give her dose #2 now or do I start again with dose #1?
- Select 2 volunteers to role play a typical immunization visit, beginning with the initial encounter with parent and child (using a model doll), including demonstration of proper injection technique, and concluding with counseling of the parent on next visit, management of possible adverse reactions, questions, etc.

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Understand the principles of passive and active immunization.
- Understand the national strategy and plans for immunization
- Knowledge of the indications and contraindications of vaccines in general
- Appropriate patient education about immunization and its side effects
- Knowledge of need for special vaccines

Asthma

ASTHMA

LEARNING OBJECTIVES:

- Diagnose asthma correctly
- Describe the risks and triggering factors
- Describe an effective plan management for acute asthma.
- Describe an effective plan management for chronic asthma.
- Understand the treatment protocol based on level of severity
- Correct use of spacers and MDI in children and infants
- When to refer child for acute attack
- Communication with the patient and the family in understanding, control and prevention of the disease.

TEACHING STRATEGIES:

- Review technique of use of peak flow meter in older children and adolescents.
- Review the principal of spacers and their uses in children
- Use of lecture or informal presentation for material, small group discussion for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- Portable peak flow meter for each group with disposable mouth pieces.
- Different types of spacers
- White board or flip chart and markers for summarizing major points

LEARNING POINTS:

Introduction:

Airway inflammation plays a central role in Asthma and its management:

- Asthma is a chronic inflammatory disorder of the airways. Many cells and cellular elements play a role, in particular, mast cells, eosinophils, T-lymphocytes, macrophages, neutrophils, and epithelial cells.
- Environmental and other factors provoke the airway inflammation in people with asthma, examples of these factors include allergens to which the patient is sensitive, some irritants and viruses. The inflammation is always present to some degree, regardless of the level of asthma severity.
- Airway inflammation causes recurrent episodes in asthma patients of wheezing, breathlessness, chest tightness and coughing, particularly at night and in the early morning.
- These episodes of asthma symptoms are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment. Airflow obstruction is caused by a variety of changes in the airway, including bronchoconstriction, airway edema, chronic mucus plug formation airway remodeling.
- Inflammation causes an associated increase in the existing airway hyperresponsiveness to a variety of stimuli, such as allergens, irritants, cold air and viruses. These stimuli or precipitants result in airflow obstruction and asthma symptoms in the asthma patient.

Diagnosis of Asthma – History and Physical Examination

- Many causes of wheezing in the first two years of life are not related to asthma:
  - Bronchiolitis
  - Cystic fibrosis
  - G. E. Reflux
  - Foreign body inhalation
  - Tracheal-Esophageal fistula
- After the first 2 years of life, asthma becomes the most common cause of recurrent wheezing
- Asthma should be strongly considered if:
  - The patient presents with episodic wheeze, chest tightness, shortness of breath, or 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 are present
  - Wheezing develops with known triggering factors, such as:
    - Infection (URTI)
    - House dust mites
    - Exercise
    - Smoking and other irritants
    - Animals
  - The patient has relatives with asthma, allergy, sinusitis, or rhinitis
  - A physical exam reveals:
    - Hyperextension of the thorax
    - Wheezing, or prolonged or forced exhalation
    - Nasal secretions, sinusitis, rhinitis, or nasal polyps
    - Atopic dermatitis or eczema, or allergic skin problems

However, in the absence of symptoms at the time of a physical exam does not exclude an asthma diagnosis.

- Be aware of the following danger signs in acute asthma:
  - Cyanosis
  - Exhaustion
  - Inability to talk
  - Silent chest

- To establish Asthma diagnosis:
  - Perform an asthma-specific medical history and physical exam as noted above
  - Document by spirometry that airflow obstruction exists and is partially reversible, i.e.:
    - FEV1 is < 80% the predicted limit
    - FEV 1 / FVC is < 65% the lower limit of normal
    - FEV1 increases > 12% and at least 200 mL after use of a short-acting inhaled beta2 - agonist (i.e., salbutamol).

- Older adults may need to use oral steroids for 2-3 weeks before taking the spirometry test to measure the degree of reversibility achieved. Chronic Bronchitis and Emphysema may coexist with asthma in adults. Children younger than 7 years may not perform appropriate spirometry.

- Exclude alternative diagnoses (for example; vocal cord dysfunction, vascular rings, foreign bodies, other pulmonary diseases), using additional tests if necessary.

Management of chronic asthma
(NOTE: management of acute respiratory distress from asthma is described later)

1. Define Goals of management:
   - Prevent chronic 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 FEV1 *
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:

For all levels of severity	Use short acting inhaled ß2 agonist (salbutamol or albuterol inhaler) as needed with other long-term control medications (1-3 puffs every 4 hours)
Step 1: mild intermittent asthma (<2 symptomatic episodes/week)	**No daily medication needed** Use short acting inhaled ß2 agonist (salbutamol or albuterol) as needed (1-3 puffs every 4 hours)
Step 2: mild persistent asthma (3-6 symptomatic episodes/week)	**One daily medication** : Anti-inflammatory drug • Low-dose inhaled corticosteroid (40 mcgm. 1-4 puffs/day) • Cromolyn (Intal) or nedocromil (Tilade). • Zafirlukast (Accolate) or Zileuton (Zyflo) may also be considered in patients 12 years or older. **OR** Sustained –release theophylline to serum concentration of 5-15 (but not preferred therapy)
Step 3: moderate persistent asthma (Daily symptoms)	**One daily medication** : • Medium-dose inhaled corticosteriod. (80 mcgm. 2-4 puffs twice daily) **OR** **Two daily medications**: • Low-to-medium dose inhaled corticosteroid **AND** • Long-acting bronchodilator especially for night time symptoms (Salmeteral (serevent), sustained-release theophylline or long-acting ß2 agonist tablets).
Step 4: severe persistent asthma (continual symptoms)	**Three daily medications**: • High-dose inhaled corticosteroid (80 mcgm. 4-5 puffs twice daily) AND • Long-acting bronchodilator (Salmeterol, sustained-release theophylline or long-acting ß2 agonist tablets). AND • Oral corticosteroid in dosage of 0.25 – 1 mg per Kg per day with the dose generally not exceeding 60 mg/day

For rapidly worsening symptoms of asthma at any level of severity (emergency treatment)	Begin oral corticosteroid (Prednisolone) in dosage of 1-2 mg/kg./day AND Increase dosages of inhaled short acting ß2 agonist

4. When patient has been symptom free for over 2 months, consider "Step Down Therapy"
   - Gradually reduce or "step down" long-term control medications after several weeks or months of controlling persistent asthma when goals of asthma therapy are achieved.
   - Inhaled steroids may be reduced about 25% every 2-3 months until the lowest dose required to maintain control is reached.
   - Continuous attempts should be made to reduce daily use of oral steroids when asthma is controlled. For patients who are taking steroids daily on a long-term basis, referral or consultation or care by an asthma specialist is recommended.
   - Maintain patients on the lowest possible dose or oral steroids (single dose daily or on alternate days.
   - Use high doses of inhaled steroids to eliminate or reduce the need for oral steroids.

5. Reduce effects of specific allergens on a patient with persistent asthma:
   - Identify specific allergens to which patient is exposed
   - Determine and confirm sensitivity to the allergens
   - Method: skin or in vitro tests, medical history
   - Obtain agreement with the patient to begin one or two simple control measures
   - Follow up with patient, adding control measures after the first ones are implemented.

6. Develop a strategy for home management:
   - Discuss with parents whether home management is appropriate.
   - Provide a small supply of oral Prednisolone for emergency home use.
   - Give a spacer device (Volumatic / Nebuhaler) and MDI of ß2 agonist.
   - If the child can use a peak flow meter, make sure that they have one and understand how to interpret the results. Give them a target PFR below which they should seek help.
   - Tell them of the danger signs, which should make them seek help immediately. (inability to talk, poor color, exhaustion)
   - **Make sure that the child and parents know how to use a spacer device If not available, use the "open mouth" technique of the MDI, as follows:**

     - Remove the cap, hold the inhaler upright and shake it
     - Tilt your head back slightly and exhale
     - Put the inhaler 4-5 cm. away from your open mouth
     - Press down on the plunger and take a full, deep, slow breath through the mouth
     - Hold your breath for 10 seconds, then exhale slowly through your nose
     - Wait 15-30 seconds before taking next puff
     - Rinse your mouth afterward to prevent possible fungal infection
     - Keep mouth piece clean

7. Schedule regular monitoring and followup visits every 1-6 months, with spacing dependent on level of control of the asthma and understanding of the patient and parents, because:
    - Asthma symptoms change over time, requiring changes in therapy
    - Patients' exposure to precipitants of asthma will change
    - Patients' memories and self management practices will fade with time reinforcement, review, and reminders are needed.

    Elements to include in each monitoring visit:
    - Organize a system in the office to make each visit effective
    - Give patient an assessment questionnaire to complete in the waiting room
    - Have patients come back to the office more often, especially in the beginning, in order to provide time for assessment and patient education
    - Use nurses and office staff to do some of the tasks like checking the patient's inhaler technique and peak flow numbers before the patients' see the doctor
    - Identify patient's concerns about asthma & expectations for the visit
    - Assess achievement of the patient's goals and the general goals of asthma therapy :
        - prevent chronic asthma symptoms and asthma episodes during day and night
        - maintain normal activity levels
        - have normal or near-normal lung function
        - be satisfied with asthma care received and the level of control
    - Review medication usage and skills in using inhalers and peak flow meters correctly
    - Use the patients' own personal best peak flow as the standard against which peak flow measurements should be compared
    - Use the same peak flow meter and , when needed, replace with the same brand
    - Teach patients to measure peak flow fist thing in the morning before medications
        - a drop in peak flow below 80% of personal best indicates a need for added medications
        - a drop in peak flow below 50% of personal best indicates a severs exacerbation

PREVENTION AND HEALTH EDUCATION MESSAGES

- When possible, immunize against pneumococcus, and yearly against influenza
- Discontinue all smoking in the house of the patient and avoid smoke filled areas
- Avoid known allergens or asthma triggers when possible
    - Dust
    - Mold
    - Animals with fur in the house
- Reinforce the following messages with each monitoring visit:
    - Asthma can be managed and the patient can live a normal life.

- Asthma can be controlled when the patient works together with the medical staff. The patient plays a big role in monitoring asthma, taking medications, and avoiding things that can cause asthma episodes.
- Asthma is a chronic lung disease characterized by inflammation of the airways. There may be periods when there are no symptoms, but the airways are swollen and sensitive to some degree all the time. Long- term anti-inflammatory medications are important to control airway inflammation.
- Many things in the home, school, work, or elsewhere can cause asthma attacks (e.g., secondhand smoke, allergens, irritants). An asthma attack (also called episodes, flare-ups, or exacerbations) occurs when airways narrow, making it harder to breathe.
- Asthma requires long-term care and monitoring. Asthma cannot be cured, but it can be controlled. Asthma can get better or worse over time and requires treatment changes.

Emergency Management of Acute Exacerbations

Goals for treating asthma exacerbations are rapid reversal of airflow obstruction, reduction in the likelihood of recurrence, and correction of significant hypoxia.

- Assess patient's peak flow or FEV1 and administer medications upon patient's arrival without delay.
- Administer short-acting inhaled beta2–agonists (salbutamol or albuterol inhalation) and supplemental oxygen to patients who have signs & symptoms of asthma. Subcutaneous epinephrine or terbutaline are NOT recommended but can be used if inhaled medication is not available.
- Oxygen for most patients to maintain SaO2 > 90% (>95% in pregnant women, infants and patients with coexistent heart disease). Monitor oxygen saturation until a significant clinical improvement has occurred.
- Short-acting inhaled beta2–agonists (salbutamol or albuterol inhalation) every 20 to 30 minutes for three treatments for all patients. Onset of action is about 5 minutes. Subsequent therapy depends on response. Subcutaneous beta2–agonists (salbutamol or albuterol) provide no proven advantage over inhaled medication.
- Oral steroids (dose of 1-2 mg/kg to a maximum of 60 mg) should be given to most patients, such as those with moderate-to-severe exacerbations, patients who fail to respond promptly and completely to an inhaled beta2–agonists (salbutamol or albuterol), and patients admitted into the hospital. Oral steroids speed recovery and reduce the likelihood of recurrence. Onset of action is greater than 4 hours. Often a 3-to-10- day course of oral steroids at discharge is useful.
- Assess the patient with a severe exacerbation after the first dose and the third dose (about 60 to 90 minutes after initiating treatment) of short-acting beta2 – agonists.
- Evaluate the patient's subjective response, physical finding, and lung function. Consider arterial blood gas measurement for evaluating arterial carbon dioxide (PCO2) in patients with suspected hypoventilation, severe distress, or with FEV1 or peak flow < 30% of predicted after treatment.
- Patients can be discharged from the Emergency Department or hospital when peak flow or FEV1 is > 70 % of predicted of personal best and symptoms are minimal.

Before Discharge Provide Patients with the following:

- Sufficient short-acting beta2–agonists (salbutamol or albuterol inhaler) and oral steroids to complete course of therapy or to continue therapy until follow-up visit. Patients given oral steroids should continue taking them for 3 to 10 days.
- Written and verbal instructions on when to increase medications or return for care.
- Training on how to monitor peak flow
- Training on necessary environmental control measures and inhaler technique, whenever possible
- Referral for a follow-up medical appointment

CRITERIA FOR REFERRAL OF PATIENTS TO THE HOSPITAL

- Central cyanosis (lips, face)
- Decreased responsiveness to stimuli
- Silent chest on auscultation (no air movement audible)
- Unable to drink or talk
- Peak Flow meter< 50% of best or ideal peak flow
- Respiratory distress that does not **completely** improve with emergency treatment

CASE STUDIES AND EXERCISES

For each of the following patients, indicate the correct classification of asthma (ie, mild intermittment, mild persistant, moderate persistent, or severe persistent), and the most appropriate treatment:

1. Fatima – 6 years old, currently taking no medicines
   Night cough for past 3 months, difficulty breathing after walking fast or running, noted to have rapid and difficult breathing at least 3 –4 times each week. Currently RR 24, no visible difficulty breathing. Chest sounds coarse rhonchi and mild bilateral wheezing
   a. What is the classification of asthma for this patient?

   b. What treatment should you prescribe for this patient?

2. Ahmad – 12 years old, currently uses an salbutamol inhaler occasionally
   Only complaint is occasional chest tightness and cough when running, usually not more than once or twice per week. Salbutamol inhaler gives good relief of tightness and cough.
   a. What is the classification of asthma for this patient?

   b. What treatment should you prescribe for this patient?

3. Jihan – 10 years old, currently using salbutamol inhaler 2 –3 times daily, but still complaining of chest tightness and cough.
   She is currently showing some difficulty breathing.
   RR – 24, using neck muscles slightly in respiration. No cyanosis. Chest sounds – bilateral wheezing and rhonchi
   a. What is the classification of asthma for this patient?

   b. What treatment should you prescribe for this patient?

4. Ali – 3 years old. Currently using no medications. Developed URI with clear nasal mucous, occasional cough, and mild fever 3 days ago. Yesterday his cough increased and respiratory rate increased, but he did not appear ill.
   Temp. – 37.5, RR – 24, no cyanosis, no difficulty breathing, active and playful.
   Chest, occasional wheezing, no rhonchi or rales
   a. What is the classification of asthma for this patient?

   b. What treatment should you prescribe for this patient?

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Correct diagnosis and classification of severity of asthma
- Use of Peak Flow for older children
- Use of spacer or correct open mouth technique for inhaler
- Appropriate management of acute and chronic asthma, depending on classification of severity
- Appropriate patient education about asthma and its management plan.
- Knowledge of need for referral and hospital admission

How to Use Your Metered-Dose Inhaler

First, it's important to make sure the canister holds enough medicine. Check the label to see how many inhalations are in each canister. Throw away the canister when you have used 90% of the medicine. This means that if the canister holds 100 inhalations and you use 10 inhalations a day, you should throw that canister away on the 10th day and start a new canister. You can mark a calendar every day to keep track of the inhalations you have used for each canister.

Steps for using an inhaler

1. Remove the cap, hold the inhaler upright and shake the inhaler.

2. Tilt your head back slightly and breathe out all your air. Don't force the air out.

3. Hold the inhaler one to two inches from your open mouth, as shown in Picture A. Picture A shows the right way to use most inhalers. Picture B shows how to use an inhaler with a spacer. Spacers are useful for all patients. They are very helpful for young children and older adults. They are also helpful to use with inhaled steroid medicines. Picture C shows a method for people who can't use A or B.

4. Press down once on the inhaler to release the medicine as you start to breathe in slowly (this is a "puff").

5. Breathe in slowly for three to five seconds. The slower you breathe in, the more medicine will go into your lungs.

6. Hold your breath for 10 seconds to allow the medicine to go deep into your lungs.

7. Repeat puffs as directed by your doctor. Wait one minute between puffs to allow the next puff to get into your lungs better. Note: inhaled dry powder capsules are used differently. If you use a spacer, wash it and the mouthpiece once a week.

Preferred Method Preferred Method Not Preferred

A. Open mouth. Hold inhaler one to two inches away.

B. Use spacer attached to inhaler.

C. Hold inhaler in your mouth.

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Respiratory Infections in Children

RESPIRATORY INFECTIONS IN CHILDREN

LEARNING OBJECTIVES:

- Describe the diagnostic differences between upper and lower respiratory infections.
- Develop an effective treatment plan for respiratory infections, with appropriate use of antibiotics.
- Identify high risk groups that need referral to a specialist or hospital
- Understanding the impact of the disease on the child, parents, and the community.

TEACHING STRATEGIES:

- Review the anatomy and the physical examination of the upper and lower respiratory system.
- Use of lecture or informal presentation for material
- Use small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points
- If available, pulse oximeter to demonstrate oxygen saturation measurement

LEARNING POINTS:

- Introduction
  - Acute respiratory tract infections (ARI) are one of the most common causes of death in children in developing countries. They are responsible for more than 4 million deaths that occur in children under five years of age each year. Two-thirds of these deaths are in infants. 30-50% from the out patient clinic patients and about 30-40% of child hospital admissions are caused by ARI.
  - Pneumonia cases estimated to be one from each fifty ARI cases, and the mortality rate from pneumonia among children is 10-20%.
  - In Jordan 33% of outpatient and primary health care visits are ARI cases. About 28% from pediatric hospital admission are ARI cases. 21% of deaths among hospitalized children under 5 were from ARI (pneumonia).

- Acute upper respiratory infections include:
  - Common cold
  - Rhinitis
  - Sore throat
  - Otitis media

- Acute lower respiratory infections include:
  - Pneumonia
  - Bronchitis
  - Bronchiolitis

- Danger signs of a respiratory infection
  - Difficulty breathing
  - Rapid respiratory rate for child's age
  - Inability to drink
  - General deterioration or toxicity

- Evaluation of repiratory infection – Essential questions of **history**
  a. Is the child complaining from a **Cough**, and the duration?
  b. Can the child **Drink**?
  c. Does the child have a **Fever**?
  d. Has the child had **Convulsions**?
  e. What is the **Vaccination** history?

- Evaluation of respiratory infection – Essential elements of **physical examination**
  a. Calculation of **Respiratory Rate**
  b. Check for **Chest Indrawing**
  c. Listen to **Chest Wheezing**
  d. Listen to **Stridor**

- Management of respiratory infection – Different presentations in children age 2 months to 5 years
  - Child with Common cold or Rhinitis:
    Typical Case: Ali is a 3 year old boy who was less active in play than usual 3 days ago, and that evening began coughing occasionally. He has had a very runny nose for 2 days, with occasional coughing after running, and decreased appetite. He is taking fluids well.
    Examination: He looks well. Temp – 37.5, RR- 20, P – 88. No difficulty breathing or chest indrawing. Chest – no wheezing, rales, stridor.

    Typical Symptoms of cold:
    - Cough, but NO difficult breathing
    - No Increase in Respiratory rate
    - No chest indrawing
    - No danger signs

    Management of child with cold or rhinitis:
    - Mother can take counseling and education on home care.
    - No antibiotic needed.
    - Give remedy fluid, like: Lemon with honey, or fruit juice
    - Give antipyretic if child has a fever

  - Child with mild to moderate pneumonia:
    Typical Case: Nisreen is a 4 year old girl who developed a typical cold 4 days ago, with mild cough, sore throat, and fever. However, the past 24 hours her cough has become more severe and frequent and is awakening her from sleep. Her appetite is decreased, and she is fussy and does not want to play.
    Examination: She looks somewhat ill, with frequent coughing. Temp. – 38.5, RR – 28, P – 92. She is taking fluids well, has no obvious difficulty breathing or chest indrawing, has normal color. Chest – no wheezing, but few coarse rales and rhonchi in the right chest.

    Typical Symptoms:

- Cough or difficult breathing
- Increase in Respiratory rate
- No chest indrawing
- No danger signs

Management of child with mild to moderate pneumonia:

- Give Antibiotic to be used at home.
  a. Erythromycin 15 mg/kg/dose given three times daily for 7-10 days OR
  b. Amoxicillin 20 mg/kg/dose given three times daily for 7-10 days
- Mother can take counseling and education on home care.
- Come back after 2 days for follow up.

- Child with severe pneumonia:

  Typical Case: Mohammad is a 2 year old boy who began to become more fussy 2 days ago, and was noted to have a high fever that evening. Today he is not eating at all, although continues to take fluids. He vomited twice in the past 6 hours but has had no diarrhea.

  Examination: Looks ill, very fussy, moderate congested cough. Temp. – 39.5, RR – 44, P – 110. Moderate indrawing of chest is noticed with respirations. Chest – very noisy with bilateral rhonchi and a few rales, no wheezing

  Symptoms:
  - Cough or difficult breathing
  - Indrawing chest
  - No danger signs

  Management of child with severe pneumonia:
  - Give first dose of the Antibiotic
  a. Procaine Penicillin 600,000 to 1,200,000 Units IM
  b. Ceftriaxone 50 mg/kg. In one dose IM
  c. Ampicillin 50 mg/kg in one dose IM or by mouth
  - Refer to the hospital immediately
  - Referral form should include; assessment, findings, reason for referral, and medication received

- Child with severe illness, possibly sepsis:

  Typical Case: Fatima is a 4 year old girl who had mild cold symptoms with a runny nose and sore throat 1 week ago. She appeared to improve somewhat, but the past 3 days she has had intermittently a high fever. She has refused all food for the past 2 days, has vomited 4 times, and is now too sleepy to drink fluids. She has had no convulsions. She is the 6th child of a family of 8 children.

  Examination: Looks very thin and ill. Very sleepy and cries weakly only when examined or disturbed. Mouth is dry, no tears are noted when crying. Temp. – 39, RR – 44, P – 120. Neck shows no stiffness, Chest – bilateral fine rales and some wheezing. Abdomen is thin with persistant skin fold after pinch test.

  Symptoms:
  - Cough and difficulty breathing PLUS any of the following danger signs:
  - Inability to drink
  - Convulsions
  - Abnormally sleepy- difficult to wake

- Malnourished
- Stridor

Management of severe ill children:

- Give the first dose of Antibiotic:
  a. Ceftriaxone 50 mg/kg. In one dose IM **OR**
  b. Ampicillin 50 mg/kg in one dose IM or IV **OR**
  c. Procaine Penicillin 600,000 to 1,200,000 Units IM

- Refer to the hospital immediately
- Start IV hydration if hospital transfer cannot be immediately arranged
- Referral form should include; signs, findings, reason for referral, medication received

- All children less than 2 months of age with respiratory infection should be referred to specialist or hospital for evaluation and observation

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

All mothers or caretakers are counseled for the following key messages:

- Child nutrition
  - Continued breastfeeding and proper nutrition.
  - Increase the amount of food after recovering
  - Clean the nose with warm water
- Give more fluids than usual
- Teach home remedy fluids preparation and usage, such as lemon juice with honey
- Keep child warm
- Return back immediately if:
  a. Difficulty breathing
  b. Increase in respiratory rate
  c. Inability to drink
  d. General deterioration
- Warn of dangers of exposure to passive smoking

CASE STUDY

Name of patient	Ahmad
Sex	Male
Age	2 years
Present History	He was doing well until this morning where he found by his sister blue with coughing in the kitchen. On arrival health center after 10 minutes he appeared to be normal except for moderate tachypnea. He was noted to be feverish, coughing and appeared to be somewhat short of breath.
Physical exam.	Resp. Rate - 55/min, Temp. - 39C. Throat – mildly red, but no exudate. No adenopathy in the neck Auscultation of lung - Right sided crackles Heart - normal

Topics of discussion regarding case study:

1. What is current problem in this patient?

2. What important additional elements in the history should be asked?
3. What is the next step in the management of this patient?
4. What is the most important step in management of this patient?

CRITICAL INDICATIONS FOR REFERRAL

- Age less than 2 months.
- Signs of respiratory distress or moderate tachypnea
- Failure to improve with appropriate therapy after 2-4 days
- Severe or complicated pneumonia
- History of cystic fibrosis or severe asthma
- Immuno-compromised patients (AIDS, corticosteroid therapy, leukemia, lymphoma)

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Proper diagnosis of upper and lower respiratory tract infection.
- Appropriate non-pharmacological and pharmacological management of respiratory tract infection
- Appropriate patient education about respiratory tract infection, and its management plan.
- Knowledge of need for referral and hospital admission

Acute Otitis Media

ACUTE OTITIS MEDIA

LEARNING OBJECTIVES:

- Diagnose acute and chronic otitis media correctly.
- Describe the risks of otitis media if not treated properly.
- Describe the predisposing factors of otitis media.
- Develop an effective management plan for otitis media
- Understand when to refer
- To teach trainees how to use otoscope in diagnosis of otitis media properly and follow up
- Family education

TEACHING STRATEGIES:

- Review the technique of examination of the ears by otoscope.
- Use of lecture or informal presentation for material
- Small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- Otoscope with different sizes of cups –one for each group to do demonstration for ear examination..
- White board or flip chart and markers for summarizing major points

LEARNING POINTS :

- Pathophysiology
  - Otitis media always associated with blockage of Eustachian tube and collection of fluid behind TM (Tympanic Membrane – eardrum)
  - Retained fluid behind TM (effusion) becomes infected, creates inflammation and edema of middle ear space and TM
  - Once infection suppressed with antibiotics, resolution of effusion requires average of 4-12 weeks more.

- Significance of otitis media on general health of the patient
  - Effect on hearing of active otitis media
    - Average hearing decreased by 20-40%
    - Words muffled, not clear
  - Effect on learning and behavior
    - Since child does not hear clearly, may not listen to teaching
    - Can result in apparent bad behavior, because child cannot understand parent's instructions
  - Effect on speech
    - If hearing decreased during time of speech formation (age 9 months – 2 years), speech may be abnormal

- Predisposing Factors
  - Congenital disorders such as cleft palate
  - Active or passive smoking
  - Family history of otitis media (narrow Eustachian tubes)
  - Immune-compromised patient (leukemia)
  - Bottle feeding of child, especially in supine position rather than sitting

- Review correct diagnosis of otitis media
  - Normal color of TM (Tympanic Membrane – eardrum)
  - Check the mobility of TM
  - Presence of effusion (fluid behind TM) or not

- Differential diagnosis of otitis media
  - Otitis Externa
    - Painful on ear movement
    - Canal inflamed – may extend to periphery of TM
    - TM still mobile, not bulging
    - May have palpable post-auricular node
    - Treated with local cleaning and antibiotic drops
  - Bullous Myringitis
    - Often seen in older child (>5 years old)
    - Clear or hemmorhagic bullae on TM
    - May be associated with cough and bronchitis (often Mycoplasma pneumoniae infection)
    - Treated with antibiotics specific for Mycoplasma (erythromycin, sulfa)
  - Foreign Body
    - Usually seen on otoscopy
    - Removal depends on availability of instruments, suction, skill of operator, age of child
  - TMJ Syndrome (in older children & adults)
    - Pain referred to ear, but point tenderness over TMJ
    - Pain on eating or opening mouth
    - Often history of injury, "pop" of TMJ, malocclusion of teeth
    - Treat underlying cause, local heat and anti-inflammatories

- Clinical evaluation of otitis media
  - Important elements of history
    - Length of symptoms (pain, crying, pulling at ear, fever)
    - Associated symptoms (URI, rhinitis, allergy, cough)
    - History of previous episodes of otitis media (more than 3 previous episodes in past year places child at high risk for chronic otitis)
  - Important element of physical examination
    - Vital signs, including resp. rate and temperature
    - General activity level (does child appear to be ill)
    - Eyes, conjunctiva (associated conjunctivitis)
    - Ears (TM, mobility, check hearing with tuning fork in older children)
    - **IMPORTANT** – Not all red TM are otitis – red TM can be caused by crying or screaming! Must try to see if TM mobile or not – most reliable indicator of effusion and possible infection
    - Mouth and throat (associated URI, tonsillitis)

    - Neck (adenopathy)
    - Chest (possible associated bronchitis or pneumonia
    - Heart (possible murmer)
  - Type of otitis media
    - Acute – recent onset, acute pain and fever, often associated URI or allergy
    - Chronic – previous episodes of otitis, recent episodes of otitis that may not have resolved, decreased mobility of TM with effusion without significant symptoms (painless otitis)
  - Laboratory investigations usually not necessary

- Possible Complications of Otitis, especially inadequately treated otitis
  - Acute otitis may convert to chronic otitis with persistent fluid behind TM (effusion)
  - Mastoiditis (spread of infection to bone of skull) with possible meningitis
  - Perforation of TM, with possible chronic open TM

- Treatment Protocol
  - Goal of treatment – eradication of infection and clearance of fluid behind TM
  - Management strategy
    - Use of antibiotics to clear acute or chronic infection
      - Amoxicillin – 25-30 mg/kg/dose for 3 doses/day for minimum of 5 days
      - Cotrimoxazole – 12 mg/kg/dose for 2 doses/day for minimum of 5 days
      - Cefaclor – 10 mg/kg/dose for 3 doses/day for minimum of 5 days
    - Use of Decongestant - pseudoephederine or nasal spray decongestants shown to have VERY LITTLE effectiveness in most cases
    - Use of Antihistamines – have little or no effect on resolution of otitis – should NOT be used except in cases of associated allergic rhinits in older children
    - Followup of otitis extremely important – at a minimum, child should be seen in 4-6 weeks to confirm resolution of inflammation and especially resolution of effusion (fluid behind TM is gone, and TM mobile again)
    - If effusion persists more than 2-3 months, should be referred to specialist for further followup

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Consider otitis in any ill child with predisposing factors noted above
- Encourage cessation of smoking in household
- Advise avoiding folk remedies
- Instruct the patient to return to clinic if symptoms have not been markedly improved in 48 hours

CRITERIA FOR REFERRAL TO SPECIALIST

- Recurrent ear infection or more than 3 episodes/year
- Hearing loss
- Chronic or persistent infection with persistent effusion (immobile TM)
- Evidence of purulent ear discharge (perforated TM) or mastoid inflammation

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Correct diagnosis of acute and chronic otitis media
- Correct examination of the ear
- Appropriate antibiotic management of acute and chronic otitis media.
- Appropriate patient education about otitis media and its management plan.
- Knowledge of need for referral and hospital admission

CASE STUDY

Name: Nadine
Sex: Female
Age: 10 months

Medical history This girl was seen at health center by G.P5 days ago, because of unusual crying, irritability and fever. She was diagnosed acute otitis of left ear and amoxacillin was given. Next day pus discharge noticed. Fever persists and the patient started to have vomiting, poor feeding

Physical exam. R.Rate 40/min Temp. 39C. Pulse 110/min

She was irritable and drowsy. Left ear full of pus. Right ear normal. Throat was congested and hyperemic. Chest, cardiovascular and abdominal examination was within normal.

Topics for Discussion regarding case study:

1. What is the most important step in the management of this patient?
2. What important additional elements of the examination should asked?
3. What is an appropriate plan of management of this patient?

Sore Throat

SORE THROAT

LEARNING OBJECTIVES:

- Describe the diagnostic differences between non-infectious, viral and streptococcal pharyngitis
- Develop an effective management plan for sore throat, with appropriate use of antibiotics.
- Identify high risk groups that need referral to a specialist or hospital

TEACHING STRATEGIES:

- Review the anatomy and the physical examination of the mouth and throat and associated regions
- Use of lecture or informal presentation for material
- Use small group discussion or role play for prevention, counseling and patient education issues.

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points

LEARNING POINTS:

- Pharyngitis or tonsillitis one of the most common diagnosis in Health Centers in Jordan
  - Prospective study done by 30 Health Team Trainers in Jordan, July 2001
  - 14,600 patients seen, and 4400 patients diagnosed with "respiratory infection"
  - Of all patients with "respiratory infection", 64% had diagnosis of either tonsillitis or pharyngitis
  - Of those diagnosed with URI, pharyngitis, or tonsillitis (patients with sore throat), 83% were treated with antibiotics
  - Note that according to most study data, only 25-35% of these patients should have received antibiotics for presumed or suspected bacterial pharyngitis.

- Common causes of sore throat
  - Infectious causes, with frequencies seen in U.S.

Infectious Agent	Approx. Frequency
Virus	50-80%
Group A *β Streptococcus*	5-35%
Infectious Mononucleosis	1-10%
Chlamydia or Mycoplasma pneumoniae	5%
Haemophilis influenzae B	1-2%
Other infectious agents (candida, etc.)	<1%

(data from Sloane, Slatt, et al, Essentials of Family Medicine, 3rd edition, 1998, Williams and Wilkins, pp. 624)

- Non-infectious causes
  - Gastroesophageal reflux
  - Post-nasal drainage secondary to allergic rhinitis
  - Acute thyroiditis
  - Persistent cough

- Probability of Group A β Strep and infectious mononucleosis changes with age of child

Infection	Age	Probability
Group A β Strep	0-4	15%
	5-9	34%
	10-19	16%
	Adult	9%
Infectious mononucleosis	0-4	<1%
	5-14	1-2%
	15-24	5-10%
	Adult	2%

(data from Sloane, Slatt, et al, Essentials of Family Medicine, 3rd edition, 1998, Williams and Williams, pp 624)

Differential diagnosis of child with sore throat – common symptoms and patterns

- Viral URI or pharyngitis
  - Most common cause of sore throat – up to 80% of all cases of sore throat
  - Onset of symptoms over 1-2 days
  - Sore throat described as mild to moderate pain, "scratchy",
  - May have low fever, usually < 38.5 C.
  - Associated with other viral symptoms, such as runny nose, cough
  - Throat (pharynx and tonsils) may be mildly red and inflamed, usually no exudates on tonsils
  - **Caution** – children often have "white spots" (epithelial inclusion bodies) on tonsils – these are normal finding, and are not exudates
  - Management – symptomatic treatment
    - Paracetamol as needed for malaise and fever
    - Frequent warm liquids
    - Throat lozenges for symptomatic relief
    - In older children (>5 years) may use decongestant such as pseudoephedrine – 1-2 mg/kg every 6 hours
    - **Caution** – antihistamines may reduce runny nose, but are too drying – increased risk of secondary sinusitis. They should be avoided in simple URI, unless allergic rhinitis also present

- Group A *β Streptococcal* pharyngitis
  - More common in young school children than any other age group
  - Usually rapid onset of symptoms over 24 hours or less
  - Sore throat and pain on swallowing is most common feature, although some children may complain more of malaise, abdominal pain, or neck pain
  - Usually very few associated respiratory symptoms such as cough or runny nose

- Look for **4 key symptoms and signs**:
  a. Fever >38.5 C.
  b. Tender, enlarged cervical lymph nodes
  c. Purulent exudates on tonsils
  d. Absence of cough
- Probability of Group A *β Streptococcal* pharyngitis with these signs:

Number of above signs	Probability of Strep Infection
1	5-9%
2	12-15%
3	27-40%
4	55-65%

- Treatment of high probability streptococcal pharyngitis (3 or 4 signs)
  - When possible, confirm with a throat culture
  - Treatment with antibiotic reduces symptoms by only 1-2 days, but reduces transmission of β Strep. to others, and risk of rheumatic heart disease
  - Antibiotic choices
    - Preferred - Penicillin G (phenoxymethyl penicillin) 250mg four times daily for 10 days, or 500 mg three times daily for 10 days.
    - Benzathine penicillin – 1.2 million units IM in single dose
    - If allergic to penicillin – erythromycin 400 mg. Three times daily for 10 days
    - Alternate – azithromycin for 3 days, or cephalosporin
- **Caution** – use of amoxicillin can lead to severe rash if patient actually has infectious mononucleosis
- Penicillin or erythromycin treatment by mouth must be continued for 10 days, even when symptoms resolve quickly – to reduce risk of rheumatic fever
- Antibiotic treatment **does not** reduce risk of post-streptococcal glomerulonephritis
- Can give one dose of dexamethasone 10 mg, IM or by mouth, for severe sore throat pain (recent studies documenting safety and effectiveness except in immunocompromised children)
- Watch for possibility of peri-tonsillar abscess – especially in children with:
  - severe pain on swallowing
  - inability to open mouth (trismus)
  - high fevers
  - bulging tonsil on one side
  - Should be referred for aspiration and drainage.

- Infectious Mononucleosis
  - Most common in adolescents and young adults, but can be seen in young children and adults
  - Caused by Epstein-Barr virus
  - Incubation period generally 1-2 weeks after exposure (usually unknown exposure)
  - Symptoms and signs of infectious mononucleosis:
    - begin with moderate to severe sore throat, and fever
    - tonsils are often enlarged and inflamed, with exudates
    - cervical lymph nodes are usually enlarged and somewhat tender
    - often spleen is enlarged and palpable

- signs and symptoms often confused with streptococcal infection initially
- Acute pharyngitis usually subsides spontaneously by 5-7 days, and is replaced by fatigue, malaise, and lack of energy
- Secondary phase of malaise and lack of energy can last 4-16 weeks
- Resolution of fatigue is slow and gradual, but recovery complete in young people
- Diagnosis of infectious mononucleosis:
  - Must have a high suspicion for this with sore throat, especially in adolescents
  - Often patients treated as strep. infections with antibiotics, but develop fatigue and lack of energy as throat pain subsides
  - Throat culture for *β Strep*. usually negative, although strep infection and mono may occur together
  - Differential count and blood smear shows increased lymphocytes, with increased numbers of atypical lymphocytes
  - If infectious mono suspected, can confirm with "Monospot" test (rapid antigen test for heterophile antibody)
  - Note – Monospot test is reliably positive only after first week of illness – can be falsely negative in first 5-7 days of illness
  - Liver function tests may also be abnormal for first 1-2 weeks (increased AST (SGOT) and alkaline phosphatase.
- Management of infectious mononucleosis:
  - No specific treatment known
  - Must counsel patient and family about prolonged period of fatigue, but can anticipate full recovery with time
  - Activities can be adjusted to match patient's level of energy – generally able to do some activities in early morning, but fatigue worsens as day progresses
  - Must avoid contact sports (football, rugby, etc.) for first 2-3 weeks of illness because of risk of spleen rupture, even if spleen not grossly enlarged
- Currently there is very conflicting data on role of Epstein-Barr virus in chronic fatigue syndrome, but it appears to be very rare.

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

All mothers or caretakers are counseled for the following key messages for children with sore throats:

- Most sore throats are not improved by taking antibiotics
- Most sore throats will improve spontaneously with simple home remedies, but a child with severe sore throat or fever should be examined by the doctor.
- Give more fluids than usual, preferably warm fluids
- Teach home remedy fluids preparation and usage, such as lemon juice with honey for URI
- If antibiotics given for suspected or proven streptococcal pharyngitis, they must be taken for 10 days even though patient is often better in 2-4 days.
- Return back immediately if:
  a. Difficulty breathing, opening mouth, or swallowing
  b. Persistent fever after 2 days of antibiotics
  c. Rash is noted
  d. Persistent fatigue or weakness is noted

CRITICAL INDICATIONS FOR REFERRAL

- Age less than 2 months.
- Difficulty breathing or moderate tachypnea
- Failure to improve with appropriate therapy after 2-4 days
- Difficulty with swallowing or inability to open mouth
- Immuno-compromised patients (AIDS, corticosteroid therapy, leukemia, lymphoma)

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Proper differentiation between signs and symptoms of URI, strep. pharyngitis, and infectious mononucleosis
- Knowledge of the 4 key signs of *β Strep.* pharyngitis
- Appropriate non-pharmacological and pharmacological management of each of the major causes of sore throat
- Appropriate patient education about sore throat, and its management plan.
- Knowledge of need for referral and hospital admission

Urinary Tract Infection

URINARY TRACT INFECTIONS (UTI)

LEARNING OBJECTIVES

- Describe the risks of UTI especially in young children
- Discuss the symptoms of UTI in different age groups
- Diagnose UTI correctly
- Develop an effective treatment plan for UTI, including long-term prophylaxis when appropriate

TEACHING STRATEGIES

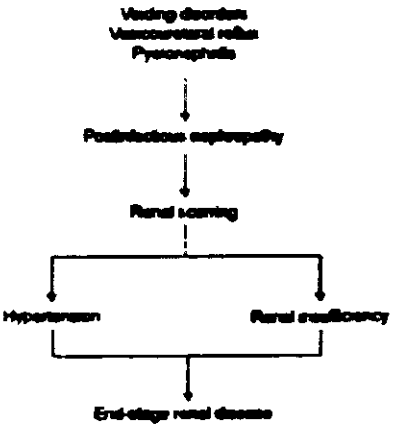
- Use lectures and informal presentation in defining UTI, diagnostic techniques..
- Small groups discussions for counseling and parental education

MATERIALS AND EQUIPMENT NEEDED

- White board or flip chart and markers
- Radiographs showing complications of UTI

LEARNING POINTS

- UTI is one of the most common causes of unexplained fever in children
  - UTI is the cause of up to 15% of unexplained fever in girls less than 2 years of age
- Significance of UTI (especially recurrent UTI) in children
  - UTI in children is usually pyelonephritis (infection of kidney), and not just limited to urinary bladder (cystitis)
  - Can lead to kidney scarring, hypertension, and ultimately renal failure
  - Most severe forms of kidney scarring occur in children less than 2 years of age



- UTI should be suspected and investigated with urinalysis and possible culture in ANY child with a fever or illness not easily explained by another reason

- Clinical presentation of symptoms depends on age of child:

Newborn	Infants & Preschoolers	School Age Children
Jaundice	Diarrhea	Vomiting
Sepsis	Failure to thrive	Fever

Failure to thrive	Vomiting	Bad urine smell
Vomiting	Fever	Abdominal and flank pain
Fever	Bad urine smell	New onset incontinence
	Abdominal and flank pain	Frequent urination – small amouints
	New onset incontinence	Painful urination
		Urgency of urination

- Common causes of UTI in children
  - Most common abnormality is vesico-ureteral reflux (urine reflux from bladder into ureter and kidney)
  - Also associated with bladder or ureteral diverticulae, dilated ureters, duplication of urinary collecting system, partial obstruction of urethra in males
  - Poor hygiene in children (poor cleaning after bowel movement)
  - Voluntary retention of urine (not voiding when appropriate)
  - Tub baths with bubble bath, especially in females
- Because of high incidence of congenital abnormalities and urine reflux in children, must refer to specialist for evaluation in following circumstances:
  - UTI in any child less than 5 years of age
  - Recurrent UTI (greater than 3 episodes/year) in females over 5 years of age
  - Any UTI in a male over 5 years of age
- Urine should be collected for urinalysis and culture if UTI is suspected
  - Urine must be analyzed on fresh specimen to be reliable – transport of urine with delay of over 2 hours results in bacterial growth and unreliability of analysis
  - Urine bag – easiest, but most unreliable because of contamination with skin and bowel bacteria
  - Catheter – very reliable, but may be difficult to obtain in health center
  - Clean voided specimen – generally reliable and easy, but must have older, cooperative child
  - Suprapubic aspirate – very reliable, but requires special technique of aspiration
- Presence of nitrite, or >10 WBC (leukocytes), or 4+ bacteria in fresh urine is relatively good indication of UTI

Management of UTI

- Confirm UTI with culture and sensitivity when possible. Bacteria may be resistant to multiple antibiotics
- If child has systemic symptoms (fever, vomiting, dehydration, abdominal pain) – refer to hospital for evaluation and treatment
- If child has no severe systemic symptoms (temperature <38 C., no toxicity, no vomiting) with UTI, begin treatment with antibiotic and recheck in 48 hours
  - Amoxicillin 25 mg/kg/dose for 3 doses per day
  - Cotrimoxazole 12 mg/kg/dose for 2 doses per day
  - Cefalexin 15-25 mg/kg/dose for 3 doses per day
- Repeat urinalysis (and culture if possible) in 2 – 3 weeks to confirm resolution of UTI

- Recurrent UTI (>3 episodes in one year) or presence of congenital urinary tract abnormalities or urine reflux – should consider long term antibiotic prophylaxis to prevent recurrent infections
  - Cotrimoxazole 6 mg/kg/dose for one dose at bedtime for minimum 3-6 months
  - Nitrofurantoin

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Alert parents to possible UTI in any febrile episode
- Education regarding symptoms of UTI in older children
- Proper local cleaning especially in girls
- Motivate parents and patients to give long-term prophylaxis when indicated
- Need for continual followup in children with UTI, especially in females, because UTI may persist even in absence of symptoms such as fever or pain

CRITICAL ELEMENTS FOR REFERRAL

- Age below 5 years
- Recurrent UTI (>3/year) in a female over age 5
- Any UTI in a male over age 5
- Significant genitourinary anomalies are suspected
- High fever, toxic or ill appearing, vomiting or dehydration
- Uncertainty about diagnosis or inability to obtain urine specimen for analysis
- Persistent bacteria in urine after appropriate antibiotics

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Symptoms of UTI in children, by age group
- Potential risks of untreated or recurrent UTI
- Indications for prophylactic, long-term use of antibiotics in UTI
- Indications for referral for further evaluation and management

CASE STUDY

Sarah is 3-year old girl presented to the health center with vomiting, fever, frequent urination and abdominal pain for 16 hours. On examination, Sarah looked ill, her temperature was 39 C. and the right costophrenic angle was tender to palpation. This is the first episode of this type.

Topics of discussion regarding case study

1. What is the most likely diagnosis?
2. How could you confirm the diagnosis?
3. Should Sarah be referred to hospital?
4. Does Sarah need further investigations?

c. What interventions can be done to decrease the long term effects of this problem?

2. Hypertension
   a. What are the long-term effects of this health problem?
   b. How can persons with this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

3. Automobile accidents
   a. What are the long-term effects of this health problem?
   b. How can persons at risk for this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

4. Anemia in women
   a. What are the long-term effects of this health problem?
   b. How can persons at risk for this problem be identified at the earliest stage (ie. What screening can be done?)
   c. What interventions can be done to decrease the long term effects of this problem?

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Describe the basic elements of family health care?
- List the most significant elements of preventive health care?

4. WOMEN'S HEALTH

Introduction to Women's Health

INTRODUCTION TO WOMEN'S HEALTH

LEARNING OBJECTIVES:

- Define reproductive health and its elements
- Describe external and internal female and male genital system
- Understand ovarian and menstrual cycle
- Recognize common problems of adolescence
- Understand the importance and procedures of premarital examination and counseling
- Understand the process of conception

TEACHING STRATEGIES:

- Review the definition, elements, and anatomy of reproductive health
- Use graphic material to present reproductive anatomy
- Large group discussion

MATERIALS AND EQUIPMENT NEEDED:

- Overhead projector and transparencies
- Diagrams or transparencies of female and male reproductive anatomy
- Flipcharts
- White board and markers

LEARNING POINTS:

- Definition of reproductive health (WHO)
  - Is a state of complete physical mental and social well-being and not merely the absence of disease or infirmity in all matters related to the reproductive system in its functions and process

- Elements of reproductive health
  - Safe motherhood:
    - Antenatal
    - Safe delivery
    - Postnatal
  - Infant and child health
  - Family planning services
  - Health information, education, communication
  - Counseling
  - Early detection of reproductive system cancer
  - Early detection and management of STD's, HIV infection
  - Management of reproductive morbidities
  - Management of infertility
  - Health of women in menopause
  - Gender Issues, Reproductive rights, involvement of men
  - Adolescent Health

- Anatomy of female reproductive system
  - (See attachment 1, use diagrams or pictures to illustrate anatomy)

- Ovarian and menstrual cycle
  - (See attachment 2 for graph of cycle and relationships between FSH, LH, estrogen, progesterone, and physiologic changes)

- Puberty and adolescence
  - Puberty is part of the developmental process that involves development of the body, hormonal changes, attitude and psychological changes
  - Recognized in the female by:
    - Development of breast tissue
    - Growth of pubic hair
    - Beginning of menstrual cycle
    - Changes in body structure
    - Average age – 12-13 yrs., normal range – 11-15 yrs. (should be evaluated if no menses by 16 years)
  - Recognized in the male by:
    - Enlargement of the testicles and penis
    - Growth of pubic and axillary hair
    - Changes in voice and body structure
    - Occasionally, by temporary enlargment of one or both breast nipples
    - Average age – 13-14 yrs., normal range – 12-16 yrs.

- Preconceptional and premarital counseling and examination
  - Important concepts of Sexuality, Marriage and Parenthood:
    - Sexuality: A child's sex education is going on all the time. She must be educated about body changes, where babies come from, changes of puberty and starts to masturbates
    - Marriage and parenthood: Marriage can provide companionship, a guaranteed sexual outlet, domestic service and to opportunity for joint parenthood
    - Preparing for parenthood: Preparing for health pregnancy, prevent any reproductive disaster before happening.
  - Pre-Conceptional/Premarital Counseling
    - Diet:
      - Bread and cereals: whole grain cereals and bread provide carbohydrates fiber, minerals and vitamins
      - Fresh fruits and vegetables, especially for folic acid
      - Protein foods: (meat, fish, eggs)
      - Dairy Products: Fresh milk contains vitamins and fatty acids which are destroyed by process such as drying and sterilization. A well balanced diet should contain sufficient vitamins and minerals for daily requirement
      - Consider taking a folic acid supplement (0.4mg/day) and Vitamin D supplement (if covered) during reproductive life
    - Weight:
      - Pre-pregnancy weight can have an important bearing on pregnancy outcome. If the women is underweight there is evidence of an association with fetal abnormality and low birth weight. The

overweight women increase risk of complication of pregnancy hypertension and risk to her own health
    - Use the Body Mass Index as a guide:
      - Less than 20 - Underweight
      - 20-27 - Desirable
      - 27-30 - Moderate obesity
      - Over 30 - Severe obesity
  - Exercise and relaxation
  - Avoiding hazards:
    - Smoking: There is higher rate of spontaneous abortion, congenital abnormality and fetal and neonatal death.
    - Alcohol: It is now recognized that alcohol consumed in pregnancy can damage the fetus
    - Drugs: It must be taken according to doctor's order. This include self medication such as cold cures, painkillers, antacids and laxatives and use of psychotropics
    - Infections: Immunization for Rubella for school girls is very important
- Premarital/Preconceptional Examination
  - Should be encouraged to detect high risk conditions
  - Should be done for both male and female
  - Begin with past history and family history: focus on potential genetic conditions such as consanguineous marriages, birth defects, congenital conditions (thalessemia, hemophilia, porphyuria, etc.)
  - Immunization history, especially rubella and dT for the female
  - Previous sexual history, if applicable (especially for the male), or history of STD
  - Menstrual history in the woman – regular or irregular, age of menarche, presence of menstrual abnormalities such as severe pain, heavy flow
  - Brief physical examination, especially of blood pressure, weight, height, BMI, heart, lungs, hepato-splenomegaly, lymph nodes
- Health Education/Counseling
  - Discuss and counsel regarding possible contraception and benefits of birth spacing
  - Advise beginning folate supplementation for woman – 0.4 mg/day, and vitamin D supplement if covered
  - Advise regarding hazards of smoking, drugs, alcohol when applicable (as discussed earlier)
  - Answer any questions that may arise

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE:

- Definition of reproductive health
- Anatomy and physiology of reproductive health
- Adolescence ,puberty and common problems
- Premarital and preconceptional education and counseling

ATTACHMENT 1

ANATOMY OF FEMALE REPRODUCTIVE SYSTEM

External Genitalia:
Vulva (Interior of urogenital triangle of the true perineum is covered by the external genitalia and other structure. It is extending from the monus pubis to the perineum.

Mons Pubis:
The soft fatty tissue covered with pubic hair, which lies on the top of the pubic bone

Labia Majora:
Are fold of skin with under lying deposit of fat, the lateral labial surfaces are pigmented and hairy. The inner are smooth and contain many sebaceous glands and sweat glands

Labia Minora:
Are two cutanous fold lying within the labia majora, enclosing the urethral and vaginal orifices

Clitorus:
Small structure, firm, rounded at the top of the vulva .It is composed of erectile tissue and blood vessels

Hymen:
It is formed of connective tissue covered by squamous epithelium, relatively thin and nonvascular

Bartholin gland:
The two bartholin glands are similar to the bulbourethral glands in the male, but lie superficial to the perineal membrane

The Internal Genitalia:
Vagina:
Muscular canal that leads from the vaginal opening, it is usually measures between 3-6 inches in length.
The vaginal opening is called the introitus, through which vaginal discharge comes.

The uterus (womb)
A thick walled muscular hollow organ, shaped like a pear. In the nullipara it measures:

- Exterior (7.5 cm)
- Thickness (2.5 cm)
- Length of the interior cavity (6 cm.)
- Thickness of muscle wall (1.2 cm.)
- Weight (45-55 gm)

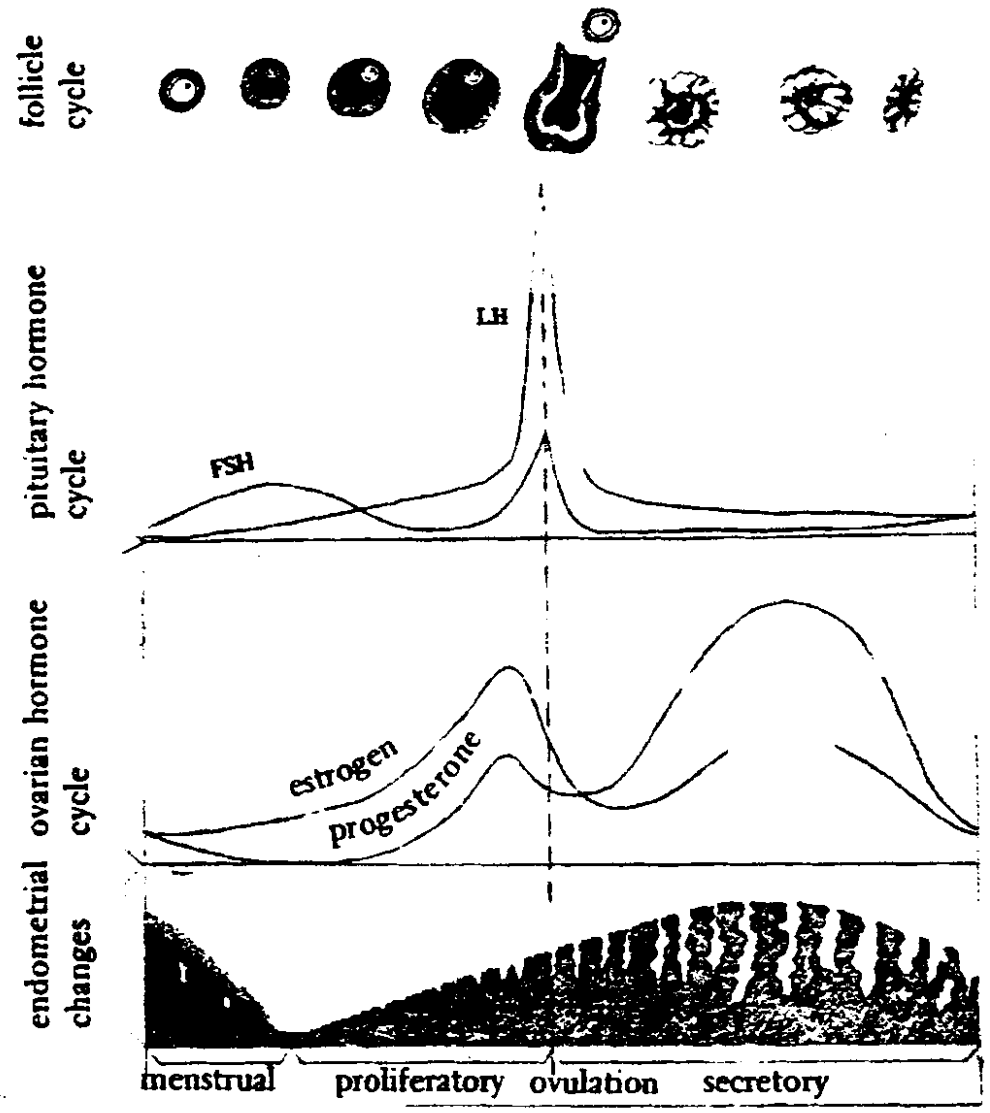
The parts of the uterus are the body (fundus), the isthmus, and the cervix.
The uterus is maintained in position by four pairs of ligaments and indirectly by the pelvic floor.

The upper two thirds of the uterus is called the fundus or body, while the lower one third makes up the cervix
The endometrium lining the body of the uterus is made of columnar epithelium. Its stroma is made of connection tissue cell. It is also a rich source of prostaglandin. **The myometrium or muscle coat** consists of three layers: an inner circular layer, a thick intermediate layer and an outer longitudinal layer.
The adnexa (fallopian tubes) are attached to the uterus, extend from the ovaries to the uterus, one on either side. The length of each tube is 10 centimeters. The opening of the fallopian tube next to the ovary is funnel shaped with many finger-like fimbrae, called the ampulla.

The ovaries are solid, almond shaped structure each about 3 centimeters long, 1.5 centimeters wide, and 2 centimeters in thickness. They are located on each side of uterus below the fallopian tubes. Cross section show that the ovary is roughly divided into a vascular center and an outer cortex consisting of several thousand cells which eventually mature into eggs.

ATTACHMENT 2

Female Menstrual Cycle



Antenatal Care

ANTENATAL CARE

LEARNING OBJECTIVES

- How to identify the mother and baby at risk for complications in pregnancy or delivery, and what to do to minimize that risk
- Develop competence in the initial history and examination of the pregnant woman
- Understand the protocol for followup of the pregnant woman
- Describe the common potential problems and complications of pregnancy, and their management.
- Understand how to appropriately educate the patient about the important issues throughout her pregnancy

TEACHING STRATEGIES

- Use lectures to present main points
- Use small group discussion or role play to present patient education issues
- Discuss the Case Study
- Have participants present several of their own case histories of pregnancies, and practice risk assessment (using the attached form) in small groups

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points
- Overhead Projector, Transparencies

LEARNING POINTS

- Importance of antenatal care in normal and abnormal pregnancies
  - Identify the patient at risk for complications, and to minimize that risk when possible
  - Reassure the woman when all is well with her and the baby
  - Begin the process of education regarding her health and that of the baby
  - Begin the discussion of planning for the birth and care of the newborn
  - Initiate discussion of birth spacing methods

- Initial Visit Protocol - History
  - Patient profile: name, address, highest level of education achieved, occupation, and emergency contact.
  - Husband's profile: highest level of education achieved, occupation.
  - Risk factors: age of mother, number of children, and space between children.
  - LMP and Estimated Date of Delivery (EDD) If the pregnant woman does not know when her last menstrual period was, recommend using ultrasound to determine the EDD
  - Menstrual regularity, lactation, use of contraception in the past, gravidity, parity, abortions, pre-term deliveries, still births
  - Mode, place, and date of previous deliveries.
  - Outcomes and complications of previous pregnancies (e.g., full term normal healthy baby, stillborn, cesarean section, bleeding spotting during pregnancy).

BEST AVAILABLE

- Time of initial quickening during current pregnancy (Normal - 16-18 weeks for multiparas; 18-20 weeks for primiparas).
- Any symptoms or complaints during current pregnancy.
- Medications taken during pregnancy
- Smoking history
- Fetal movement.
- Risk of pregnancy should be determined following initial visit, and subsequently re-assessed throughout pregnancy (normal or high)
  - Use attached Coopland risk classification table (attachment 1)

- Initial Visit Protocol: Physical Examination
  - Confirm diagnosis of pregnancy
    - By missed menstruation in otherwise normal cycles
    - Typical changes in breasts and evidence of pregnancy on pelvic exam
    - Pregnancy test
      a. Urine ß-HCG most accurate on first morning specimen, and within 7-10 days after missed menstrual period
      b. If initial uring pregnancy test negative, confirm with second test 7 days later
      c. Serum pregnancy test (ß-HCG) accurate within 10 –12 days of conception, or approximately date of next menstrual period
  - Weight
    - Should be measured at each visit
    - Measure height at first visit in order to determine the body mass index (BMI) using the BMI calculator/wheel.

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

    - Use an adult scale to weigh the client:
      - Balance should be accurately adjusted at zero on flat level.
      - Light clothing without shoes.
      - Total weight gain during the entire pregnancy should be determined according to the client's BMI at the initial visit.
    - Most woman gain an average of 9-12 kg during pregnancy. Note that there has been no good evidence that weight gain is a significant risk factor.
  - Blood Pressure
    - Record results and underline **in red** if deviated from normal. Range of normal: 80/60-140/90. If BP is higher than 140/90, and does not come down after rest, refer for medical management.
  - HEENT
    - Inspect face for puffiness; conjunctiva, tongue for color; mouth for cavities.
    - Palpate (feel) thyroid for enlargement
  - Breast
    - Inspect the breasts for symmetry, condition of nipples (flat, inverted).
    - Palpate breasts for lumps
  - Chest
    - Auscultate (listen to) heart and lung sounds.

- Extremities
  - Inspect fingernails for color, hand for swelling (ability to remove rings), feet and legs for swelling (an impression or dent when pressed by your fingers).
  - Check reflexes, tap knee with reflex hammer. If woman's leg jerks VERY briskly and quickly, refer in the presence of high blood pressure.
- Back
  - Tap the back over the kidney for signs of tenderness. If pain, check for other signs of urinary tract infection.
- Abdomen
  - Inspect the shape, symmetry, and for fetal movement.
  - Look for evidence of previous abdominal surgery, such as C-Section
  - Listen for fetal heart tones (120-160 beats per minute).
  - Palpate the fetus using the technique described in "Attachment 3: Lie & Presentation."
- Pelvis (when specific vaginal or pelvic complaints exist) Note that pelvic examination is not routinely required at the initial evaluation.
  - Steps of Pelvic Exam (Attachment 9)

    Step 1: Perform external genital inspection
    Step 2: Perform internal inspection (speculum)
    Step 3: Perform external genital palpation
    Step 4: Perform internal palpation (bimanual)
    Step 5: Perform rectovaginal palpation

- Appropriate laboratory and other investigations
  - Urine for glucose, protein at each visit. Microscopic exam, culture and sensitivity (when indicated for suspicion of infection)
  - Haemoglobin and PCV at first visit, 2nd trimester and 9th month.
  - Blood type and Rh factor at first visit (See Attachment 7 for management of Rh issues)
  - VDRL at first visit
  - Random blood sugar at 18 weeks. Refer for standardized post-glucose test or 3 hour glucose tolerance test if greater than 135mg/100ml, as seen in Attachment 8
  - Hepatitis B and rubella antibodies (recommended)
  - Vaginal smear if necessary for abnormal discharge

- Ultrasound scan for determination of fetal size or abnormalities when indicated. Note that ultrasound scanning is not routinely recommended for normal, uncomplicated pregnancies without any of the following indications: (See also Attachment 6)
  - Assessment of bleeding or pain in early pregnancy.
  - Differential diagnosis of troublesome vomiting.
  - Estimation of gestational age if otherwise uncertain.
  - In mothers who have large or small newborns (for gestational age) in past pregnancies.
  - Monitor fetal growth in high-risk pregnancies.
  - Assessing placental site, or identifying the source of antenatal bleeding or hemorrhage.
  - Examination of the fetus when the risk of congenital anomaly is high.

- Determination of fetal presentation if it is unclear from the abdominal examination.

- Followup antenatal visits:
  - Frequency of visits: In normal pregnancy, the **RECOMMENDED** frequency is as follows:

Up to 28 weeks → Once every 4 weeks
28-36 weeks → Every 2 weeks
After 36 weeks → Weekly

  - For those patients who are unable to comply with the number of recommended visits, the **MINIMUM** number of visits recommended by the WHO is 5, distributed as follows:

	Timing	Content
First Visit	By end of 3rd month (12 weeks)	• Screen & treat anaemia • Screen & treat reproductive tract infections • Screen for risk factors & medical conditions • Initiate prophylaxis where required (e.g., iron supplementation for anaemia) • Assist mother to develop a birth plan
Second Visit	6th or 7th month (24-28 weeks)	• Continue development of birth plan • Begin discussion of family planning • Review risk factors
Third Visit	8th month (32 weeks)	• Screen for pre-eclampsia, multiple gestation, anaemia • Further develop the individualized birth plan • Counsel on family planning • Review preparing for labor and delivery
Fourth Visit	In 9th month (36 weeks)	• Identify fetal lie/presentation • Continue review of preparing for labor and delivery • Refer to where client has decided to give birth • Counsel about importance of postpartum care and family planning
Fifth Visit	38 weeks	• Review signs of labor and when to go to hospital • Review process of labor & delivery • Counsel about importance of postpartum care

  - High risk patients should be seen more frequently, every 2 weeks till 28 weeks then weekly till delivery with the physician.

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- During each visit:
  - blood pressure
  - weight
  - urine for sugar, protein and acetone.
  - abdominal examination for fetal size and well being
  - fetal heart tones and movement (not less than 10 movements in 12 hours)
  - any problems since last visit (vaginal discharge, bleeding, edema, etc.)
  - Appropriate patient and family education as noted below.

PATIENT AND FAMILY COUNSELING

- During the course of each pregnancy, the following issues should be discussed, ideally with both the patient and her husband: (See Attachment 2 for more complete details)
  - Bathing and personal hygiene
  - Birth spacing counseling
  - Bowel habits
  - Breast care and breastfeeding (Lactation) counseling
  - Care of teeth and gums
  - Childbirth education
  - Clothing
  - Common complaints and symptoms of pregnancy
  - Danger signs during pregnancy
  - Drug education and classification of drugs
  - Exercise
  - Physiology of pregnancy
  - Fetal movement
  - Follow-up visit schedule
  - Health hazards to pregnant women and infants: smoking and alcohol
  - Immunizations during pregnancy
  - Nutritional advice
  - Physiology of labor
  - Postnatal care
  - Psycho-social problems
  - Relaxation and sleep
  - Sexual relationships
  - Travel
  - Warning signs of pre-term labor
  - Work during pregnancy
- Divide information over the course of antenatal visits giving information when it would be most relevant.
- Information needs to be repeated or assessed throughout the course of the pregnancy.
- Build on information previously given.
- Avoid giving too much information at one time.
- If you may see the woman only once, choose the most important information to give her.

CASE STUDIES

I. Amina, 35 years old, G6 P4 Ab2, attended the antenatal clinic on 5 March. Her LMP was on 23 November 1999; Her EDD is on 30 August 2000. The first three babies were delivered normally at term; she had two abortions in the first trimester followed by evacuation of the uterus. Last baby was delivered by caesarian section for abnormal vaginal bleeding at 35 weeks gestation. She is diabetic for the last 2 years and on oral hypoglycemic drugs.

Topics for discussion regarding this case study

a. Using the Antepartum Risk Assessment Form, what is her level of risk with this pregnancy?
b. What is an appropriate plan of management for this patient at this point?
c. What counseling issues would be most appropriate for this patient at this point?

II. Fatima is 24 years old, G2 P1 Ab0 who comes to the antenatal clinic at 12 weeks of pregnancy for the first prenatal visit. The first baby delivered normally at term and was 3.6 kg. She has no complaints at present, and her examination is normal.

Topics for discussion regarding this case study

a. Using the Antepartum Risk Assessment Form, what is her level of risk with this pregnancy?
b. What is an appropriate plan of management for this patient at this point?
c. What counseling issues would be most appropriate for this patient at this point?

CRITICAL ELEMENTS FOR REFERRAL

- Patients classified as high or very high risk on Coopland risk assessment form
- Increase in the blood pressure
- Bleeding or abnormal vaginal discharge
- Severe anemia
- Medical illness as diabetes, hypertension, thyroid disease, heart disease etc
- Rh isoimmunization
- Poly or oligohydramnios
- Fetal growth retardation or abnormally large uterus (twins, polyhydramnios)
- Patients needed abdominal delivery

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Proper conduction of antenatal and postnatal care
- Appropriate investigations necessary at the booking and postnatal visits.
- Appropriate patient education regarding breast feeding, contraception, smoking, sexual activity
- Contraception and birth spacing
- Knowledge of need of referral.

Attachment 1
Antepartum Risk Assessment Form:

Patient File Number _____ Age _____
Gravida_____
Abortion_____ LMP_____ EDD_____

Reproductive History	RS	Medical or Surgical History	RS	Present Pregnancy	RS
Age <16 or >35	1	Previous gynecologic surgery	1	Bleeding <20 weeks	1
				>20 weeks	3
Ist visit > 20 weeks	1	Chronic renal disease	1	Anemia <11 gm/100 ml	1
Parity = 0	1	Diabetes	3	Postmaturity	1
Parity > 5	2	Chronic hypertension	3	Hypertension	2
Abortion >2	1	Cardiac disease	3	Premature rupture of membranes	2
History of infertility	1	Gestational diabetes (A)	1	Oligo or Poly hydramnious	2
Antepartum or Postpartum bleeding	1	Epilepsy	1	Intrauterine Growth Retardation	3
Infant >4kgs	1	Psychiatric problem	1	Multiple Pregnancy	3
Infant <2kgs	1	Other significant medical disorders (score 1-3 according to severity)		Abnormal fetal position	3
Toxemia or hypertension	1			Rh-isoimmunization	3
Previous C-Section	2				
Abnormal or difficult labor	2				
Column Total		XXXXXXX		XXXXXXX	

Total Score (Total of three columns) -

* Low Risk: 0-2 High Risk: 3-6 Severe Risk: 7 or more

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Attachment 2 – Patient Education Guidelines during Pregnancy

1. Bathing and Personal Hygiene

- There is no objection to bathing during pregnancy: it is encouraged.
- Advise taking extra precautions not to slip or fall when bathing or showering near the end of the pregnancy.
- Tub baths at the end of pregnancy may be not advisable, as the heavy uterus usually upsets the balance of the pregnant woman and increases the likelihood of tripping and falling in the bathtub. Advise using a shower or pouring water over the body.
- Advise washing breasts daily with a soft cloth and wearing a supportive bra. Avoid massaging nipples during washing.
- Advise cleansing external genital daily, wiping from front to back, especially if vaginal discharge is present. Change underwear frequently, and if possible, use cotton underwear.

2. Birth Planning

Counsel the client and her family to think ahead and make plans for when the client will need to come to the facility to give birth. Waiting until the last minute will only add additional stress to a very exciting period. Guide clients in discussion to consider the following and take appropriate actions:

- How far from where you live is the facility where you will give birth?
- How will you get there? Who will go with you?
- If you have to leave home during the night, who will care for the children?

If you have to use public transportation:

- How much will it cost (transportation costs)? How can you save the amount?
- Will the transportation be available at night? How will you get in contact with transportation?

3. Birth Spacing Counseling

Introduce client to family planning and its purposes during the second trimester, using health education talks, pamphlets and posters, and videos. During the third trimester, counsel the client regarding all available methods. This will be particularly important for women wanting immediate postnatal IUD insertion or immediate postnatal voluntary surgical contraception. Counseling should continue after delivery until the mother is discharged and provide her chosen method, if appropriate.

Emphasize to the client that the recommended interval for spacing of children is a minimum interval of at least two years.

- Birth spacing is vital for maternal health and child survival. Benefits of birth spacing are:
    - Gives the mother time to renew nutrient stores.
    - Reduces the risk of death and illness of the mother and infant.
    - Promotes the health of the entire family by ensuring a healthy mother.
    - Saves lives.

4. Bowel Habits

During pregnancy, bowel changes may occur due to sluggishness of the intestinal tract caused by the effect of progesterone and pressure from the growing uterus. The following changes may be observed:

- Constipation (common), due to generalized relaxation of smooth muscle and compression of lower bowel by the uterus. It is characterized by discomfort caused by passage of hard fecal material.
- Bleeding and painful small tears may develop in the swollen and vascular rectal mucous.
- Development of hemorrhoids.

Tell the client that, to avoid these problems, she should:

- Increase water intake (eight glasses per day); drink prune juice; take warm water or hot fluids upon waking.
- Pay close attention to bowel habits; go to the toilet when you feel the urge. Take sufficient quantities of fluid, vegetables, and fruits with their skins, to increase dietary fiber.
- Engage in reasonable amount of daily exercise (e.g., brisk walking).
- Take stool softener prescribed by provider with plenty of water.

5. Breast Care and Breastfeeding (Lactation) Counseling

Avoid nipple stimulation (touching, rubbing) and massage since it can provoke contractions

Counsel the client on infant feeding during the third trimester, using client materials and videos covering the advantages and behaviors of successful breastfeeding and care of the breasts. Review breastfeeding preparation messages at the 36th week of gestation. Breastfeeding is vital for child survival, maternal health, and birth spacing. Introduce or reinforce LAM criteria and optimal breastfeeding practices.

LAM Criteria

A woman can use LAM if she answers "No" to ALL of these questions:

- Is your baby 6 months old or older?
- Has your menstrual period returned? (Bleeding in the first 8 weeks postnatally does not count.)
- Is your baby taking other foods or drink or allowing long periods of time (4 or more hours) without breastfeeding, either day or night?

If the woman answers "Yes" to **any one** of these questions, she **cannot** rely on LAM fo prevention of pregnancy, but she can continue to breastfeed her baby while using a method of contraception that will not interfere with lactation.

6. Care of Teeth and Gums

- Encourage the importance of daily care and brushing of the teeth after meals.

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- Encourage the daily drinking of milk and eating dark, leafy vegetables to prevent loss of calcium and loss of teeth.
- Pregnancy does not prevent dental care; it is required during pregnancy to prevent serious infections.
- Encourage dental visits when needed.

7. Childbirth Education

During the second half of pregnancy, provide information about preparation for labor and birth, the proper place and who will attend the delivery, preparation of baby's and mother's clothes, care of newborn, breastfeeding, care of other family member, in order to:

- Help the mother and family take a decision about the appropriate place of delivery.
- Promote hospital delivery and delivery by trained health professional (doctor and midwife).
- Promote breastfeeding.
- Explain these processes to the mother and her family:
  - Process of labor.
  - Process of birth.
  - Labor relaxation techniques.
  - Comfort and support measures by those staying with the woman.
  - Postnatal care/infant care.

See also "Attachment 10: Preparing the Pregnant Woman for Labor & Delivery."

8. Clothing

- The clothing worn during pregnancy should be practical and non-constricting.
- Well fitting supporting brassieres indicated.
- Contracting garters should be avoided.
- Low-heeled shoes are recommended.

9. Common Complaints of Pregnancy

Many discomforts are expected in pregnancy, which are related to cardiovascular changes, hormonal effects, uterine growth, and the change in body posture.
After investigation to rule out a serious pathologic condition, treatment may be directed to symptomatic relief.

Table 1. Common Complaints of Pregnancy.

Complaint	What to Tell the Client	Provider Management
Constipation	• Increase your water intake (8 glasses), eat high-fiber foods, and take daily exercise. • Use mild laxatives as a last resort.	• Counsel the client on diet. • Prescribe psyllium hydrophilic mucilloid (Metamucil), lactulose (Duphalac). • Suggest mild laxatives only if the other measures have failed.
Headache	• Take mild pain relievers: e.g., paracetamol. Avoid aspirin. • Inform provider if pain becomes severe.	• Determine that the headache is not a **Danger Sign** (see below). • Offer paracetamol (Panadol, Revanin) 300 mg every 3–4 hours. • For severe headache or migraine, offer codeine or other related narcotic might be used. **Remember:** headache can be associated with hypertension.
Backache	• Avoid excessive bending, lifting, or walking without a rest period. • Rock pelvic periodically during the day for relief. • Wear supportive, low-heeled shoes. • If severe, wear a maternity girdle for additional support. • Heat or ice to back for relief, whichever is more comforting.	• Counsel regarding comfort measures. **Remember:** the symptoms of UTI and onset of labor include backache.
Nausea and vomiting	• Eat small meals frequently. Keep crackers at bedside and eat before getting out of bed. Eat fruit or drink fruit juice before going to sleep. • Avoid oily, spicy foods. • Get out of bed slowly. • Symptoms should not extend beyond the first three months; if severe and persistent, see your health care provider.	• Counsel about comfort measures. • Provide Vitamin B_6, 50 mg, twice daily. • If symptoms are severe, refer for possible hospitalization and intravenous fluids. • Medications for management may include - Meclozine, promethazine - (Phenergan) - Diphenhydramine (Benadryl) - Other antihistamines • Birth defects have not been associated with the use of these drugs.
Varicosities	• Elevate legs periodically during the day. • Wear support hose (elevate legs before putting on hose for maximum support).	• Prescribe support hose, as necessary. • Refer if varicosities are severe and painful.

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Complaint	What to Tell the Client	Provider Management
Vaginal discharge	• Cleanse genitalia daily. Wear cotton underwear. • Use light sanitary pads if discharge is heavy. • Avoid vaginal douching. • If discharge develops with itching, irritation or foul odor, see the provider as soon as possible for treatment.	• If not infection, counsel for genital hygiene. • With symptoms of infection, treat according to guidelines or refer for treatment.
Leg cramps	• During cramping, straighten leg slowly with the heel pointing and the toes upward or push the heel of the foot against the footboard of the bed or floor, if standing. • Exercise daily to enhance circulation. • Elevate legs periodically throughout the day. • Take calcium tablets daily. Eat calcium rich foods such as dairy and dark green leafy vegetables.	• Prescribe Calcium carbonate or calcium lactate tablets

10. Danger Signs During Pregnancy

Teach the pregnant woman and her family to report any of the following conditions immediately:

- Vaginal bleeding
- Sudden gush of fluid or leaking of fluid from vagina
- Severe headache not relieved by Paracetamol
- Dizziness and blurring of vision
- Sustained vomiting
- Swelling (hands, face, etc.)
- Loss of fetal movements
- Convulsions
- Premature onset of contractions (before 37 weeks)
- Severe or unusual abdominal pain
- Chills or fever

11. Drug Education and Drug Classification

The following are guidelines for the clinician who prescribes medication during pregnancy or lactation:

- Try to avoid any medication during the first trimester.
- Use single, non-combination, short-acting agents.
- Choose topical (if available) over-the-counter medications.
- Use the lowest effective dosage of the safest known medication.

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- Instruct breastfeeding mothers to use a single dose or short acting medication so they can feed again, past the peak blood level to minimize the risk to infants.
- Encourage breastfeeding mothers to watch and see whether the infant seems to have any problems related to any medication the mother may be taking
- Use Attachment 10 as a guide to the use of the most commonly used medications

Table 2. Drug Classification Scale (to be used with Attachment 10)

Category	Description
A	No fetal risks (multivitamins). Proven Safe during pregnancy.
B	Fetal risks not demonstrated in animal but there are no human studies.
C	No adequate studies, fetal risks unknown.
D	Some evidence of fetal risks, may be necessary to use during pregnancy

12. Exercise

Continue to be active but avoid fatigue. The trained athlete can continue rigorous training during pregnancy but should avoid raising her core temperature or becoming dehydrated. Exercise should be varied during the third trimester to avoid too much stress on knee and ankle joints. Walking can be accepted to the needs of most women. Exercise should include women's posture, muscular relaxation, and breathing exercise.

13. Fetal Movements

Fetal activity is usually of cyclic frequency or pattern and may vary throughout pregnancy. Lack of fetal movement or marked decrease in frequency may be warning signal of fetal distress: inform provider immediately.

14. Health Hazards to Pregnant Women and Infants

Smoking should be discontinued during pregnancy. It is important to counsel patients about this and record their compliance. The potentially harmful effects of cigarette smoking during pregnancy include low birth weight, premature labor, miscarriage, stillbirth, (cot) death, birth defects, and increased respiratory problems in neonates. More than 10 cigarettes a day can have a pronounced effect on birth weight. Many women do not realize the severity of the risk. Patient education is important, with counseling or referral to appropriate community groups.

Alcohol use should be discontinued in pregnancy. Chronic alcoholism has been shown to cause fetal mal-development that is commonly referred to as fetal alcohol syndrome. The more alcohol the mother drinks, the more the fetus is at risk of damage. Encourage mother to avoid social drinking.

Avoid exposure to X-rays and contact with persons with infectious diseases (e.g., German measles, chicken pox).

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15. Immunizations during pregnancy for a previously non-immunized woman:
Adjust for the immunized woman.
Tetanus toxoid should be administered in pregnancy, especially if exposure to pathogens is likely.

Table 3. Tetanus Toxoid Immunization Schedule.

Dose	Schedule
TT1	At first contact or as early as possible during pregnancy
TT2	Four weeks after TT1
TT3	Six to 12 months after TT2, or during subsequent pregnancy
TT4	One to three years after TT3, or during subsequent pregnancy
TT5	One to five years after TT4, or during subsequent pregnancy

- **Live virus vaccine** should be avoided during pregnancy because of possible damaging effects on the fetus.
- **Hepatitis B vaccine** series may be given in pregnancy to women at risk of exposure.
- **Immune globulin** is recommended for pregnant women exposed to measles, Hepatitis A, Hepatitis B, tetanus, chickenpox, or rabies.

16. Nutritional Advice
Eat foods from each of the six major food groups:

1) Fat (sparingly)
2) Milk, yogurt, cheese
3) Vegetables
4) Meat
5) Fruit
6) Bread, cereals, and other carbohydrates

Drink plenty of liquids (especially water—8 to 10 large glasses, or 1 liter), increase fiber, and increase calcium and iron intake. For women whose BMI is normal before pregnancy, maintain a normal weight gain according to BMI. This is usually achieved by a well-balanced diet containing 60-80 gm protein, 2400 or more calories, low sugar and fats, high fiber, milk and other dairy products; higher weight gain may be required. Excessive weight gain or high pre-existing maternal weight is associated with increased risk factor for the infant in terms of birth trauma and delivery by Caesarean section.

Table 4. BMI Assessment and Recommended Weight Gain.

BMI	Assessment of Weight	Recommend Weight Gain
Less than 18.5	Underweight	12.5-18 Kg
18.5-24.0	Normal weight	11.5-16 Kg
24.0 and above	Overweight	7.0 - 11.5 Kg

Prescribing prenatal vitamins in most cases may not be necessary where diets supply adequate calories, protein, and minerals for appropriate weight gain. However, there are two exceptions:

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Folic Acid Supplementation pre-conceptually and throughout the early part of pregnancy has shown to decrease the incidence of fetal neural tube defects. Thirty to sixty (30-60) mg/d calcium up to 1.5 mg/d in later months of pregnancy and during lactation.

Iron Supplementation after 12 weeks is recommended. Also, increased iron requirements in the latter part of pregnancy are difficult to meet in the routine diet. To enhance the absorption of iron, instruct mothers to take iron when eating meat or vitamin-rich foods (fruits and vegetables). Avoid tea, coffee, and milk at the same time when taking iron: it interferes with the body's absorption of iron. Iron can also be taken between meals with orange juice.

17. Physiology of Labor (See "Attachment 10: Preparing the Pregnant Woman for Labor & Delivery")

During the second half of pregnancy, teach the woman, her partner, and her family, through discussions with health care staff, lectures, pamphlets, and videos, about the normal physiology of labor, stages, preparation, anatomy of birth canal, signs of labor progression, breathing, and nature of pain in order to:

- Reduce the need for analgesia and anesthesia during labor.
- Ensure cooperation of client with the attending staff during delivery.
- Minimize fetal distress.
- Reduction of some maternal complications (e.g., exhaustion) during delivery.
- Minimize instrumental and operative interference.
- Ensure smooth and shorter progression of labor.

18. Postpartum Care

Instruct pregnant women when to return after delivery for postpartum visits. The first visit should be within the first week after delivery, and the second visit should be two to six weeks after delivery or sooner, if necessary. Explain to the woman that if the following occur anytime during the postnatal period, she should return to the health center or hospital immediately:

- Heavy bleeding.
- Fever or chills.
- Abdominal pain or foul-smelling lochia (vaginal discharge).
- Pain and/or tenderness, heat in the calf of the leg(s).
- Feeling depressed or not happy.

Explain the importance of postpartum care:

- Monitors the mother's full recovery from the effect of pregnancy and delivery.
- Helps detect complications early for their effective management.
- Facilitates family planning counseling and provision of method(s).

19. Psychosocial Problems

The pregnant woman may have worries and fears about labor, or may doubt her ability to care for the baby or for her other children. Health providers need to be sympathetic, reduce anxiety, and provide problem solving with counseling and/or education for the woman.

20. Relaxation and Sleep

Instruct the pregnant woman to continue all ordinary activities with one or two hours bed rest during the day. Adequate sleep may be difficult to achieve as sleeping patterns change. Therefore, it becomes more important to ensure rest breaks during the day.

21. Sexual Relationships

There are no restrictions of sexual relations for pregnant women without complications. Whatever is comfortable and pleasurable may continue unless or until a pregnancy complication occurs (e.g., vaginal bleeding, preterm labor, known placenta previa). Support the woman to avoid sexual contact if she or her partner has symptoms of STI; ask her to see the provider immediately. Encourage couples to use condoms where the risk of STIs exists. Instruct the mother to avoid sexual intercourse if the waters break or labor begins.

22. Travel

- Travel is not harmful for a healthy pregnant woman. Avoid long periods of sitting, and take a walk every two hours to promote circulation.
- Travel in pressurized aircraft presents no unusual risks.

23. Warning Signs of Preterm Labor

Infant outcomes are improved when preterm labor is diagnosed and treatment is started early. Teach the mother signs of preterm labor. These signs include:

- A feeling that the baby is "balling up" which lasts more than 30 seconds and occurs more than four times per hour.
- Contractions or intermittent pains or sensations between nipples and knees, lasting more than 30 seconds, and recurring four or more times per hour.
- Menstrual-like sensations, occurring intermittently.
- Change in vaginal discharge, including bleeding.
- Indigestion or diarrhea.

24. Work During Pregnancy

Most women can safely work until term without complications. A flexible approach must be taken. Pregnant working women should take breaks every two hours and walk around frequently to support circulation.

Pregnant women my have less tolerance to heat, humidity, environmental pollutants, prolonged standing, and heavy lifting.

Pregnant women who should probably **not** work include:

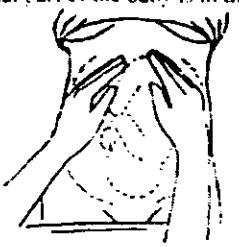
- Those with history of two premature deliveries.
- Incompetent cervix and fetal loss, secondary to uterine abnormalities.
- Cardiac disease greater than Class II (tires after minimal activity).
- Hemoglobinopathies.
- Diabetes; greater risk with retinopathy or renal involvement.
- Third trimester bleeding.
- Premature rupture of the membranes
- Multiple gestations after 28 weeks.

Attachment 3
Lie & Presentation

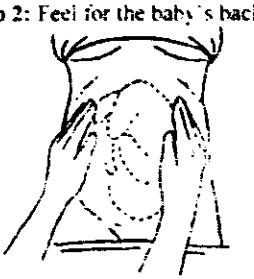
Feel for the baby's head and body. By 30-32 weeks, the baby is usually lying with the head down towards the mother's pelvis. (Vertex presentation). Most babies lie more on one side of the mother than the other.

Look and feel for movement of the baby as shown in the diagrams below:

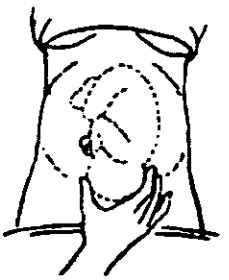
Step 1: Feel what part of the baby is in the upper uterus.



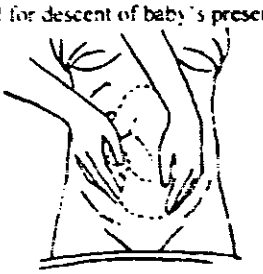
Step 2: Feel for the baby's back.



Step 3: Feel what part of the baby is in the lower uterus.



Step 4: Feel for descent of baby's presenting part.



Attachment 4
Pelvic Examination

In preparing to perform the pelvic examination:

- Confirm that the client has recently emptied her bladder.
- Explain to the client what you are going to do and answer questions.
- Layout all instruments and equipment that you will need.
- Ensure that the examination space is private, that the examining table does not face the door; that curtains or a barrier protects the client from exposure.
- Position woman appropriately on examination table with feet in stirrups.
- Drape the client's abdomen and pelvis with a cloth, towel or her own clothing. In all cases, respect her modesty and treat her with dignity.
- Position light for good illumination of the cervix.
- Open instruments or examination pack with instruments.
- Wash your hands, dry them with a clean towel or air-dry, and put on high-level disinfected gloves.

Step 1: Inspection of External Genitalia:
Purpose: to check for any inflammation, discharge, growth or lesions.

Ask the client to separate her legs and look at the external genital structures:

- Mons pubis – presence and distribution of hair; presence of lice or nits.
- Labia majora and minora – presence, intact; color; presence of discharge, mass (growth), or discoloration.
- Bartholin glands opening – normally not visible; abnormal finding include, presence of redness or discharge.
- Perineum – smooth and unbroken, presence of mediolateral episiotomy scar; presence of fistula or abnormal mass.

Gently separate the labia major and labia minora and look at the deeper external structures (tell the client you will be touching her **before** your touch her):

- Clitoris – presence, size; abnormal masses.
- Hymen – presence or absence; if present, open, closed, presence of a mass.
- Para-urethral gland openings – normally invisible; if visible, look for redness, discharge, or masses.
- Urethral opening – color without discharge; abnormal findings include redness, discharge, or masses.
- Vaginal opening – visible; abnormal findings include protrusion of the vaginal walls (rectocele, cystocele).

Step 2: Inspection of Internal Structures:
Purpose: to inspect vagina and cervix for inflammation and/or discharge, growths or lesions.

Inform the client of what you are going to do next.

Separate the labia minora and gently insert a closed speculum obliquely into the vaginal opening, directing it downwards until you meet gentle resistance. Gently open the blades, lock them in position, and look at:

- Cervix – shape, color; if the ectocervix is smooth with a colorless discharge; abnormal finding include discharge, masses, irregular borders around the cervical opening; blood of unknown origin, ulceration. The pregnant cervix is usually softer, may be somewhat bluish (cyanotic), and may show some visible endocervical epithelium which should not be confused with inflammation
- Cervical os – for presence of masses protruding from the opening (abnormal).
- Vaginal mucosa – intact, color, without odor; presence of discharge, blood of unknown origin, redness, fistula, areas of white coloration, ulcerations

Take specimens for Pap smear and/or culture, if indicated and available (gonorrhea, chlamydia, wet mount).

When finished with this step, loosen the screws to allow the spreading of the speculum. Gently remove the speculum obliquely, rotating it to a partially open position to inspect the vaginal mucosa while withdrawing the speculum. If abnormal discharge was present, put a few drops of KOH (potassium hydroxide) solution on the accumulated discharge in the lower blade to determine the presence of a fishy odor consistent with Bacterial vaginosis.

Place the speculum in a container with decontamination solution.

Step 3: Palpation of External Genitalia
Gently separate labia major and minora with the first two fingers of one hand, gently insert the forefinger of the examining hand at the opening of the vagina about one inch, press the anterior vaginal wall and draw it toward the vaginal opening. Look for presence of discharge (abnormal).

Rotate the examining hand downward and place the forefinger at the 4 o'clock position with the thumb on the same area on the vulva. Palpate the right Bartholin gland. Repeat this maneuver at the 8 o'clock position to palpate the left Bartholin gland. Feel for enlargement, mass, or painful response by client.

Tell the client that you will insert your fingers deeper to feel her internal organs.

Step 4: Palpation of Internal Structures
Insert the first two fingers of the examining hand, until resistance is felt. Place the other hand on the client's abdomen just above the pubis.

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- Feel the cervix – consistency, smoothness, condition of the cervical opening, and presence of pain when gently moved.
- Gently palpate the anterior and posterior fornices to examine the uterus. Feel for shape, size, smoothness of surface, consistency (firm or soft), and position (anteverted/retroverted/midposition).
- In the pregnant woman, estimate the size of the uterus, especially in the first 12 weeks.
- Gently palpate the right and left fornices to examine the ovaries and tubes. Feel for masses, tenderness.

Use the hand you placed on the client's abdomen to gently push the internal organs down toward the fingers in the vagina to help feel the organs completely.

Assess the Pelvic Muscles

- Withdraw fingers from the vagina halfway and ask the client to squeeze your fingers. Feel the strength of her pelvic muscles during this part of the examination.
- Rotate the vaginal hand palm-down and separate the fingers lightly, asking the client to cough or bear down. Look for bulging of the anterior and/or posterior vaginal walls, or loss of urine.

Withdraw the fingers completely from the vagina and look at the gloves for any blood or abnormal discharge that may have collected. Evaluate any abnormal discharge.

Step 5: Recto-Vaginal Palpation
After palpation of the internal organs, inspect the anal opening, and palpate the anal sphincter and the rectum.

Inspect the anal opening: it should be free of blood, without tissue protruding. Abnormal findings include red, swollen mass (hemorrhoids) or brownish mass (prolapse of the rectum).

Inform the client of what you are going to do next. Ask her to bear down while you gently insert your index finger into the anal opening. Note the tone of the sphincter (tight). Confirm a retroverted uterus that was felt during the vaginal examination by feeling it through the anterior wall of the rectum. Feel all surfaces of the rectal wall for masses.

Gently withdraw your finger and discard the glove.

Wipe the client's genitalia and assist her to a sitting position. Share your findings with her.

Document your findings immediately in the client record.

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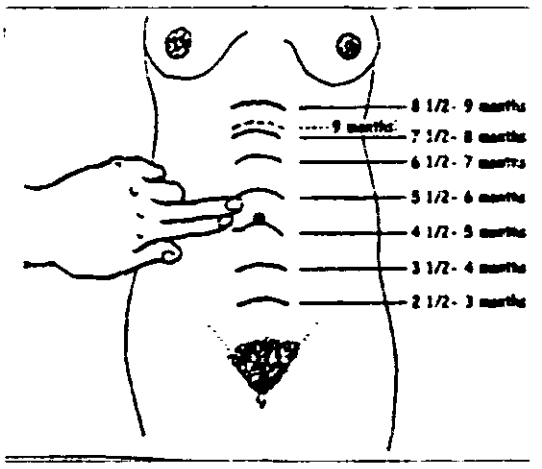
Attachment 5
Fundal Height Measurement[1]

Measuring the Baby's Growth

The uterus moves up in the mother's abdomen as the baby grows. The uterus grows about two fingerbreadths in a month. At 12 weeks, the top of the uterus is usually just above the pubic bone. When the baby is about 20 weeks old, the top of the uterus is usually at the mother's umbilicus. Use a centimeter tape to measure the distance from the top of the pubic symphysis over the curve of the abdomen to the top of the uterine fundus. Fundal height in centimeters correlates well with weeks of gestation until the 34th week of pregnancy.

The figure illustrates fundal height at different stages of pregnancy:



[1] Beck, D., Buffington, S., McDermott, J., and Berney, K. *Healthy Mother, Healthy Newborn Care: A Reference for Caregivers*. American College of Nurse-Midwives, MotherCare USI, Inc., 1998.

Attachment 6
Indications for Ultrasound[2]

Ultrasound is an excellent means of assessing fetal well being; however, it can be inappropriately used, leading to excessive reliance on technology and increasing health care costs. Consequently, it is crucial to know the indications for ultrasound, its true value and limitations.

- Estimated gestational age for clients with uncertain dates of LMP.
- Evaluation of fetal growth.
- Vaginal bleeding of undetermined etiology in pregnancy.
- Determination of fetal presentation.
- Suspected multiple gestation.
- A support to amniocentesis.
- Significant uterine size and clinical dates discrepancy.
- Pelvic mass.
- Suspected Hydatidiform mole.
- Suspected ectopic pregnancy.
- A support to special procedures; e.g., fetoscopy, chorionic villus sampling, cervical cerclage placement.
- Suspected fetal death.
- Suspected uterine abnormality.
- Localization of IUD.
- Surveillance of ovarian follicle development.
- Biophysical evaluation for fetal well being.
- Observation of intrapartum events; e.g., extraction of second twin.
- Manual removal of placenta.
- Suspected polyhydramnios or oligohydramnios.
- Suspected abruptio placenta.
- A support to external cephalic version.
- Estimation of fetal weight.
- Abnormal serum alpha-fetoprotein value.
- Follow-up observation of identified fetal anomaly.
- Follow-up evaluation of placenta location for identified placenta previa.
- History of previous congenital anomaly.
- Serial evaluation of fetal growth in multiple gestation.
- Evaluation of fetal condition in late registrants for antenatal care.

[2] Varney, Helen, CNM, MSN, FACNM (1997), *Varney's Midwifery*. Jones and Bartlett Publishers, Boston. 307, Tables 19-16.

Attachment 7
Rh Incompatibility[3]

Rh Incompatibility Screening

The mother's blood and Rh type should be identified through routine laboratory tests during the first antenatal visit.

Women with the following history indicate Rh type testing

- History of previous blood transfusion.
- History of previous "yellow baby" or a baby needing a blood transfusion
- History of stillbirth or neonatal death resulting from causes unknown to the mother.
- History of receipt of RhoGAM (Rh immune globulin) after previous deliveries or pregnancy losses.

If the woman is Rh negative, order an indirect Coombs' test to screen for Rh antibodies.

Rh Negative, Coomb's Negative	Rh Negative, Coombs' Positive (presence of Rh anitibodies)
If the Coombs' test is negative, repeat the Coombs' test at 28 weeks.	Consult with obstetrician for medical management.
If Coombs' test is negative at 28 weeks, offer RhoGAM injection, it decreases the risk of developing antibody titers during the antenatal period in the event of maternal-fetal transfusion that can occur during placenta previa or abruptio placenta, and during the intrapartal period.	
If the client accepts RhoGAM, no further testing is necessary before delivery (RhoGAM provides protection against antibody formation for 12 weeks).	

[3] *Varney's Midwifery*, 357

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Attachment 8
Gestational Diabetes Mellitus (GDM) Screening[4]

GDM Screening

All pregnant women for whom there are no initial risk factors for diabetes mellitus should be screened at 28 weeks gestation. If the screening test is normal, no further testing is needed.

A woman who shows any of the following should be screened three times during the course of her pregnancy in the first trimester or at the first visit, at 28 weeks, and at 34 to 36 weeks:

- Family history of diabetes mellitus (parents, siblings, grandparents).
- History of previous unexplained stillbirth.
- Poor obstetrical history (spontaneous abortions, congenital anomalies).
- Previous delivery of newborn weighing nine pounds (>4 kg) or more.
- Non-pregnant weight greater than 180 pounds, depending on body build and height.
- Recurrent monilial infection (if this is the only factor, screen only at 28 weeks)
- Recurrent glucose in the urine in a clean-catch specimen, not explained by dietary intake.
- Signs and symptoms of diabetes (excessive urine output, excessive thirst, excessive eating, weight loss, and poor healing).
- Pre-eclampsia or chronic hypertension.
- Polyhydramnios.
- Age 25 or older.
- Gestational diabetes in previous pregnancy.

[4] *Varney's Midwifery*, 353.

Attachment 9
Preparing the Pregnant Woman for Labor and Delivery

Introduction

This section introduces a number of issues that will help minimize your pain and fear during labor and delivery. In addition, it summarizes what happens and what is expected to happen during each phase of labor and delivery, and what is expected from the woman during each phase.

Objectives

- To reduce the woman's fears, which may be due to lack of knowledge of what happens during labor and delivery.
- To provide the mother and her baby the best of health and safety.

Delivery Free from Fear and Pain

Delivery should be free from any significant pain. This section describes how to promote an easier labor and delivery for you and your baby.

What is the relationship between fear and pain?

- Fear leads to tension, and tension leads to cramps, which in turn cause pain, while pain increases fear.

  It is essential to eliminate fear in order to reduce pain, and considering that fear is usually born of the unknown, it is fundamental to introduce you to the characteristics of labor and the delivery process. This will help you overcome many of your fears. This pamphlet presents you with some information on delivery that is free from fear and with minimal pain.

How can the pain of labor and delivery be reduced?

- Learn the art of relaxation.

  Relaxing the muscles of the body is of vital importance while having contractions during labor. The contractions lead to dilation of the cervix, thus allowing the fetus to pass through. When the mother relaxes between periods of contractions, she is helping her body by preventing exhaustion. Therefore, it is advisable to practice relaxation techniques daily during your pregnancy up to the time of delivery. Relaxation thereby becomes a habit that can be easily applied during labor and delivery.

  Relaxation Technique

  - During relaxation, close your eyes and breathe slowly. Clear your mind of thoughts that may hinder relaxation by counting breaths or by counting to 100 (or another method.

  - Practice relaxation on a daily basis, so that you can relax quickly at the onset of labor and delivery, when you need it most.

- Regular breathing during labor and delivery helps both relaxation and the movement of the abdominal muscles; hence enabling you to benefit from the relaxation exercises.

- During labor and delivery, inhale deeply during each contraction. This raises the abdominal muscles, thereby facilitating uterine dilation during contractions. Begin exhalation (i.e., releasing air from the lungs, and thus abdominal muscles) at the end of each contraction.

Methods and medications used to reduce the pain of delivery

In the beginning of labor, contractions occur at long intervals; which become gradually shorter until the interval between each contraction is less than two minutes. Sometimes, labor (uterine contractions during delivery) causes such pain and discomfort that it necessitates assistance for the alleviation of this discomfort.

There are many medications that help reduce the pain of labor and delivery without harming the mother or the fetus, and which do not affect the progress or course of labor and delivery. There is no need to worry—the doctor will provide the appropriate medication, if needed, to alleviate pain without affecting the mother or the baby.

The less fear there is, the easier and less painful the delivery will be. Ask your doctor or nurse any questions that you have, as they will be with you during delivery; they have the knowledge and experience to help you overcome all your fears.

How will you tell your children about your new pregnancy?

As your belly becomes noticeably bigger, or beginning about the fifth month, use a tactful and pleasant way that is appropriate to your child's age to explain why your belly is getting bigger, that a happy event awaits the family and that the new baby will not replace anyone in it but will be just like other family members.

What to Bring to the Hospital

A pregnant woman should prepare a suitcase for herself and her new baby's requirements at the beginning of the ninth month of pregnancy. It is appropriate to inform the husband where the suitcase is kept. It is recommended to include the following in the suitcase:

- Mother's requirements:
  - A non-maternity, loose, comfortable gown suitable to wear when leaving the hospital.
  - Two or three suitable and comfortable nightgowns.
  - Bathrobe and slippers (without heels).
  - Toothbrush and toothpaste.
  - Deodorant, perfume or eau de cologne.
  - Comb and/or hairbrush.
  - Two or three towels.
  - Tissue paper.
  - Hand mirror and daily cosmetics.
  - Under wear, such as two bras in the size used during pregnancy.
  - Soap.
  - Shampoo.
  - An appropriate loofah [washcloth].

- Baby's requirements:
  - An appropriate number of diapers.
  - Sleeping garments.
  - Wrap (Kofaliyyeh)—a square light cotton cloth used to wrap the infant: the cloth is folded into an inverted triangle, the infant is wrapped in an envelope-shaped bundle with arms stretched alongside the body with the wrap fixed in place with a safety pin. This practice is believed to make carrying the infant easier and molding a better posture with a straight back. Often times the practice is carried to extremes.
  - Bonnet or stocking cap
  - Blanket.

How do you know you've started labor?

Delivery may take place one or two days or even weeks before or after the date determined by the doctor as determined by the date of your last menses.

Knowing what labor means will help you know what will happen, this in turn helps you feel comfortable and assured during the last days or weeks of your pregnancy.

- What happens in this phase?

  The fetus begins changing its position in preparation to come into the world. The urinary tract is lowered down and forward. This is the time when we hear the use of the traditional phrase "the baby is down." During this period, the same clothes will fit you but in a kind of awkward way. You may notice an increased vaginal discharge too; this means that the fetus has taken the position required to come into the world, its head pushing down on the uterus. This may cause you some discomfort or some mild pain. If this is your first pregnancy, you may think this pain is the pain of delivery. If you call on the doctor or the health center, the doctor or nurse can examine you and inform you about your progress. These false unpleasant pains may continue for a day or more.

  Real labor and delivery pains may begin on the same night or within one to two weeks. No one can absolutely determine the time of delivery. A few things can help decide the time of delivery, however, such as:

  1. *The regularity of contractions*

     Contractions may occur every 15 or 20 minutes and last for 45 seconds to a full minute. Within one or two hours, the intervals between contractions become shorter. These contractions can be easily identified. They begin in the back and become stronger and extend towards the abdomen. The pain is caused by the vaginal muscles contracting in preparation for pushing the fetus out.

  2. *Bloody discharge or blood clots*

     During pregnancy, clots play the role of a "plug" that closes the cervix. When labor contractions begin, these plugs fall through the vagina, thus they can be seen. This phenomenon may take place before or after the beginning of labor.

  3. *Leaking of a watery vaginal fluid*

     The amniotic fluid protects the fetus. The amniotic sac usually ruptures during the last phase of delivery, but it may rupture before that phase. In this case, you should visit your doctor or the hospital because labor pains will begin immediately afterwards.

In addition to these signs, there are other signs that the doctor waits to see. Despite the breaking of the bag of waters, labor contractions may be delayed until the vagina is dilated enough for your baby to pass through. Sometimes, your waters "break," but delivery does not take place until one day or possibly one week has elapsed, depending on how ready the vagina is.

When these signs appear, you should totally abstain from eating solid or dry foods: drinking only juice and eating only fluid foods as a precaution for a possible use of anesthesia during delivery, which can cause nausea on a full stomach.

Also remember to prepare yourself for delivery with regards to shaving or cleaning the hair around your genital area, and taking a hot bath within an appropriate time of the signs of labor appearing.

Phases of Labor

From a medical perspective, labor is divided into three phases. When labor starts, try to remain calm, and occupy yourself with something you enjoy, such as reading a book or a magazine or watching television. Try to ignore the contractions as much as you can.

First Phase

- At the onset of labor, the head of the fetus turns downwards, and presses against the vagina, which begins to dilate to allow the fetus out. Then the bag of waters breaks and the contractions become closer while the vagina continues to dilate to the maximum (10 cm). Muscles contract to push the fetus out.
- Don't try to exert pressure or bear down at this time, for this will only increase your fatigue; rather try to relax as much as you can even during contractions.
- Should your doctor find you in severe discomfort, the doctor shall give you medications to comfort you.
- The expansion and dilation of the cervix during labor is estimated by centimeters or finger widths. It is measured by the number of fingers that can be inserted through the cervical opening. When the cervix is fully dilated, its diameter reaches approximately 10 cm or five finger-widths.
- The first phase of labor (cervical dilatation) typically takes about 8-12 hours in a first delivery (primipara), and less than that in subsequent deliveries. The speed of cervical dilatation depends on the strength and regularity of contractions.
- Should the bag of waters fail to rupture in the beginning of this first phase, it may break when the cervix is fully dilated.
- A rectal enema is sometimes administered to the mother in order to clean the rectum; this is not accompanied by discomfort.
- The head of the fetus continues moving downwards with the increased dilatation of the cervix during the first phase of labor.
- During this phase, the doctor will measure the baby's heartbeats from time to time, and will estimate the rate of cervical dilatation by rectal or vaginal examination.

Second Phase

- The baby is delivered in this phase. This phase begins with the completion of cervical dilatation (the end of the first phase), and is concluded with the baby coming to the outside world.

- When this phase begins, you will be taken to the delivery room on a bed or a mobile stretcher.
- The delivery room is somewhat similar to an operation theater. It is clean and contains shiny sterile equipment, with a lamp hanging from the ceiling. You will be moved from the bed or stretcher to the delivery table, which is a special type of surgical table, supplied with straps and supporters. The suitable position for delivery is lying on your back with your legs support by stirrups and spread apart. This is the position that you will be helped to take.
- The second phase of delivery usually lasts for about one half to one hour, during which time the baby gradually moves downward from the uterus to the vagina to the outside. The duration of this phase depends on uterine contractions and on how much you help yourself by following the instructions of the doctor or midwife. During this phase, you will feel the urge to bear down, and if you utilize bearing down (according to the contractions of abdominal wall muscles and bearing down with them), you will help yourself and your baby shorten the period of delivery. Meanwhile, your muscles act involuntarily to facilitate delivery.
- At the end of this phase, the doctor may resort to performing a perineal incision. This is a simple procedure that helps the head of the fetus out during delivery, protecting it from the increased pressure of tissues around the vaginal opening. The doctor performs a lateral or medial incision in the perineum (the outer vaginal opening) after injecting an anesthetic into the perineum. The incision is not very painful and heals quickly. The doctor sutures the incision while the anesthetic is still effective, and uses a silk material that goes away on its own to suture the incision.
- The fetus is pushed a little outwards with each contraction, with the head appearing first in most deliveries, followed by the neck and shoulders. The doctor holds the baby's head and gently pulls it out.
- When the baby is delivered, the doctor holds it and a nurse removes the amniotic fluids from its mouth and nose. The doctor helps the baby take its first natural breath. The baby may be put on your breast to help form a bond between the two of you, then the baby is wrapped with a cover to keep it warm, and the doctor puts a few drops in its eyes to protect them from contamination.

<u>The Third Phase</u>

In this phase, the placenta separates and leaves the uterus. The placenta is a mass in the shape of a circular disc attached to the uterine wall and connected to the baby via the umbilical cord, which is cut once the baby is delivered. During pregnancy, the placenta supplies the baby with food and oxygen. The delivery of the placenta usually takes only a few minutes and the doctor will help you bring it out by giving you a special injection to stimulate the uterine muscles and cause them to contract, thereby reducing bleeding which accompanies the placenta's delivery. This phase is considered easy and free from pain.

- After delivery, you will be moved to the recovery or convalescence room, where you will remain under observation until your condition is stable, following which you will be moved to your room.

Note: A small percentage of deliveries are done in ways other than that indicated by this pamphlet. This is due to the following reasons:

- Using artificial induction of labor to help the mother deliver when the term of pregnancy is completed without natural labor beginning, because the baby could be at risk if it remains in the uterus for a longer period.

- Delivery by cesarean section:
  This is a surgical operation whereby an incision is made into the abdomen and the baby is removed. It is an easy operation and does not pose many risks. Doctors resort to this operation in such cases, the mother has been in labor a long time and is too fatigued or exhausted to continue with normal delivery, or when the pelvis is narrow or contracted or when the size of the pelvis is disproportionate with the head of the fetus, or in some cases of hemorrhage during delivery, or the presence of tumors in the pelvis or ovaries, or in the case of diseases accompanying pregnancy such as toxemia of pregnancy or diabetes, or abnormal fetal positions such as the transverse position, or the emergence of the umbilical cord preceding the head of the fetus during delivery.

After Delivery: What Now?

Once the dream becomes a reality, hold your baby in your arms and enjoy the arrival of your new child. At this point you will forget the troubles of pregnancy, labor and delivery; you will forget your fear of complications and of the unknown. It is essential that you focus on self-care during the postpartum period by following the instructions of the doctor, nurse and midwife, and that you return to visit the health center during the fist week from delivery and in the subsequent periods according to the previous instructions of the doctor. Remember that breastfeeding is best for your baby, and remember to follow up your baby's growth, development and care, and to maintain the baby's protection from infectious diseases by complying with the national immunization schedule. Should you need further information, do not hesitate to visit your doctor or the health center to obtain it.

Congratulations, and our best wishes for a normal and safe pregnancy and delivery of a beautiful, happy baby!

Attachment 10
Drug Classification Table

Drugs by category. Refer to Table 2 when using this table.

	Drugs	A	B	C	D
Antibacterial	Penicillin				
	Erythromycin		X		
	Cephalosporins		X		
	Tetracyclines (Doxycycline)				X
	Monobactam			X	
	Carbapenum			X	
	Aminoglycosides:				
	Gentamicine			X	
	Streptomycine				X
	Clindomycin		X		
	Chloramphenicol			X	
	Sulfonamides		X		
	Trimethoprim			X	
	Nitrofurantoin		X		
	Vancomycin			X	
	Ciprofloxacin			X	
	Rifampicin		X		
	Rifabutin				
Antiparasitic	Metronidazole		X		
	Lindane		X		
	Chlorquine			X	
	Quinine				X
	Spiramycin		X		
	Mebendazole			X	
Antifungal	Fluconazole			X	
	Itraconazole			X	
	Nystatin		X		
	Amphotericin		X		
Antiviral	Acyclovir			X	
	Zalcitabine (ddc)			X	
	Stavudine (d4t)			X	
	Amantadine				X

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	Drugs	A	B	C	D
Cardiovascular & Antihypertensive	Digoxin			X	
	Quinidine			X	
	B-adrenergic blockers			X	
	Local anesthetic antiarrhythmics		X	X	
	Calcium antagonists			X	
	Methyldopa			X	
	Hydralazine			X	
	ACE inhibitors			X	X
	Amiodarone				X
	Adenosine			X	
	Furosemide			X	
	Thiazide				X
	Warfarin				X
Anticoagulants	Heparin		X		
	Coumarine				X
Thrombolitics	Urokinase (thrombolite)		X		
	Streptokinase			X	
Asthma	Corticosteroids		X		
	Epinephrine		X		
	Terbutaline		X		
	Albuterol			X	
Anticonvulsants & Antidepressant	Phenytoin				X
	Carbamazero				X
	Trimethadine				X
	Diazipam			X	
	Phenobarital			X	
	Desipramine			X	
	Monoamineoxidase inhib.				X
	Chlorpromasine			X	
	Thioridazine			X	
	Clozapine		X		
Mild analgesics	Paracetimol or Acitaminophen		X		
	Aspirin			X	
	Ibuprofen or Indomethacin			X	
	Piperazine (meclizine, cyclizine)		X		
Others	Androgens				X
	Danazol				X
	Diethylstilbesterol (DES)				X
	Lithium				X
	Methotrexate				X
	Radioactive Iodine				X
	Cyclosporine			X	
	Vitamin A			X	

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Table 2. Drug Classification Scale (to be used with Attachment 11):

Category	Description
A	No fetal risks (multivitamins). Proven Safe during pregnancy.
B	Fetal risks not demonstrated in animal but there are no human studies.
C	No adequate studies, fetal risks unknown.
D	Some evidence of fetal risks, may be necessary to use during pregnancy

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Postnatal Care

POSTNATAL CARE

LEARNING OBJECTIVES

- Define postnatal period
- Understand the importance of postnatal care.
- Identify the obstetric complications that might occur during the purperium. and manage them appropriately
- Review necessary education of the mother and family regarding newborn care and immunizations. breastfeeding. danger signs, nutrition. and other issues
- Review how to appropriately counsel the mother and her husband on birth spacing and contraceptives

TEACHING STRATEGIES

- Use lectures to present materials
- Small group discussion about the role of postnatal care
- Use role play to practice patient education and birth control counseling

MATERIALS AND EQUIPMENT NEEDED:

- White board or flip chart and markers for summarizing major points

LEARNING POINTS

- Importance of scheduled postnatal care.
  - Identification of significant complications at an early. treatable phase
  - Patient education regarding breastfeeding. postpartum care. danger signs. family planning
  - Assessment of bonding with infant
  - Evaluation of psychological state and screening for depression
- Schedule for routine post-partum care following uncomplicated delivery
  - First 24 hours
  - At 1 week after delivery
  - At 6 weeks after delivery

- **Initial Clinical evaluation of patients (first 24 hours after delivery – usually in hospital)**
  - First 4 hours: Check for bleeding per vagina, uterine tone. blood pressure and pulse
  - 4 – 24 hours: Check for: involution of the uterus, bleeding per vagina. vital signs. episiotomy care (when present)
  - Give RhoGam if patient Rh negative and Coombs test negative
  - Evaluate psychological status of mother, especially regarding:
    - Acceptance and bonding with infant
    - Presence of depression
    - Acceptance of breastfeeding
- Upon discharge from the hospital. pt should be counseled to observe for following complications:

- Postpartum fever
  Fever and rapid pulse could be caused by:
  1. Chest infection (pneumonia, bronchitis)
  2. Wound infection, in case of caesarian section.
  3. Pelvic inflammatory disease
  4. Deep vein thrombosis.
  5. Mastitis or breast abscess
- Deep vein thrombosis
- Secondary Postpartum hemorrhage
- Urinary complications, as urine retention, urinary tract infection, fistula
- Psychological problems as postpartum depression and 3rd day blues.

- **1 week postpartum visit**
  - History: Ask about:
    - Diet and nutrition
    - Presence of fever or chills
    - Abnormal bleeding
    - Breast feeding success and practices
    - Abnormal vaginal discharge
    - Depression or mood changes
    - Problems with urinary function or stools
    - Episiotomy or perineal discomfort
    - Calf pain or swelling
  - Examination: Examine the following:
    - Vital signs, especially blood pressure
    - Abdomen for muscle tone and uterine involution
    - Breasts for lactation, plugged ducts, nipple irritation, masses
    - Extremities for varicose veins, edema, phlebitis
    - Examination of perineum for episiotomy healing (if appropriate)
  - If patient received a C-section, check in addition to all of above:
    - Abdominal wound for infection, discharge, degree of healing
    - Pain control – should be minimal need for pain medication at this point
    - Patient activity level – should be ambulatory but still avoiding activities that strain abdominal muscles
  - Laboratory investigations
    - May check Hgb., especially if patient anemic during delivery, or blood loss significant
    - Pap smear may be taken
    - If vaginal discharge, consider vaginal smear for diagnosis
  - Patient education and counseling:
    - Resumption of sexual intercourse – (may begin when involution complete and episiotomy or tears well healed – usually about 6 weeks post-partum)
    - Breast feeding – (all patients should be strongly encouraged to breast feed fully for at least the first 6 months – ask about and discuss any questions or problems the patient may have with breast-feeding – see Attachment 1)
    - Physical activity (all activity allowed, but adequate rest important especially for the breast-feeding mother)
    - Diet (should be taking a balanced 2200 kcal/day for lactation)
    - Medication – continue iron and/or vitamin supplementation if previously prescribed

- If patient breastfeeding, review cautions regarding medication use. See Attachment 10 in the Antenatal Care section
- Family planning – this is an ideal time to encourage patient commitment to birth spacing. Help patient choose an appropriate method. See Attachment 2 for guidance

- **6 week post-partum visit**
  - History – Ask about:
    - Diet and nutrition
    - Psychological and emotional status – adjustment to mothering, depression, support of family
    - Breastfeeding success and condition of breasts (soreness, cracking, bleeding of nipples, complete emptying, localized soreness or redness)
    - Vaginal discharge (should have only scant lochia, non-bloody and non-purulent)
    - Fever, abdominal pain
    - Urinary or bowel problems, constipation
    - Resumption of menses and sexual activity
  - Physical Examination: Examine the following:
    - Vital signs, especially blood pressure
    - Abdomen for muscle tone and uterine involution (should be almost complete)
    - Breasts for lactation, plugged ducts, nipple irritation, masses
    - Extremities for varicose veins, edema, phlebitis
    - Pelvic Examination – check for:
      - Vulva and perineum for complete healing of lacerations, episiotomy, or evidence of inflammation such as candida
      - Vagina for discharge, inflammation
      - Speculum examination to examine vagina and cervix for lacerations or inflammation
      - Bimanual examination to confirm involution of uterus, evidence of infection (pain on motion of cervix, uterine or adenexal tenderness), masses or tumors
      - Check muscle tone of vagina and rectum; ask patient about bowel and bladder control
  - If patient had a C-Section:
    - Abdominal wound for infection, discharge, degree of healing. Should be well healed at this point
    - Pain – should have only occasional twinges of pain with exertion at this point
    - Patient activity level – should be ambulatory and may be able to resume most activities except the most strenuous
  - Laboratory
    - Hgb. And/or PCV to check for possible anemia
    - Urinalysis for possible infection
  - Patient education and counseling
    - Review breastfeeding and ask about possible problems or concerns with breastfeeding (see Attachment 1)
    - Review birth control and continue to counsel patient as appropriate.

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- If patient using LAM, review criteria for successful LAM, and counsel patient on need for another method at 6 months or if any of LAM criteria not met. See Attachment 2

CRITICAL ELEMENTS FOR REFERRAL

- Deep vein thrombosis
- Bleeding per vagina
- Fistula (urinary incontinence)
- Psychological problems
- Respiratory infection.
- Wound infection, in case of Cesearian Section.
- Pelvic inflammatory disease
- Mastitis or breast abscess

CASE STUDY

Mrs. Khadija Amad , 35 years old, Delivered 6 days ago vaginally, and was discharged home on the 2nd day after delivery. Attended the clinic with history of swelling of her right leg. On examination, she was a febrile, pulse 85 per minute, blood pressure 110/70 mmHg.
Her chest and abdominal examinations revealed no abnormality. Her right leg was swollen and reddish and tender.

Topics for discussion regarding this case study

1. What are the medical problems identified in this patient
2. What important additional medical elements of the history should be asked
3. What important additional medical elements of the physical examination should be done
4. What is an appropriate plan of management for this patient at this point.
5. What counseling point would be most appropriate for this patient at this point?

CRITICAL ELEMENT OF COMPETENCE FOR EVALUATION

- Proper and complete postnatal evaluation of patient using above elements
- Appropriate patient education regarding breast feeding, contraception, smoking, sexual activity, contraception
- Knowledge of need of referral for complications

Attachment 1.
Common Breastfeeding Difficulties[1]

Signs, Symptoms/Conditions	Prevention	Counseling & Management
Low Milk Supply: • Poor infant weight gain. • Number of wet diapers fewer than 5 per day. • Sucking [illegible] satisfying [illegible]	• Increase frequency of breastfeeding. • Breastfeed exclusively day and night, on demand by infant. • Correctly position the baby on the breast. • Encourage family members to [illegible]	• [illegible] feedings other than breastfeeding. • Breastfeed [illegible] proper [illegible] increase frequency of feedings. • Wake infant for feedings if [illegible] through the night. • [illegible] • [illegible] weight gain.
Sore Breasts or Nipples: • Red [illegible] nipple pain. • Cracks in the nipple. • Occasional bleeding. • Nipples become reddened.	• Correctly position the [illegible] for feeding. • Remove infant from the breast by [illegible] the breast first. • Increase frequency of breastfeeding. • Express breasts [illegible] dry. Encourage [illegible] each feed.	• [illegible] to [illegible] dry after feeding. • [illegible] correctly. [illegible] fingers before removing infant from breast. • [illegible] position for feedings to change pressure [illegible]. • [illegible] breasts to air in sunlight. [illegible] dry. • [illegible] nipples after breastfeeding. • Begin breastfeeding on the side [illegible] less. • Do not stop breastfeeding; feed frequently but for shorter periods of time. • [illegible] applications [illegible] anti-pruritic, [illegible] properties [illegible] remove before each feed. • [illegible] apply A&D [illegible] or Vitamin E; the [illegible] does not have to be removed before infant feeds.

[1] *LAM (Lactational Amenorrhea Method): A Postpartum Temporary Contraceptive Option For Women Who Breastfeed* (2000). Training Module for Health and Family Planning Service Providers. Linkages.

BEST AVAILABLE

Signs, Symptoms/Conditions	Prevention	Counseling & Management
Engorgement: • Nipples and areola full and not possible to flatten for infant to attach for feeding. • Breast skin tight. • Breast full and firm to touch.	• Breastfeeding frequently day and night. • Hold nipple flat between thumb and fingers to help infant attach correctly to the breast. • Avoid tight brassieres. • Avoid sleeping on stomach. • Use a variety of positions for holding the baby to change points of pressure on breasts.	• Apply heat before start of breastfeeding. • Massage breasts before breastfeeding. • Gently manually express small amounts of breastmilk to soften the areola so that it can be flattened for infant to attach correctly. • Place thumb and fingers at the junction of the areola and breast: flatten areola to encourage infant to take the entire nipple and areola into the mouth. • Wear a supportive bra. • Take warm showers and manually express milk before or after breastfeeding. • Cold compresses and pain-relievers may help if swelling has extended up chest and under arms.
Obstructed Ducts/Mastitis: • Breast pain. • Generally not feeling well. • Redness in one area of the breast, swollen, hot to touch, hard with a red streak. • Fever (at times), flu-like symptoms.	• Breastfeeding frequently day and night. • Hold nipple flat between thumb and fingers to help infant attach correctly to the breast. • Avoid tight bras. • Avoid sleeping on stomach. • Use a variety of positions for holding the baby to change points of pressure on breasts.	• Seek medical care for antibiotic treatment (10-14 days). • Apply heat before the start of breastfeeding. • Massage the breasts before breastfeeding. • Continue feeding on both breasts starting on the unaffected side. • Breastfeed frequently. • Increase maternal fluid intake. • Apply cold compress or warm pack to breasts after feeds. • Encourage maternal bed rest. • Wear a supportive bra.

BEST AVAILABLE

Attachment 2
Postnatal Contraception

Postnatal infertility usually lasts for approximately six weeks for the woman who does not breastfeed exclusively. Sometimes the infant's on-demand pattern of feeding may not support prevention of ovulation. For these reasons and to provide maternal recuperation before another pregnancy occurs, contraception should be offered during the postnatal period.

Table 2. Contraceptive Method Options

Breastfeeding Women	Non-Breastfeeding Women
Immediate (First Choice): • LAM • Condom • IUD • Voluntary Surgical Contraception	**Immediate:** • Postnatal sterilization (male or female) • Norplant insertion • IUD • Depo-Provera injection • Progestin-only pills • Condoms (male) • Abstinence: according to cultural and religious practices, counsel regarding other options and Emergency Contraceptive Pills (ECP).
Beginning 6 weeks after Delivery (Second Choice): • Progestin-only pills • DMPA • Norplant • Spermicides • Fertility Awareness (when an identifiable pattern of fertility signs returns)	**Beginning 3 Weeks after Delivery** (to reduce the risk of thromboembolism): • Combined oral contraceptive pills (COCs)
Beginning 6 weeks after Delivery (Third Choice): • Combined oral contraceptives	**Beginning 6 weeks after Delivery:** • Spermicides (foam, cream, jellies) • Diaphragm, where available • Fertility Awareness Method (Cervical Mucus Method (CMM), once menstrual cycles have resumed. •
Advise all women about Emergency Contraception and provide, if requested.	

Process

- Before discharge (preferably introduced during antenatal visits), review the contraceptive options.
- Review client's history and labor/delivery course; screen for factors that would keep the woman from safely using her preferred method.
- If the client's preferred method can be provided immediately:

- Give the contraceptives.
- Give a contraceptive supply for the number of weeks until the next follow-up visit.

- If the client's method of choice is best initiated four to six weeks after delivery, provide condoms with instructions.
- Give appoint for follow-up visit six weeks or when necessary, based on the client's needs.

Follow-up Visits

- Review postnatal course with client, review symptoms of infection; breastfeeding experience.
- Review postnatal course with chosen contraceptive.
  - If satisfied and no precautions exist, provide re-supply.
  - If not satisfied, counsel for contraceptive options and provide client's chosen method.
  - If practicing LAM, assess whether client still fits the criteria for its use:

LAM Criteria

A woman can use LAM if she answers "No" to ALL of these questions:

- Is your baby 6 months old or older?
- Has your menstrual period returned? (Bleeding in the first 8 weeks postnatally does not count.)
- Is your baby taking other foods or drink or allowing long periods of time (4 or more hours) without breastfeeding, either day or night?

If the woman answers "Yes" to **any one** of these questions, she **cannot** rely on LAM for prevention of pregnancy, but she can continue to breastfeed her baby while using a method of contraception that will not interfere with lactation.

  - If Yes and client wants to continue using LAM, support client and provide condoms and spermicide for possible change in criteria **before** the next visit.
  - If No, or client wants to change method, counsel on contraceptive options and provide client's chosen method.

- Give a follow-up visit based on when the client is due to return: six weeks, three months, or six months.
- Make necessary referrals if other reproductive health or other health needs are noted.

Family Planning

FAMILY PLANNING

LEARNING OBJECTIVES

- To provide the woman with the most appropriate, safe, effective family planning method for her.
- To educate the woman about the importance of family planning for her health, family and society.
- To provide monitoring and follow up care to avoid unwanted discontinuation of birth spacing.
- To provide other reproductive health promotion services like screening for breast and cervical cancer.
- To provide diagnosis and treatment of genital infections and STD's

TEACHING STRATEGIES

- Group discussion together with lecture presentation
- Role play of counseling situations
- Use of teaching models or simulators to practice application of condoms, insertion of IUD, insertion of Norplant

MATERIALS OR EQUIPMENTS NEEDED

- White Board, Flip Charts
- Overhead Projector
- Markers
- Pelvic models for practice in pelvic exam and IUD insertion
- (When appropriate) – arm model for practice in Norplant insertion
- Penile models (or bananas) for practice in condom use

LEARNING POINTS

Introduction

In 1976, the average Jordanian woman had 7-8 children during her reproductive years. This has steadily decreased recently, and in 1999, the average woman has fewer than 4 children overall. Much of this decline has been because of the use of birth spacing methods, especially the use of modern methods of birth control. Currently, almost 55% of all Jordanian women of reproductive age are using some form of birth spacing, and 34% are using some form of modern birth control method. The National Population Strategy would like to increase the use of effective methods of birth control, especially among the young and the rural women.

A woman and her husband must consider many factors in deciding upon a method of birth control, such as desired spacing between pregnancies, age of onset of child-bearing, total number of children desired, and the advantages and potential disadvantages of the various methods. The couple must be carefully counseled about the options available, and the advantages and disadvantages of each. In addition, the health care provider must consider the various contraindications of each method, and

match desired methods with the individual medical situation of the client. To accomplish this task, the health care provider must be knowledgeable in the various birth control methods, and be able to effectively communicate with the woman or couple regarding this sensitive area.

Types Of Counseling

- Definition of counseling:
  Counseling is a two way process of communication by which one person helps anther to identify her or his reproductive health needs and to make the most appropriate decisions concerning those needs. This is characterized by an exchange of information, ideas discussion and deliberation.

- General counseling
  - Takes place on first visit
  - Needs of clients discussed
  - Options given
  - Questions answered
  - Misconceptions / myths discussed
  - Decision made
- Method or service specific counseling
  - Decision and choice made
  - More information given
  - Screening process and procedures explained
  - Instructions given
  - What to do if problems develop
  - When to return
  - Handouts given to take home
- Return and follow up counseling
  - Problems and side effects discussed and managed
  - Continuation encouraged unless major problems exist
  - Instructions should be repeated
  - Questions answered and client concerns addressed

The six principles of counseling

1. Treat each client well
   - Be polite
   - Show respect
   - Create a feeling of trust
   - Provider and client speak openly
   - Answer questions patiently
   - Ensure confidentiality

2. Interact
   - Listen
   - Learn
   - Respond
   - Understand needs, concerns and individual situations
   - Encourage

3. Tailor information to the client
   - Learn what information the client needs
   - Personalize the information to the clients needs

4. Avoid too much information
   - Don't overload
   - Keep time for questions. concerns and opinion

5. Provide the method that the client wants
   - Help client make their own informed choice
   - Respect that choice
   - Gently correct mistaken ideas

6. Help the client understand and remember
   - Show samples and materials available
   - Give printed materials
   - Remind clients what to do
   - Repeat information as needed

Family Planning Issues to Discuss

When discussing a contraceptive method. consideration should be focused on the following:

- Effectiveness
- Advantages and disadvantages
- Side effects and complications
- How to use
- STD prevention
- When to return

Characteristics of effective counselors

- Understands and respects the client's right s
- Earns the client's trust
- Understands the benefits and limitations of all contraceptive methods
- Understands the cultural and emotional factors that affect a woman's decision to use a particular contraceptive method.
- Encourages the client to ask questions
- Uses non-judgmental approach which shows the client respect and kindness
- Presents information in an unbiased. client sensitive manner
- Actively listens to the client's concerns
- Understands the effect of non-verbal communication
- Recognizes when she/he cannot sufficiently help a client and refers the client to some one who can

Communication Techniques

Non verbal communications like nodding . or hand movement for greeting . smiling for welcome – the ROLE principle:

R - relax

O - open and approachable

L - listen
E - eye contact

Verbal communication - the CLEAR principle:
C - clarify
L – listen
E - encourage
A – acknowledge
R - reflect and repeat

PREVENTION ISSUES and HEALTH EDUCATION MESSAGES

- Birth spacing is important for the health of the mother, and to enhance family structure
- Birth spacing provides significant economic benefits for young families
- Address social, religious, and other messages about contraception
- Because of the many methods of birth spacing available, a method acceptable to the couple should be available
- The decision regarding whether or not to use contraception and which method should involve the marriage couple, not just one or the other
- At the first visit, ALL methods appropriate for the couple should be described and discussed.
- If the client is not ready to make a decision, do not force the issue – make a note in the medical record to review the issues at later visits

CRITICAL POINTS FOR REFERRAL TO SPECIALIST

Rarely a client needs special counseling skills specially if verbal communication is not feasible, however these special situations are managed by involvement of other family members .

CASE STUDY

It is suggested that role play and group participation in the observation of counseling practice be done were all can attribute in feed back and reflections , the whole participants should have the opportunity to demonstrate , and improve his or her skill under guidance from trainer.

Roles to be adopted :

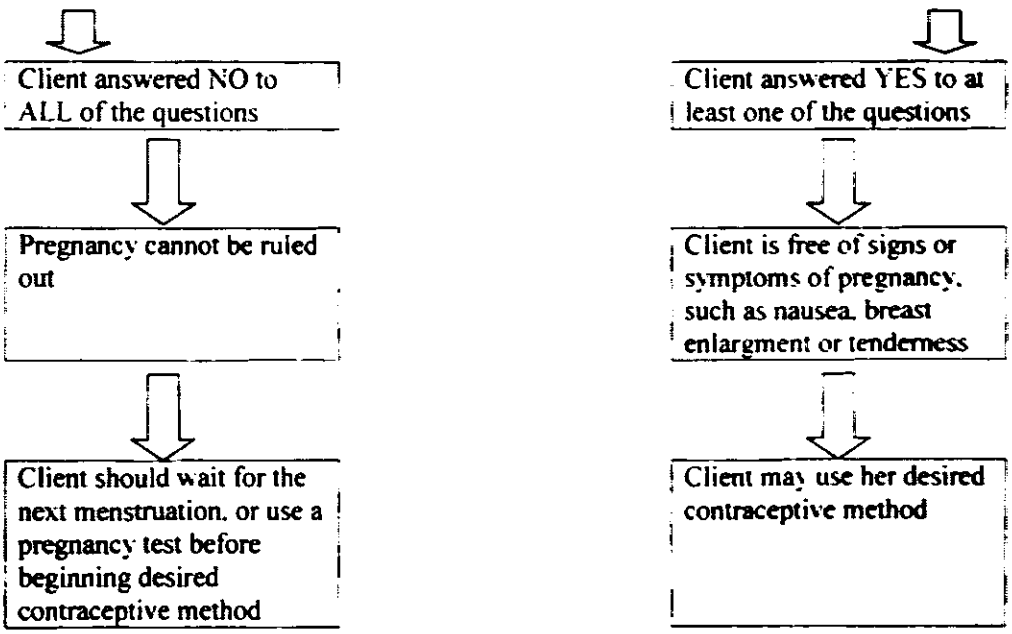
- A client with difficulty in memorizing, understanding, needing to repeat instructions several times , when assigning role to participant , the participant having the role of provider should not be informed beforehand .
- One participant playing a role of a disinterested client with difficulty in concentrating , and keeping track with what is said.

CLIENT ASSESSMENT FOR PREGNANCY BEFORE CONTRACEPTIVE USE

HOW TO BE REASONABLY SURE A CLIENT IS NOT PREGNANT

You can be reasonably sure a client is not pregnant using the following checklist of questions:

NO		YES
	1. Are you less than 6 months postpartum AND breastfeeding completely AND are free from menstrual bleeding since your delivery?	
	2. Have you had NO sexual intercourse since your last menstruation?	
	3. Have you given birth in the last 4 weeks?	
	4. Did your last menstrual period start within the past 7 days?	
	5. Have you had a spontaneous abortion in the past 7 days?	
	6. Have you been using a reliable contraceptive method correctly and consistently?	



(from: Family Health International)

When a woman is more than 6 months postpartum you can still be reasonably sure she is not pregnant if:

- She has kept her breastfeeding frequency high,
- Has still had no menstrual bleeding (amenorrheic), and
- Has no clinical signs or symptoms of pregnancy.

Pelvic examination is seldom necessary, except to rule out pregnancy of greater than 6 weeks, measured from the last menstrual period (LMP).

Pregnancy testing is unnecessary except in cases where:

- It is difficult to confirm pregnancy (i.e., 6 weeks or less from the LMP);or
- The results of the pelvic examination are equivocal (e.g., the client is overweight, making sizing the uterus difficult).

In these situations, a sensitive urine pregnancy test (i.e., detects <50 mIU/ml of hCG) may be helpful, if readily available and affordable. If pregnancy testing is not available, counsel the client to use a temporary contraceptive method or abstain from intercourse until her menses over or pregnancy is confirmed.

CLIENT ASSESMENT

Table 1. Summary: Client Assessment Requirement for All Contraceptive Methods

ASSESSMENT	NATURAL, LAM OR WITH-DRAWAL	BARRIER METHODS (Condom, Diaphragm, or Spermacide	HORMONAL METHODS (COC, POP, DMPA, or Norplant)	IUD	VOLUNTARY STERILIZATION (Female/Male)
Reproductive Health Background	Yes	Yes	YES (See Client Assessment Checklist)	YES (See Client Assessment Checklist)	YES (See Guiding Assessment Checklist)
History of STD	NO	NO	Yes	Yes	Yes
PHYSICAL EXAMINATION					
Female General (including BP)	NO	NO	No[b]	No[b]	Yes
Abdominal	NO	NO	No[b]	Yes	Yes
Pelvic Speculum	NO	NO	No[b,c]	Yes	Yes
Pelvic Biannual	NO	YES[a]	No[c]	Yes	Yes
Male (groin,penis, testes and scrotum)	NO	NO	N/A	N/A	Yes

[a] Required to size /fit diaphragm.

[b] If screening checklist responses all negative (NO), examination is not necessary.

[c] Only necessary if pregnancy is suspected and pregnancy test is not available

COMBINED ORAL CONTRACEPTIVES (COCs)

Description
Combined oral contraceptive are preparations of synthetic estrogen and progesterone which are highly effective in preventing pregnancy

Effectiveness
0.1 pregnancies per 100 women each year when taken consistently

Mechanism of Action
- Suppress ovulation through inhibition of hypothalamic-pituitary axis.
- Thicken cervical mucous (prevents sperm penetretion.)
- Change endometrium (making implantation less likely.)
- Reduce sperm transport in upper genital tract (Fallopian tubes.)

COC Indications for Use
- Couples needing birth control for birth spacing.
- Nulliparous women.
- Nonlactating postpartum women (combined oral contraceptives.)
- Need for short or long-term reversible contraception.
- Need for postcoital birth control (emergency contraception.)
- Immediate postabortion period.
- Acne.
- Heavy or painful menstrual periods.
- Recurrent ovarian cysts.
- Family history of ovarian cancer

COC Advantages
- Ingestion unrelated to sexual activity.
- 99% effective if used correctly and consistently.
- Greater effectiveness.
- Reversible, rapid return of fertility.
- Correction of menstrual alterations.
- Prevention against ovarian, endometrial and breast cancer.
- Prevention against benign diseases of the breast.

COC Disadvantages and Potential Side Effects
Serious, but very rare:
- Thrombophlebitis and pulmonary embolus
- Stroke
- Hypertension

Not serious, but somewhat more frequently seen
- Non menstrual weight gain
- Nausea
- Dizziness
- Acne

- Breast tenderness
- Headaches: occasionally migraine
- Mood changes
- Chloasma.
- Changes in libido
- Irregular vaginal bleeding
- Amenorrhea

Types of COC

- **Monophasic:** a fixed concentration of estrogen and progesterone hormone through out the cycle – 21 and 28 day packages
- **Multiphase** : biphasic or triphasic variations of concentration of estrogen and /or progesterone throughout the cycle

COC Specific counseling

1. If client chooses COCs :
   - assure client knowledge of COCs including myths and rumors prior use of COCs
   - explain in clear and non-technical language:
     - advantages of COC including non contraceptive benefits
     - how the pill works and the need to take it every day
     - common side effects of the COC as above
2. Respond appropriately to clients' questions.
3. Screen client for COC precautions using checklist for COC users:
   - ask all questions on history checklist
   - perform health assessment as detailed below
   - determine that no contraindications exist
4. Explain and demonstrate appropriately the following:
   - how to use
   - when to start
   - what to do if client misses one or more pills
   - how client uses condoms / spermicide
   - when a back up method is needed to be used
5. Ask client to repeat back instructions and correct any errors.
6. Explain in an non alarming way to give early pill danger signs, and instruct client what to do if any occur.
7. Ask client to repeat key instructions.
8. Provide client with at least a three month supply of COCs. Provide client with condoms and / or spermicide
9. Reassure client that she may change the pills or try another method if she does like these COCs. Reassure the client that the doctor is available to see her if she has any problems, questions or needs advice.
10. Plan for a return visit and give the client a definite return date.
11. Document the visit on the client record.

Health Assessment

The purpose of the health assessment is to determine the clients suitability for oral combined contraceptive. Health assessment should include:

A. Medical history :

- Drug history
- Age
- Relevant family and past medical history
- Gynecological history including LMP and menstrual pattern
- Smoking history and current medication.

B. Physical examination that includes:

- Weight
- Blood pressure
- Examination of extremities for varicosity's or sign of phlebitis
- Check skin and eyes for jaundice
- Breast examination (with instructions for self examination)
- Bimanual pelvic examination and inspection of the cervix
- Other examinations as indicated by medical history

C. Laboratory tests:

- Urine for glucose and protein
- Pap (cervical) smears for screening purposes.
- Others as indicted by medical and/or physical examination.
- COCs should not be withheld due to an absence of part or all of the physical or laboratory examinations, if no contraindications are found or exist in the medical history.
- The required examinations should be scheduled within the following three months.
- The medical history and the results of the examinations must be documented in the clinical records of each client especially the presence or absence of any possible contraindication and/or special situation.

Contraindications to Use of COC (Absolute and Relative)

- Pregnant
- Breastfeeding (less than 6 months postpartum)
- Active smoking and over age 35
- Increased risk of cardiovascular disease (hypertension, diabetes with vascular complications, history of deep vein thrombosis or embolus, severe headaches with focal neurologic symptoms)
- Pre-existing conditions such as active breast cancer, tumors of the liver
- Unexplained vaginal bleeding
- Current use of some drugs (especially long-term antibiotics, rifampicin, phenytoin, cabamazepine, barbiturates, primidone, grizeofulvin)

Initial client instructions

1. Start with combined monophasic preparation containing 30-35 microgram of estrogen (i.e. Microgynon)
2. Change the type of pill only if there are side effects significant enough to cause the client to consider discontinuing or changing pills
3. Provide the instructions clearly in a language appropriate to the background of the client.

4. Client can start taking pills:
   - Anytime the women is not pregnant
   - If the woman wishes to start the pills on a particular day that is beyond the 7 days of her menstrual cycle, she has to use backup method for the next 7 days
   - Days 1-7 of the menstrual cycle
   - Postpartum after 6 months if using LAM
   - After 3-4 weeks if not breast feeding
   - Post abortion (immediately or within 7 days)
5. The client should take one pill everyday at the same time until the cycle is finished.
6. If the client is using 21 pill cycle, she should skip seven days before starting a new cycle.
7. Client should be advised that if she misses one or more pill, she may have some spotting or break through bleeding, but more important, she will be at greater risk of becoming pregnant.
8. In case of missed pills:
   - If one pill is missed, the client should take the pill as soon as she remembers
   - If two pills in the first two weeks are missed, the client should take two pills on two consecutive days and then continue the rest of the cycle as usual (back up method should be used).
   - If two pills are missed in the third week, or if three or more pills are missed at any time, the client should discard the current cycle and start a new one immediately.
   - In all previous cases, the client should use a backup method for a minimum of one week.

Return visit counselling

1. Ask client if she is satisfied with the COC.
2. Ask client if she is having any problems or experiencing any side effects. If yes, manage as appropriate.
3. Ask client to describe / how she is taking the COCs.
4. Repeat the history check list.
5. Update the medical history and perform:
   - blood pressure
   - weight
6. Briefly review key messages/instructions and ask client to repeat.
7. Provide at least another 3 cycles of COCs.
8. If client wants to discontinue the COC, help her make an informed choice of another method.
9. Encourage client to come back at any time if she has questions or problems.

COMBINED ORAL CONTRACEPTIVE

Interactions With Other Drugs

COMMONLY USED OR PRESCRIBED DRUGES	ADVERSE EFFECTS	COMMENTS AND RECOMMENDATION
Analgesics Acetaminophen (Tylenol , paracetamol others)	Possible decrease pain_relieving effect (increased drug excretion)	Monitor pain-relieving response.
Antibiotics ___ griseofulvin and rifampin NO documented clinical effect or significance has been established for penicillins, tetracycline, cephalosporins and other commonly used antibiotics. Hormonal methods be used no backup method is routinely necessary with these antibiotics.	Decreased contracpitive effect with COCs and CICs, especially with low-does COCs, 30-35 ug ethinyl estradiol (EE).	Help client choose another method or use higher estrogen pill (50 ug EE) or backup method (e.g., condoms).[a]
Antidepressant (Elavil , Novpramin , tofranil and others)	Possible increase antidepressant effect	Use with caution. Low doses are probably safe.
Antihypertensives Methyldopa (Aldoclor , aldomet and other)	Possible decrease antihypertensive effect	Use COCs and CICs with caution, monitor BP.
Antiseizure Braiturates (phenobrabitol and others) Carbamazepine (tegerol) Phonation (dilation) Primidone (Mysoline)	Decreased contraceptive effect with COCs and CICs, especially if lowest does COC used. Possible increase phenytoin effect	Help client choose another method or use higher pill (50 ug EE) or backup method (e.g., condoms).[a]
Beta_blockers (Corgard , inderal , loperssor , tenormin)	Possible increase beta-blocker effect	Monitor cardiovascular status.
Bronchodilators Theophlyline (bronkotabes , marax , primatene , quiborn terdal , theor_dur and others)	increase theophylline effect	Monitor for symptoms of theophylline overdose.
Hypoglyceminics (diabinese , orinese , tolbutamide , tolinase)	Possible decreased hypoglycemic effect	Monitor blood glucose as for any diabetic patient.
Tranquilizers Benzodiazepine (Ativan , librium , serax , tranxene , valium , xanax and others)	Possible increased or decreased tranquilizer effects including psychomotor impairment	Use with caution. Commonly prescribed dosages are unlikely to result in significant effects.

PROGESTERONE-ONLY PILLS (POPs)

Description:
The Progesterone only pills (POPs) is an oral hormonal contraceptive containing only progesterone in a smaller dose than in the combined pills.

Effectiveness:
When taken at the same time every day (0.5 – 0.10 pregnancies per 100 women during the first year.)

Types:
35-pill pack ⟶ 300-mg levonorgestrel
28 pill pack 75⟶ mg norgestrel (Overate, Femulen)

Advantages of POP
- Same as for COC
- May be taken while breast feeding
- May eliminate some of the side effects noted with COC, such as hypertension, breast tenderness, weight gain, peripheral edema

Disadvantages and Potential Side Effects of POP
- Irregular menstrual bleeding
- Headaches
- Chloasma of face
- Depression

Contraindications to use of POP (absolute and relative)
- Pregnancy
- Active breast cancer
- Unexplained vaginal bleeding
- Liver disease (active viral hepatitis, cirrhosis, tumors)
- Current use of some drugs (especially long-term antibiotics, rifampicin, phenytoin, cabamazepine, barbiturates, primidone, grizeofulvin)

Client instructions
- Provide instruction clearly and in a language appropriate to the backgrounds of the client
- client should start the first cycle of POP :-
  - within the first five days of the menstruation preferably first day
  - any time the client is sure she is not pregnant
  - postpartum , after 6 month if using LAM .after 6 week's if breast feeding (not on LAM) immediately or within 6 weeks if not breast feeding
  - post abortion :immediately
- Client should take one pill every day at same time until the cycle is finished.
- She should start a new cycle the day after she previous cycle without a break .
- Client should be informed , if she misses one or more pill , she could have some spotting , break through bleeding or pregnancy , she should start taking the pill as

soon as possible and she should use backup method for the next 48 hours after restarting the pills.

- Diarrhea and vomiting interfere with the effectiveness of the pill . In these cases the use of backup method for at least seven days is required.
- Client should consult the clinic if she experiences side effects, has any concern or problem concerning the bill.
- Client should have a date for the next visit and the name of the pill she has been given.
- Encourage the client to ask questions to clarify any uncertainties and request her to repeat the basic instructions to check for understanding.
- Client should be advised about the following side effects during the first three cycle and then usually disappear. They should not be a reason to discontinue the method:
  - break through bleeding
  - nausea, dizziness
  - breast tenderness
  - headaches (mild)
- Acute vomiting, diarrhea and few medicines the POP effectiveness and for this reason the use of backup method is required.
- Client should consult the clinic if pregnancy is suspected or if she experiences any of the following warning signs of complications:
  - severe abdominal pain
  - severe chest pain, cough, shortness of breath
  - severe headache
  - eye problems - loss of vision or blurring
  - severe leg pain in calf or thigh
  - jaundice
- Client should be given the date for her next visit and the name of the pill she took
- Client should be encourages to ask questions to clarify any uncertainties and requested to repeat the basic instructions to check for understanding.

Follow up care

The client should be seen after the first cycle and then every 3 months

Three months follow up protocol:

- Update the client's address and how to contact her.
- Access the client's satisfaction with the method.
- Determine if the client has had any problems or side effects and, if so record them in her clinical record.
- Update the medical history and perform:
  - blood pressure
  - weight
  - any other examination if indicated
- Provide appropriate counselling as required
- Review with the client the pill danger signs and the instructions for taking the pill
- Encourage the client to contact the clinic any time is she has any questions or complaints.

DMPA (DEPO-PROVERA)

Description:
Depot medroxy progesterone acetate
Trade name: Depo Provera, is a highly effective reversible contraceptive method. It is a three month injectable, containing a synthetic progestine which resembles the female hormone progesterone. Each dose contains 150 mg. which is released slowly into the blood stream and provides the user with a safe and highly effective form of contraception.

Type and Dosage:
Depo Provera 150 mg. (NET-EN) 200mg 2 months

Effectiveness:
Pregnancy rate usually lower than one per 100 woman years with standard regime. effect comparable to Norplant , TCU 380 A IUD, and voluntary sterilization.

Mode of Action:
- Inhibits ovulation
- Thickens the cervical mucus
- Thins the endometrial lining

Indications:
Appropriate for any woman who:
- Desires an effective long-acting reversible method
- Prefers a method that requires no preparation before intercourse
- Wants a convenient method
- Does not want others to know about it
- Does not want to keep the method at home
- Cannot comply with oral contraceptives
- Cannot use estrogen containing method
- Completed her family size, but does not desire sterilization

Advantages of DMPA:
- Reduces frequency of fibrosis
- Reduces frequency of ovarian cysts
- Reduces incidence of pelvic inflammatory disease
- Relieves premenstrual tension
- Prevents anemia
- Reduces symptoms of endometriosis
- Reduces sickle cell crisis in Africans with sickle cell disease or trait
- Decrease the frequency of epileptic seizures in women with epilepsy

Disadvantages:
- Long acting cannot be easily discontinued or removed
- Does not protect against HIV/STDs
- Irregular menstrual bleeding

- Headaches
- Chloasma of face
- Depression

Contraindications to Use of DMPA
- Pregnancy
- Active breast cancer
- Unexplained vaginal bleeding
- Liver disease (active viral hepatitis, cirrhosis, tumors)
- Current use of some drugs (especially long-term antibiotics, rifampicin, phenytoin, cabamazepine, barbiturates, primidone, grizeofulvin)

Other considerations for caution in use (May be given, but client must be monitored closely)
- Diabetes
- Hypertension
- Depression

Timing of DMPA
- First injection may be given any of the following times when the woman is not pregnant:
  - First 7 days after the start of menses
  - Immediately or within 14 days following induced or spontaneous abortion
  - Immediately postpartum or up to 38 days after delivery if not breast feeding
  - Between 6 weeks and 6 months if breast feeding
  - At any time if the woman has not had intercourse since her last menses
  - At any time if reliably using another effective method of contraception
- Injections repeated every three months up to 2 weeks after last injection, or 4 weeks prior to scheduled date

Potential Complications and Side Effects
- Menstrual changes, irregular, prolonged bleeding or spotting usually occurs.
- Increased appetite causing weight gain.
- Delay in return to fertility.
- Headaches
- Mood changes
- Nausea
- Abdominal pain
- Breast tenderness
- Heavy bleeding may occur

Information Needed at Followup Visits
Relevant information needed about:
- Blood pressure
- Menstrual changes
- Weight gain
- Headaches
- Minor side effects

- Heavy menstrual bleeding

DMPA method specific counseling

1. Ask her what she knows about DMPA. Correct any myths rumors or misinformation.
2. Explain how DMPA works and its effectiveness in preventing pregnancy
3. Explain the potential side effects of DMPA:
   - Changes in menstrual periods (irregular spotting, not periods)
   - Possible delay in return to fertility of average eight months
   - She may gain weight
   - She may feel some depression
   - Explain with client how irregular or increased bleeding may affect her daily life, and if a delay in return to fertility is important to her.
   - Explain what to expect regarding injection, frequency of return visits.
   - Ask the client if she has any questions and respond to them.
   - Screen for precautions using DMPA screening checklist (attached).
   - Ask all questions on history checklist
   - Check weight and blood pressure
   - Record findings

Administration of DMPA

If no concerns are present, prepare and administer DMPA injection according to following steps:

1. Wash hands
2. Check vial for contents (dosage)
3. Gently shake DMPA vial
4. Open sterile package
5. Attach needle to syringe
6. Draw DMPA into syringe
7. Wipe site of injection and allow antiseptic to dry
8. Administer 150 mg deep IM in deltoid or gluteal area
9. Do not massage site of injection
10. Wash hands
11. Repeat the following important instructions to client:
    (a) DMPA injections take effect immediately if given between 1-7 days of menstrual cycle, other wise client must use backup method or abstain form intercourse for 24 hours following first injection.
    (b) Return for next injection in 3 months, client may be up to 2 weeks late in returning and still be protected from pregnancy. Howevere, it is better for client to return on time.
    (c) Remind client of menstrual changes she may experience and possibility of weight gain.
    (d) Remind client to inform other health care providers she is on DMPA.
    (e) Reassure client she may return at any time is she has questions or concerns.
    (f) Discuss with client returning immediately if she has any of the following problems:
        - Heavy vaginal bleeding
        - Excessive weight gain
        - Headaches

- Severe abdominal pain

12. Have client repeat back to you important instructions
13. Give client booklet with next appointment (time & date)
14. Document / record the visit according to local clinic guidelines

Return visits

Ask for any problems or complaints.

- Repeat the history checklist.
- Check blood pressure and weight.
- If client has developed any concerning symptoms or wants to discontinue DMPA, help her make an informed choice for other methods.
- If client is satisfied with DMPA method, no concerning symptoms (such as suspected pregnancy, severe headaches, or severe vaginal bleeding) exist, and she wishes to continue, give repeat DMPA injection.

Follow up

- Discuss her experience with the method
- Ask about satisfaction
- If having side effects:
  - Perform physical examination
  - Reassure
  - Manage accordingly
  - If cannot be managed – refer to gynecologist
  - Use back up method if needed
  - Give injection if satisfied
  - Choose another method if dissatisfied
  - Reassure that she can come any time, or every 3 months

NORPLANT

Description
Small capsules containing progesterone (Levonorgestrel) which are implanted under the skin of the upper arm, and release the medication slowly over 5 years.

Effectiveness
Pregnancy rate usually lower than one per 100 woman years

Indications for Use – A woman who:
- Desires an effective long-acting reversible method
- Prefers a method that requires no preparation before intercourse
- Cannot comply with oral contraceptives
- Cannot use estrogen containing method because of smoking or age or side effects
- Completed her family size, but does not desire sterilization

Advantages of Norplant
- Reduces frequency of fibrosis
- Reduces frequency of ovarian cysts
- Reduces incidence of pelvic inflammatory disease
- Relieves premenstrual tension
- Prevents anemia by reducing menstrual blood loss
- Reduces symptoms of endometriosis
- Reduces sickle cell crisis in Africans with sickle cell disease or trait
- Decrease the frequency of epileptic seizures in women with epilepsy

Disadvantages and Potential Side Effects:
- Cannot be easily discontinued or removed – requires minor surgery
- Some tenderness and bruising at site of insertion for 5-7 days
- Does not protect against HIV/STDs
- Irregular menstrual bleeding
- Headaches
- Chloasma of face
- Depression
- Infection at the site of implant
- Implants may be visible to others in certain circumstances

Contraindications to Use of Norplant (Same as for POP and DMPA)
- Pregnancy
- Active breast cancer
- Unexplained vaginal bleeding
- Liver disease (active viral hepatitis, cirrhosis, tumors)
- Current use of some drugs (especially long-term antibiotics, rifampicin, phenytoin, cabamazepine, barbiturates, primidone, grizeofulvin)

Other considerations for caution in use (May be given, but client must be monitored closely)

- Diabetes
- Hypertension
- Depression

Timing of Insertion of Norplant

- During the first 7 days after onset of menstruation
- Immediately postabortion
- Immediately postpartum in non-breastfeeding women
- After 6 weeks postpartum in lactating women

Method Specific Counseling for Norplant

- Ask her what she knows about Norplant Correct any myths/rumors or misinformation.
- Explain how Norplant works and its effectiveness in preventing pregnancy
  - Inserted through a needle into the upper, inner arm
  - Requires injection of local anesthetic, which makes procedure painless
  - Capsules will be visible and palpable in upper arm
  - Effectiveness begins within 24 hours (if placed within seven days of beginning menstrual cycle), and lasts continuously for 5 years
  - Capsules may be removed at any time, but it will require local anesthetic, and a minor surgical procedure.
- Explain the potential side effects of Norplant, as detailed above:
  - Possible wound infection after insertion
  - Changes in menstrual periods (irregular spotting, not periods)
  - Possible delay in return to fertility of average 1-3 months
  - She may gain weight
  - She may feel some depression
  - Explain with client how irregular or increased bleeding may affect her daily life, and if a delay in return to fertility is important to her.
  - Explain what to expect regarding injection, frequency of return visits.
- Ask the client if she has any questions and respond to them.
- Screen for contraindications using above list
- Check weight and blood pressure
- Record findings

Follow up counseling

- The women should be asked if she is happy with the method and if there have been any problems since her last visit.
- She should be given specific instructions for what to do if she wants to have the Norplant implants removed at any time.
- False rumors should be corrected

Instruments:

Proper instruments should be available: template, knife, gauze, gloves, syringe, antiseptic, anesthetic, sodium bicarbonate, soup, Norplant capsules, round plaster

Infection Prevention for Instruments
Thoroughly wash hands and rinse (wear gloves and other protective barriers)
Decontamination, soak in 0.5% chlorine solution
Autoclave 106 kpa pressure, 121 C (20 mins unwrapped or 30 mins wrapped)
OR
Dry heat 170 C for 60 minutes or 160 C for 120 minutes

High level disinfecting (HLD)
Boil or steam , lid on for 20 mins
Chemical, soak 20 mins
Cool, use immediately, or store (source WHO 1990)

Implants should be approved by Ministry of Health and Health Care

Procedure

Insertion ⟹ ACCORDING TO THE ATTACHED PROTOCOL

Removal

Follow-up care
Unless there is a problem or she has questions, the client does not need to return until she has the Norplant removal (in 5 years) or when removal is desired or needed. Client should return to the same clinic if she has any of the following medical problems.

- pus or bleeding at the insertion site
- expulsion of the capsule
- delayed menstrual period
- heavy vaginal bleeding
- prolonged vaginal bleeding
- sever lower abdominal pain
- episodes of migraine, repeated bad headaches or blurred vision
- jaundice

INTRAUTERINE DEVICE (IUD)

Description
A "T" shaped piece of plastic covered with copper, which is inserted into the uterus through the cervix

Effectiveness of IUD
1 pregnancy per 100 women per year

Mechanism of Action of IUD
- Transport of sperm and egg through the fallopian tube is altered, preventing fertilization.
- Destruction of sperm and egg secondary to inflammatory changes in the uterus and secondary to copper.
- Increased prostaglandin production.
- Copper ions inhibit sperm transport in endocervical mucus and endometrial cavity
- Sterile infammatory reaction

Indications for Use – A woman who:
- Wants long term contraception that she does not have to remember to do something
- Cannot or does not want to take pills
- Cannot tolerate the side effects of hormonal methods (COC, POP, DMPA, Norplant)
- Is breastfeeding and wants a secure method of birth spacing
- Wants a reversible form of birth spacing
- Wants a method that does not require preparation before intercourse

Advantages of IUD
- Lack of systemic effects, excellent choice for breastfeeding women
- Low cost
- Easy insertion and removal
- Excellent reversibility
- Highly effective in preventing pregnancy
- Unrelated to sexual act.

Disadvantages and Potential Side Effects
- Irregular vaginal bleeding
- Cramping and pelvic pain, especially with menstruation
- Expulsion of IUD with loss of protection
- Perforation of uterus
- Pelvic Inflammatory Disease (PID)
- Higher incidence of ectopic pregnancy

Contraindications of Use of IUD (absolute and relative)
- Pregnancy

- Between 48 hours to 4 weeks postpartum.
- Puerperal sepsis postpartum.
- Post septic abortion.
- Cervical cancer under treatment.
- P.I.D current. or within last three months.
- S.T.D within last three months. or high risk of STD
- HIV / AIDS
- Trophoblast disease.
- Pelvic tuberculosis
- Endometriosis.
- Allergy to Copper (for Cu T type only).
- Anomalies distorting the uterine cavity.
- Anemia.
- Unexplained vaginal bleeding.

Timing of Insertion of IUD

- During the first 7 days after onset of menstruation
- Immediately post-abortion
- After 4 weeks postpartum

Pre insertion counseling

1. Greet client in friendly and respectful manner
2. Review indications and contraindications (above lists) to determine if the client is an appropriate candidate for the IUD.
3. Assess client's knowledge about the IUD's major side effects
4. Be responsive to client's needs and concerns about the IUD
5. Describe insertion and what to expect

Pre insertion Examination

1. Obtain or review brief reproductive health history
2. Confirm that no contraindications exist to insertion of IUD
3. Wash hands with soap and water
4. Ask client to empty her bladder
5. Palpate abdomen and check for suprapubic or pelvic tenderness and adenexal abnormalities.
6. Explain procedure again and encourage her to ask questions.
7. Put new examination (disposable) or HLD or sterile (reusable) gloves on both hand.
8. Perform speculum examination.
9. Collect Pap specimen or vaginal and cervical secretions. if indicated.
10. Perform bimanual examination.
11. Perform rectovaginal examination. if indicated.
12. Remove gloves and properly disposes (single use) or immerses (reusable) in chlorine solution.
13. Perform microscopic examination. if indicated (and if equipment is available).
14. Wash hands thoroughly with soap and water and dries with clean cloth or allow to air dry.

IUD Insertion (See attachment protocol)
Load Tcu 380 A inside sterile package.

1. Put examination (disposable) or HLD or sterile (reusable) gloves on both hands.
2. Insert vaginal speculum (and vaginal wall elevator if using single –valve speculum)
3. Swab cervix and vagina with antiseptic
4. Gently grasps cervix with tenaculum or Vulsellum forceps
5. Sound uterus according to protocol
6. Set blue depth gauge on the loaded IUD inserter to the depth on the sound.
7. Insert the IUD using the withdrawal technique.
8. Seat IUD gently at fundus of uterus
9. Cut strings and gently remove tenaculum.

NOTE: If the uterus sounds to a depth of 10 cm or more, the sound may have perforated the uterus, or the uterus may be enlarged due to tumors or pregnancy. **DO NOT** insert an IUD. If perforation is suspected, observe the client in the clinic carefully:

(a) for the first hour, keep the woman at bed rest and check the pulse and blood pressure every 5 to 20 minutes.
(b) If the woman remains stable after one hour, check the hematocrit / hemoglobin if possible, allow her to walk, check vital signs as needed, and observe for several more hours. If she has no signs or symptoms, she can be sent home, but should avoid intercourse for two weeks. Help her make an informed choice of a different contraceptive.
(c) If there is a rapid pulse and falling blood pressure, or new pain or increasing pain around the uterus, hospitalization is needed.

Post Insertion

1. Place used instruments in chlorine solution for decontamination.
2. Dispose of waste materials according to guidelines.
3. Remove reusable gloves and place them in chlorine solution.
4. Wash hands with soap and water.
5. Complete client record.

Post Insertion Counseling

1. Teach client how and when to check for string.
2. Discuss what to do if client experiences any side effects or problems.
3. Assure client that the can have the IUD removed at any time.
4. Observe client for at least 15 minutes before sending her home.

WARNING SIGN FOR IUD USERS

Instruct woman to contact a health care provider or clinic if she develops any of the following problems:

- Delayed menstrual period with pregnancy symptoms (nausea, breast tenderness, etc)
- Persistent or crampy lower abdominal pain, especially if accompanied by not feeling well, fever or chills (these symptoms suggest possible pelvic infection)
- Persistent vaginal discharge or discomfort
- Strings missing or the plastic tip of the IUD can be felt when checking for the strings.

REMOVAL OF IUD

Pre Removal Counseling

1. Greet woman in friendly and respectful manner
2. Ask client her reason for removal and answers any question she may have
3. Review client's present reproductive goals
4. Describe the removal procedure and what to expect.
5. Counsel regarding another birth spacing method if client still willing

Removal of IUD

1. Wash hands thoroughly with soap and water and dries with clean cloth.
2. Put new examination (disposable) or sterile (reusable) gloves on both hands.
3. Perform bimanual exam.
4. Insert vaginal speculum and look at length and position of strings.
5. Swab cervix and vagina with antiseptic.
6. Grasp strings close to cervix and pulls gently but firmly to remove IUD.
7. For routine removals, take out the IUD during menses, because it is easier then.
8. To avoid breaking the string. Apply gentle, steady traction and remove the IUD **Slowly**. If the IUD does not come out easily, refer to the specialist.

Post removal

1. Place used instrument in chlorine solution for decontamination.
2. Dispose of waste materials according to guideline.
3. Remove reusable gloves and place them in Chlorine solution.
4. Wash hands with soap and water.
5. Record IUD removal in client record.

Post removal counseling

1. Discuss what to do if client experiences any problems.
2. Counsel client regarding new contraceptive method, if desired.
3. Assist client in obtaining new contraceptive method or provides temporary (barrier) method until method of choice can be started.

LACTATION AMENORRHEA METHOD (LAM)

Definition:
Method that utilizes the temporary infertility that occurs during breastfeeding.

Mechanism of Action:
Suppression of ovulation

Criteria for effective LAM are:
1. Women who are fully or nearly fully breastfeeding
2. Have no had return of menses.
3. Are less than 6 months postpartum.

Advantages of LAM
- It can be stared immediately after delivery.
- It is economical and easily available.
- It does not require a prescription .
- No action is required at the time of intercourse .
- There are no side effects or precautions to its use.
- No commodities or supplies are required for clients or for the family planning program.
- It is used for a limited time and serves as abridge to using other methods.
- It is consistent with religious and cultural practices.
- It is 99% effective for at least the first 6 months after delivery

Disadvantages of LAM:
- Fully or nearly fully breastfeeding pattern may be difficult for some women to maintain.
- The duration of the methods effectiveness is limited to a brief six-month postpartum period.
- It can only be used by breastfeeding women .
- There is no protection against sexually transmitted infections, including HIV .

Indications for LAM - A woman who:
- Does not want to or cannot use hormonal methods
- Wants short term birth spacing before having another child
- Wants time to consider which long term method of contraception to use
- Is concerned about possible side effects of the hormonal methods or IUD

Advantages of Breastfeeding
For the Mother
- Reduces hemorrhage postpartum
- Facilitates involution of the uterus
- Protects against ovarian and breast cancer
- Offers contraceptive protection (LAM)
- Enhances maternal-infant bonding
- Reduces anxiety, stress, depression
- Enhances positive self-image

- Convenient and economical form of infant nutrition
- Hormones (prolactin, oxytocin) induces maternal behavior
- Increases relaxation and interaction with infant

For the Infant

- Prevents hyperthermia (low body temperature)
- Supports growth and survival through strengthened maternal-infant bonding
- Lower occurrences of infections (gastrointestinal, respiratory, otitis media)
- Increases alertness: stronger arousal reactions
- Infants tend to walk earlier
- Breast milk is easy to digest
- Enhances brain development thus infants tend to be more intelligent
- Lower occurrences of allergy
- Lower occurrences of infant abandonment
- Stimulates infant social interaction
- Fosters a sense of security

Complementary FP Methods for the Lactating Woman:

As soon as a woman relying on LAM for contraception no longer meets all three criteria for LAM, she should start a complementary contraceptive method. If the woman wishes to continue breastfeeding, the contraceptive methods available can be ranked according to they have on her ability to breastfeed.

Non-hormonal methods of contraception are First Choice methods in this case, as they do not interfere with breast milk and do not enter the bloodstream. These methods include:

- Condoms
- Spermicides
- Diaphragms
- IUDs
- Tubal ligation
- Vasectomy

Progestin-only methods are Second Choice methods in this case, as they do not interfere with breastfeeding. Progestin-only methods include:

- DMPA (injectable)
- Progestin-only pills (POPs)
- Norplant implants

Third choice options include both estrogens. The estrogen in these methods can reduce the production of breastmilk, and are thus generally not recommended. These methods include:

- Combined oral contraceptives (COCs)
- Combined injectable hormones

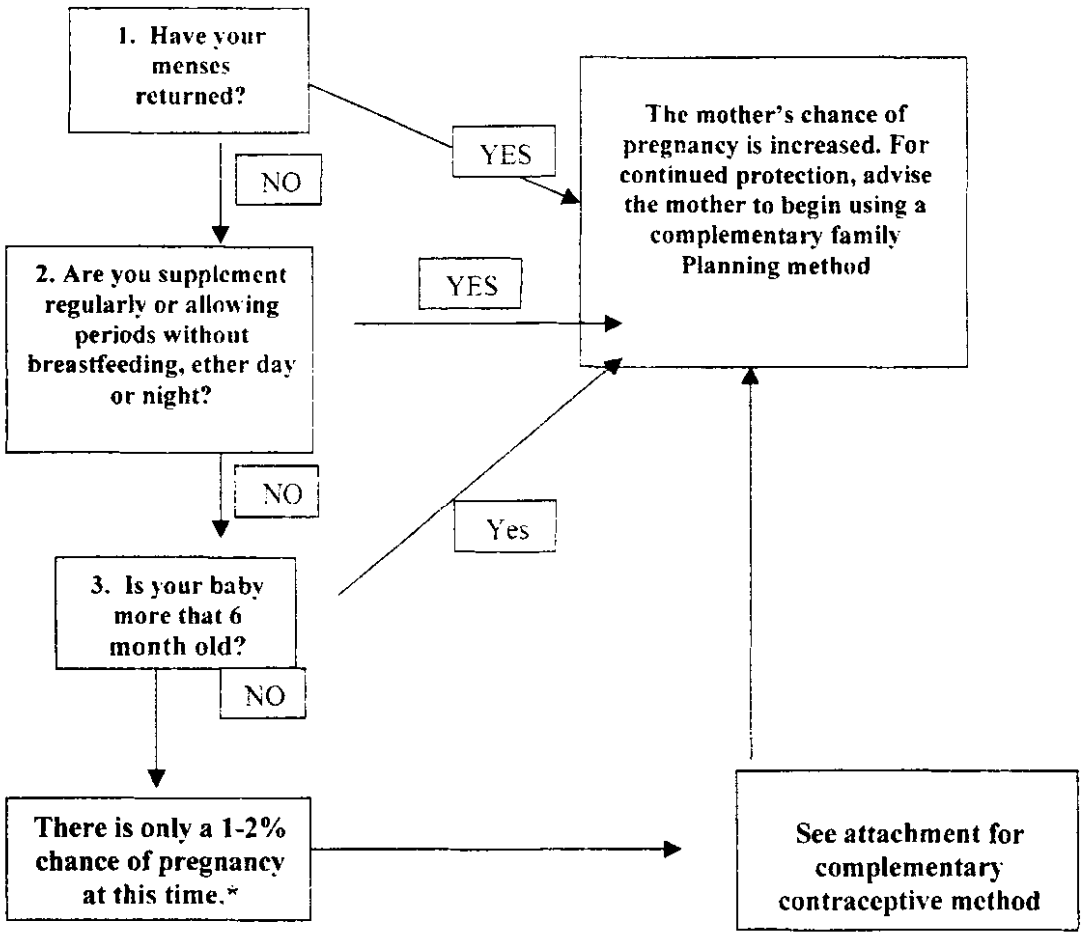
Method Specific Counseling for LAM

1. The health provide should know the criteria of LAM .
2. The mother should repeat and understand the criteria of LAM.

3. The health provider should know the complementary contraceptive methods to supply the mother who breastfeeds and doesn't choose L.A.M or appropriate for L.A.M criteria.

Lactation Amenorrhea Method

Ask the mother, or advice her to ask herself these 3 questions:



The mother, however, may choose to use a complementary method at any time.

CONDOMS

Definition:
A condom is a sheath, or covering to fit over a man's erect penis

Type:
Most condoms are coated with a dry lubricant or with a spermicidal . Different sizes, shapes, colors and texture may be available.

Effectiveness:
Must be used correctly every time to be highly effective. Effective for preventing pregnancy, and sexually transmitted diseases.

Mode of action:
Condoms keep sperm and any disease organism in semen out of the vagina, stop disease organisms in vagina from entering the penis.

Indications for Use of Condoms

- Prevention of STDs including HIV AIDS .
- Prevention of pregnancy as a contraceptive method.
- Can be used immediately after child birth
- No effect on breast milk
- Protect against pelvic infection
- Help preventing ectopic pregnancies.
- Offer occasional contraception with no daily upkeep.
- Help prevent premature ejaculation (last longer during sex)

Contraindication
Severe allery to latex rubber

Specific instructions

- Whenever possible, show clients how to put on and off a condom. Use a model, a stick, a banana, or 2 fingers to demonstrate putting on the condom.
- Any lubricant used should be water-based. Good lubricants include spermicides, glycerine, and especially made products. Water can be used also. They help keep condoms from tearing during sex. Natural vaginal secretions also act as lubricant.
- Do not use lubricants made with oil. Most of them damage condoms. Do not use cooking oil, baby oil, coconut oil, mineral oil, petroleum jelly (such as Vaseline), skin lotions, suntan lotions, cold creams, butter, cocoa butter or margarine.
- After ejaculation hold the rim of the condom to the base of the penis so it will not slip off. The man should pull his penis out of the vagina before completely losing his erection.
- Take off the condom without spilling the semen on the vaginal opening.
- Throw the condom away in a toilet, burn it, or bury it. Do not leave it where children will find it and play with it. Do not use a condom more than once.
- If a condom breaks:
  - Immediately insert a spermicide into the vagina, if spermicide is available.

BEST AVAILABLE

- Some clients may want to use emergency oral contraception to prevent pregnancy.

Tips on Caring for Condoms

- Store condoms in a cool, dark place, if possible. Heat, light, and humidity damage condoms.
- If possible, use lubricated condoms that come in square wrappers and are packaged so that light does not reach them. Lubrication may help prevent tears.
- Handle condoms carefully. Fingernails and rings can tear them.
- Do not unroll condoms before use. This may weaken them. Also, unrolled condom is difficult to put on.
- Always use a different condom if:
  - torn or damaged packaging
  - manufacturing date on the package that is more than 5 years old
  - condom is uneven or changed in color
  - condom feels brittle, dried out, or very sticky

Explain specific reasons to see a nurse or doctor

Urge clients to return or see a doctor or nurse if they or their sex partners:

- have symptoms of STDs such as sores on the genitals, pain when urinating or a discharge (drip)
- have an allergic reaction to condoms (itching , rash, irritation)
- other specific reasons to return: need more condoms, dissatisfied with condoms for any reason, have any questions or problems.

Routine Return Visits

1. Ask if the client has any questions or anything to discuss.
2. Ask the client about his or her experience with condoms, whether the client is satisfied, and whether the client has any problems. Is the client able to use a condom correctly every time? Also, you can check if the client knows how to use a condom; ask the client to put a condom on a model or a stick. Give any information and advice that the client needs. If the client has problems that cannot be resolved, help the client choose another method.

   IMPORTANT: urge clients at risk for STDS including HIV/AIDS to keep using condoms despite any dissatisfaction. Explain that only condoms protect against STD during sex.

3. If clients are satisfied:
   - Give them plenty of condoms
   - Remind them to return if they or their sex partners have symptoms of STDs, such as sores on the genitals, pain when urinating, or a discharge (drip), or are dissatisfied with condoms.
   - Give clients spermicide if they want extra protection. Counsel about spermicide use.
   - Invite them to return again at any time that they have questions or concerns.

EMERGENCY CONTRACEPTION

Definition
A method of preventing an unwanted pregnancy after intercourse has taken place

Mechanism of Action
Causes temporary changes in the ovaries, fallopian tubes, and endometrium. Probably works by preventing implantation of an embryo.

Effectiveness
When used within 72 hours of unprotected intercourse, most methods are at least 75% effective in preventing a pregnancy. Note that this is not 100% protection!

Indications for Use
- Provides some measure of contraception if taken within 72 hours of unprotected intercourse
- May be used when barrier methods fail, ie, rupture of a condom.

Disadvantages of Use
- Must be used within 72 hours of intercourse
- Often causes nausea (30-60%) and vomiting (12-20%), which may reduce effectiveness of the method
- Is not 100% effective – pregnancy may still occur in up to 25% of cases.
- Effect of high dose hormones on developing embryo (if pregnancy does occur) is unknown, although no definite risk to fetus has been observed.

Administration of Emergency Contraception
Confirm that unprotected intercourse during a potentially fertile period (ie, client not within 5 days of completing menses) has occurred within the past 72 hours. This method should not be used if more than 72 hours have elapsed.

- Two tablets each containing Ethinyl Estradiol 0.05 mg and DL-Norgestrel 0.5 mg (Ovral), are ingested 12 hours apart for a total of 4 tablets
- Provide oral anti-emetic (promethazine 25 mg, metoclopramide 5-10 mg.) 30 minutes prior to each of two doses.
- The woman should have a menstrual period within the next 21 days. If she does not, she should be examined with appropriate laboratory testing for pregnancy.
- As an alternative for those women who want immediate as well as long-term contraception, an IUD may be inserted within 72 hours of intercourse, after it is determined that the woman is not already pregnant and has no other contraindications to an IUD (see section on IUD)

Other COC which can be used for the Yuape Method of Emergency Contraception*

Trade Name	Formulation	Number of Pills Taken With Each Dose – 2 doses 12 hours apart
Ovral	0.05 mg of ethinyl estradiol1 0.50 mg of norgestrel	2
Lo-Ovral	0.03 mg of ethinyl estradiol1 0.30 mg of norgestrel	4
Nordette	0.03 mg of ethinyl estradiol1 0.15 mg of levonorgestrel	4
Levlen	0.03 mg of ethinyl estradiol1 0.15 mg of levonorgestrel	4
Triphasil	(Yellow pills only) 0.03 mg of ethinyl estradiol1 0.125 mg of levonorgestrel	4
Trilevlen	(Yellow pills only) 0.03 mg of ethinyl estradiol1 0.125 mg of levonorgestrel	4
Microgynon		4
Lofemenal		4

Breast Feeding

BREASTFEEDING

LEARNING OBJECTIVES

- Reinforce the importance of breastfeeding for the health of the child and mother
- Identify and manage the most common problems noted with breastfeeding

TEACHING STRATEGIES

- Introduce the "ten steps for successful breastfeeding" Module developed by UNICEF.
- Group discussions, case studies, pair practice and role-plays to reinforce skills and share insights among participants.
- Exercises in case management to participants to complete independently.

MATERIALS AND EQUIPMENT NEEDED

- Health education pamphlets
- Infant formula advertising material for demonstration
- White board or flip chart and markers
- The ten steps-chart (UNICEF) for successful breastfeeding

LEARNING POINTS

- Importance of breastfeeding to child survival
  - Breast milk more easily digested
  - Less chance of contamination with bacteria
  - Lower incidence of diarrhea and dehydration
  - Contains all essential nutrients for infant
  - Gives improved immunity to viral and bacterial infections
  - Promotes psychological security and emotional bonding with mother
  - Breast milk is free – no expense required
  - Provides natural birth spacing to improve maternal health and well-being
- Antenatal preparation
  - Promotion of breastfeeding and counseling should begin prior to delivery
  - Questions and concerns regarding milk adequacy, maintenance of female figure, ability to work and breastfeed, etc. should be addressed
- Lactation management
  - Anatomy and physiology
    - Milk produced in the breast glands in the periphery of the breast
    - With "letdown reflex", milk moves from glands into ducts of breast
    - "Letdown reflex" is mediated by sense of security and relaxation of mother – effect on hypothalamus to stimulate release of prolactin from pituitary gland
    - Suction of infant pulls milk from ducts into mouth
  - Important elements for successful breastfeeding
    - Personal and cultural commitment to breastfeed
    - Adequate nutrition for the mother – balanced diet of at least 2200 kcal./day

        - Adequate hydration for mother – approximately 1.5 liters/day of water is best
        - Unscheduled time and relaxation of mother is essential to successful "letdown" of milk, especially with first feedings
        - Avoidance of overwork or emotional stress
        - Avoid offering any supplemental food or fluids in a bottle for first 6 months – any bottle can cause "nipple confusion" by baby, and result in decreased demand and decreased milk supply
        - Mother must be willing to feed on the baby's demand
    - The first breastfeeds
        - Important to begin breastfeeding within first 30 minutes of delivery – ideally within first 5 minutes
        - Immediate breastfeeding results in release of oxytocin, which causes uterine contraction and decreased uterine blood loss
        - Multiparous mother may notice painful uterine contractions with breastfeeding – she should be counseled regarding value of this and to continue breastfeeding
        - Mother may notice small volume of milk for first 3 days – she should be counseled that colostrum provides all that baby needs for first 3 days, and that milk volume will increase dramatically on 3rd-4th day postpartum
- Counseling for common breastfeeding problems
    - Not enough milk
        - Be sure that mother is taking adequate time to feed baby, that she is rested and relaxed. If working, she may need to decrease amount of work
        - Confirm adequate diet (2200 Kcal./day) and fluids (1.5 liters/day)
        - Encourage mother to breastfeed somewhat more often - minimum of every 3 hours for 2-3 days to increase milk supply
    - The employed mother
        - Mother should try to negotiate with employer to allow time for breastfeeding (go home every 4 hours if lives close, bring baby to work, etc.)
        - May be able to work fewer hours (4-6 hours/day) during first 6 months to allow for breastfeeding
        - Express milk before and during work, and refrigerate or freeze in sterilized bottles. Counsel mother to wash hands and sterilize (boil) bottles prior to expression of milk. Leave expressed milk with caretaker
    - Sick babies
        - Babies should continue to breastfeed while ill. If too weak, breast milk should be expressed and given with a spoon or bottle
        - Babies with an upper respiratory infection should have their nose cleaned with normal saline drops frequently, especially just before breastfeeding
    - Drugs and breastfeeding
        - Mothers should be encouraged not to take medications during breastfeeding, unless absolutely necessary.
        - In general, medications such as paracetamol and most antibiotics are safe for breastfeeding mother to take

    - All medications taken by a breastfeeding mother should be checked against a known reference to assure safety.
- Engorged breasts
    - Usually noted only days 3-6 postpartum
    - Can be so tense that infant has difficulty latching on with mouth
    - May express a small amount manually prior to latching on
    - Feed baby somewhat more frequently (every 3 hours) for 1-2 days
    - Encourage mother that milk supply will match baby's demand within first 1-2 weeks
- Cracked or sore nipples
    - Usually occurs at onset of breastfeeding
    - Mother can prepare nipples by daily massage during prenatal period
    - Counsel mother to completely dry nipples immediately after breastfeeding, and to apply a mild lubricating lotion several times daily
    - May apply small amount of breast milk to nipple after feeding
- Inverted nipples
    - Inverted nipples should be massaged and pulled gently during the prenatal period
    - Counsel mother to pull back on breast tissue just above nipple prior to baby latching onto nipple
    - Mother may be able to express some milk manually prior to latching on, to make nipple more accessible
- Mastitis
    - Usually noted as a tender, red, painful triangular area in one breast
    - Most often caused by infection with *Staph. Aureus*
    - Mother should continue to breastfeed from infected breast to promote drainage. Milk from an infected breast does not harm child (bacteria destroyed by saliva and gastric acid)
    - Warm compresses, gentle massage of obstructed duct and brassiere support are helpful
    - For definite infection, begin anti-staph antibiotic, such as: cloxacillin 250 – 500 mg every 6 hours, erythromycin 250-500 mg every 6 hours.

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES

- Adolescents education on the importance of breastfeeding
- First feed within 30 minutes after delivery
- Feeding on demand
- Mass media and legislation against breast milk substitutes, advertisements, and subsidies
- Risks of bottle-feeding

CRITICAL ELEMENTS FOR REFERRAL

- Severe malnutrition of baby
- Dehydration
- Breast abscess

CASE STUDY

Rema is a 32-year old lady who has 4 children. The youngest is aged 3 years who developed severe malnutrition and chronic diarrhea due to cow's milk protein intolerance. Rema is 24-weeks pregnant and believes that breastfeeding her coming baby may avoid her the problems she had earlier. She visits the health center for antenatal care and advice related to breastfeeding.

Topics of discussion regarding case studies

1. Why is breastfeeding important for her baby?
2. How can she successfully breastfeed after 4 other children on bottle feeding?
3. What antenatal preparation should be done?

CASE STUDY

Mrs. Khadija Ahmed, 35 years old housewife delivered 3 days ago vaginally, her baby was premature and so he was kept at the special care baby unit.
His mother wanted to breast-feed him but the doctors wanted the baby not to have breast milk till the result of laboratory investigations are ready.
Her breasts are getting sore and heavy.

Topics for discussion regarding this case study:

1. What important additional medical elements of the history should be asked?
2. What important additional elements of the physical examination should be done?
3. What is an appropriate plan of management for this patient at this point?
4. What counseling point would be most appropriate for this patient at this point?

Table 1. Common Breastfeeding Difficulties[1]

Sign, Symptom/Condition	Prevention	Comfort & Management
Low Milk Supply: • Poor infant weight gain. • Number of wet diapers fewer than 6 per day. • Sucking not satisfying infant.	• Increase frequency of breastfeeding. • Breastfeed exclusively day and night, on demand by infant. • Correctly position the baby on the breast. • Encourage family members to help with household tasks like cooking, cleaning, and shopping.	• Discontinue any feedings other than breastfeeding. • Breastfeed infant frequently, day and night; increase frequency of feedings. • Wake for additional feedings if infant sleeps through the night. • Make sure infant takes breast into mouth correctly. • Monitor infant weight gain.
Sore Cracked Nipples: • Breast or nipple pain • Cracks in the nipple • Occasional bleeding • Nipples become reddened	• Correctly position the infant on the breast for feeding. • Remove infant from the breast by breaking suction with your finger first. • Increase frequency of breastfeeding. • Expose breasts to air to dry thoroughly after each feed.	• Apply drops of breastmilk to nipples and allow to air dry after feeding. • Make sure infant takes the breast into mouth correctly. Break suction with a finger before removing infant from breast. • Alternate infant's position for feedings to change pressure points on nipples. • Expose breasts to air, sunlight; keep nipples dry. • Apply ice to nipples after breastfeeding. • Begin breastfeeding on the side that hurts less. • DO NOT stop breastfeeding; feed frequently but for shorter periods of time. • If severely cracked, apply ointment with anti-inflammatory, anti-pruritic, vasoconstriction properties twice a day; remove before each feed. • Alternatively, apply A&D ointment or Vitamin E; the ointment does not have to be removed before infant feeds.

[1] *LAM (Lactational Amenorrhea Method): A Postpartum Temporary Contraceptive Option for Women Who Breastfeed* (2000). Training Module for Health and Family Planning Service Providers. Linkages

BEST AVAILABLE

Signs, Symptoms/Conditions	Prevention	Counseling & Management
Engorgement: • Nipples and areola full and not possible to flatten for infant to attach for feeding. • Breast skin tight. • Breast full and firm to touch.	• Breastfeeding frequently day and night. • Hold nipple flat between thumb and fingers to help infant attach correctly to the breast. • Avoid tight brassieres. • Avoid sleeping on stomach. • Use a variety of positions for holding the baby to change points of pressure on breasts.	• Apply heat before start of breastfeeding. • Massage breasts before breastfeeding. • Gently manually express small amounts of breastmilk to soften the areola so that it can be flattened for infant to attach correctly. • Place thumb and fingers at the junction of the areola and breast; flatten areola to encourage infant to take the entire nipple and areola into the mouth. • Wear a supportive bra. • Take warm showers and manually express milk before or after breastfeeding. • Cold compresses and pain-relievers may help if swelling has extended up chest and under arms.
Obstructed Ducts/Mastitis: • Breast pain. • Generally not feeling well. • Redness in one area of the breast, swollen, hot to touch, hard with a red streak. • Fever (at times), flu-like symptoms.	• Breastfeeding frequently day and night. • Hold nipple flat between thumb and fingers to help infant attach correctly to the breast. • Avoid tight bras. • Avoid sleeping on stomach. • Use a variety of positions for holding the baby to change points of pressure on breasts.	• Seek medical care for antibiotic treatment (10-14 days). • Apply heat before the start of breastfeeding. • Massage the breasts before breastfeeding. • Continue feeding on both breasts starting on the unaffected side. • Breastfeed frequently. • Increase maternal fluid intake. • Apply cold compress or warm pack to breasts after feeds. • Encourage maternal bed rest. • Wear a supportive bra.

BEST AVAILABLE

Menopause

MENOPAUSE

LEARNING OBJECTIVES:

- Diagnosis of menopausal signs and symptoms
- Understand the risks and burden of long term effects of estrogen deficiency
- Appropriate management of estrogen replacement therapy
- Communicate to patients necessary messages in understanding, prevention and control of osteoporosis and coronary heart disease

TEACHING STRATEGIES:

- Review of proper history taking in the menopausal woman, including present symptoms, medical and family history.
- Use lecture presentation for didactic material and large group discussion for counseling the patient and weighing the benefits and risks of hormonal replacement therapy.

MATERIALS AND EQUIPMENT NEEDED:

- White board for summarizing major points
- Overhead projector and transparencies
- Different packs of hormonal replacement therapy for demonstration

LEARNING POINTS:

- Definitions related to menopause
  - Menopause – point of permanent cessation of menstrual activity
  - Perimenopause – indefinite period of declining and fluctuating estrogen levels preceeding the menopause
  - Postmenopause – period of time from cessation of menstrual activity to end of life
- Initial signs and symptoms of menopause – short-term estrogen deficiency
  - Hot flashes
  - Sleep disturbances
  - Depression
  - Sexual dysfunction and dyspareunia
  - Urinary incontinence and increased incidence of urinary tract infection
  - Vaginal irritation and dryness (atrophic vaginitis)
  - Skin changes
- Long term effects of estrogen deficiency
  - Osteoporosis (relative loss of calcium from bone
  - Perhaps a slight increased risk of Alzheimer's disease
- Benefits of hormonal replacement therapy
  - Decrease in vasomotor symptoms of hot flashes
  - Protective effect of progesterone on endometrial cancer
  - Prevention of calcium and bone loss and decreased osteoporosis
  - Improvement in urinary symptoms such as frequent UTI
  - Improved lubrication and decreased pain with sexual activity
  - Decreased risk of colon or rectal cancer

- Risks of hormonal replacement therapy
  - Endometrial cancer, if estrogen only used without progesterone
  - Thromboembolism – slight increase in coagulability of blood
  - Slight increase in risk of certain breast cancers (increase of 8 cancers/100,000 women/year)
  - Slight increase in risk of cardiovascular disease, especially myocardial infarction and stroke (increase of 8 heart attack or stroke/100,000 women/year)
  - May cause some sodium and fluid retention
  - Can cause enlargement of fibroid tumors of uterus
- Management of menopausal symptoms
  - Confirm menopause (presence of typical symptoms, no menstruation for at least 4-6 months, FSH level > 35
  - Goal of treatment – restoration of normal function, and decrease in some risk factors of aging
  - Begin with lifestyle modification and improvement:
    - Regular, aerobic exercise – 30 minutes daily
    - Balanced diet with adequate fruits and vegetables
    - Begin calcium supplementation (milk and yoghurt daily, calcium 1gm. Daily)
    - Weight loss if BMI > 30
    - Stress reduction
    - Stop smoking
  - Estrogen replacement therapy
    - Confirm absence of contraindications to estrogen therapy:
      - Estrogen dependent breast cancer
      - Undiagnosed vaginal bleeding
      - Uterine or ovarian cancer
      - Large fibroid tumors of uterus
      - History of thrombophlebitis or thromboembolism
      - Severe hypertension
      - Heart disease with cardiac failure
    - May use conjugated estrogens (cheapest and most easily available) or synthetic estradiol preparations
      - Estradiol available in tablets, cream, or patches (1 – 2/week)
    - Estrogen alone – used ONLY in women after hysterectomy (0.625 – 1.25 mg/day conjugated estrogens)
    - Estrogen with cyclic progesterone
      - Used in women who want or do not object to cyclic vaginal bleeding
      - Cyclic regimen - 0.625 – 1.25 mg/day conjugated estrogens on day 1 – 25, with medroxyprogesterone 10 mg/day on day 15 - 25 each month, and no medication day 26 – 30. Some vaginal bleeding usually occurs day 26 – 31.
      - Alternative cyclic regimen - 0.625 – 1.25 mg/day conjugated estrogens on day 1 – 30, with medroxyprogesterone 10 mg/day on day 1 –12 each month
    - Combined estrogen and progesterone
      - May result in some irregular vaginal bleeding for the first 1-3 months, but then bleeding stops

- Advantage is that woman can develop habit of taking the same two pills each day
- Combined regimen - 0.625 – 1.25 mg/day conjugated estrogens and medroxyprogesterone 2.5 mg daily on continuous basis

- Monitoring of estrogen replacement therapy
  - o Woman should be evaluated at 1-3 months after beginning therapy, and at least every year after
  - o Followup should focus on following elements:
    - Improvement in menopausal symptoms and restoration of function
    - Absence of vaginal bleeding
    - Monitor blood pressure and edema
    - Breast examination and mammogram
    - Continued patient education regarding menopause and need for life-style changes
  - o Because risks of heart attack and stroke appear to increase significantly after 3-5 years of use, encourage women to discontinue estrogen replacement therapy after 1-3 years of use
    - May switch to local estrogen cream (1/2 applicator twice weekly in vagina) for prevention of urinary symptoms and dysparunia
    - Vasomotor symptoms (hot flashes, sleep disturbance) less intense 3-5 years after menopause
- Androgens – may be occasionally added to estrogen replacement to increase libido in women who complain of decreased sexual interest
- Non hormonal medication – occasionally used to help control hot flashes in women who cannot take estrogen replacement – usually a combination of an ergot preparation and anti-spasmodic. Large amounts of soy protein may also give some benefit in symptoms

CASE STUDY

Name of patient	Fatemah
Sex	Female
Date of Birth	[redacted]
Date of visit	5 April 2000
Vital Signs	pulse 82/min B/p 120/80 weight 56 kg height 168

Medical History: She is complaining of hot flashes, forgetfulness, sleep disturbances associated with nervousness, in the last three months.
Upon questioning, she has regular periods, uses barrier contraception and had her last smear 2 years ago. She has no urinary symtoms.

Physical examination: Abdomen is soft and lax
Pelvic examination revealed nothing abnormal.
Topics of discussion regarding case study:

- What additional elements in the history should be asked?
- What additional elements in the examination should be done?

- What is the appropriate plan of management?
- What counseling issues should be raised with the patient?

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Correct identification of estrogen deficiency symptoms
- Knowledge of risks, benefits, and contraindications to hormone replacement therapy
- Appropriate counseling, life style, exercise and possible HRT combinations

PROTOCOL FOR MANAGEMENT:

Initial Assessment

A. Counseling

- Begin by age 45 and review annually
- Assess risk of coronary heart disease (CHD), osteoporosis, breast cancer
- Emphasize diet, lifestyle exercise to reduce risks of coronary artery disease (CAD), osteoporosis
- Distribute written information about menopause and hormonal replacement therapy

B. Clinical exam:

- Blood pressure (BP), weight, height, pelvic exam, breast exam, General health risk assessment

C. Referrals:

- abnormal vaginal bleeding
- for (HRT) guidance with fibroids, endometriosis and persistent symptoms

Hormone Replacement Therapy (HRT)

Contraindications:

- Absolute: undiagnosed bleeding, pregnancy
- Relative: personal history of breast, ovarian, endometrial cancer; fibroid tumors of uterus, personal history of phlebitis or thromboembolism, hypertension, symptomatic heart disease

When to initiate HRT:

Symptomatic:

- Depends on severity of symptoms, menopause not firmly established until 6-12 months after cessation of menses.
- If still menstruating: low dose OC if nonsmoker (check FSH q 12 month late in placebo week and begin HRT when FSH > 35).

Asymptomatic patients for prevention:

- 6-12 months after cessation of menses
- Immediately after oophorectomy

Treatment alternatives:

- Treat 1-3 years, then try to taper (in patients with relative risk factors for long-term use)
- Oral hormonal regimens:
  - With uterus:
    - Conjugated estrogen or esterified estrogen 0.625 mg – 1.25 mg. daily with cyclic medroxyprogesterone acetate 10 mg days 1-12
    - Conjugated estrogen 0.625 mg – 1.25 mg. and medroxyprogesterone acetate 2.5 mg QD (best tolerated in women amenorrheic for at least one year)
  - Without uterus:
    - Conjugated or esterified estrogen continuously, 0.625 mg - 1.25 mg. daily.
- Estrogen patches:

    - With uterus: Estradiol patch, 0.05 mg once a week with cyclic or continuous medroxyprogesterone
    - Without uterus: Estradiol patch 0.05 mg once a week.
- Intravaginal estrogen cream if vaginal dryness is noted, and HRT is refused by patient

Osteoporosis

OSTEOPOROSIS

LEARNING OBJECTIVES:

- Identify risk factors for osteoporosis
- Describe signs and symptoms, and complications of osteoporosis
- Know how to prevent and manage osteoporosis
- Know when to refer your patient
- Counsel and educate your family

TEACHING STRATEGIES:

- Large group discussion
- Small group discussion

MATERIALS NEEDED:

- Whiteboard
- Flipchart and markers
- Overhead projector and transparencies

LEARNING POINTS:

- Definition of Osteoporosis
  - "Bone mineral density substantially less than the norm for the patient's age and gender"
  - Found in 30 – 40% of all adults over 60 years of age
- Risk factors for osteoporosis
  - Fair skin, small bone structure
  - Female – post menopausal
  - Late menarche and early menopause
  - Prolonged amenorrhea due to any cause, including multiple pregnancies
  - Chronic systemic disease (liver, renal, heart)
  - Arthritic syndromes
  - Hyperthyroidism or parathyroid disorders
  - Medications such as anticonvulsants, antacids, corticosteroids
  - Smoking, stress
  - Lack of regular exercise
  - Lack of vitamin D or calcium in diet
- Osteoporosis signs and symptoms, and complications
  - Often very few initial signs or symptoms of early or even severe osteoporosis
  - Most commonly, first symptom is a fracture
  - Most common fractures – hip, forearm, thoracic or lumbar vertebrae – usually after a minor fall
  - Decreased independence and need for care is major complication of osteoporotic fractures in the elderly
- Tests for osteoporosis
  - Most definitive test is bone densitometry – requires special machine, but best for long-term follow-up of therapy

- Osteoporosis can be suspected on simple X-rays of spine or extremities – diminished bone density and old fractures clearly seen

- Prevention of Osteoporosis
  - Prevention of most effective way of dealing with osteoporosis, since it is a slowly progressive, potentially reversible process of aging
  - Initial measures to recommend in all older adults:
    - Regular physical exercise – walking or swimming daily
    - Stop smoking
    - Take calcium 1 gm daily and Vitamin D 600 – 800 IU daily
    - If under treatment for hypertension, consider using a diuretic (to conserve calcium as well as lower blood pressure)
  - In menopausal or post-menopausal women without significant contraindications, consider hormone replacement therapy (as discussed in Menopause section)
- Treatment of established osteoporosis
  - Hormone replacement therapy can restore to a small extent lost bone density
  - In severe cases (especially with history of fractures) may need to add a medication
    - Bisphosphonate such as Alendronate 10 mg. daily
      - Must be taken with large glass of water in upright position – stay upright for at least 30 minutes after taking medication
      - Major potential side effect of Alendronate is esophageal irritation and ulceration – minimized with above precaution
      - Use of bisphosphonate such as Alendronate can increase bone mineral density as much as 5 – 10% more than hormone replacement therapy
    - Calcitonin is another medication (from the thyroid gland) that helps deposit new calcium in bone
      - Disadvantage is it requires injection or nasal inhalation
      - Used only in severe cases of osteoporosis, or in case of intolerance of bisphosphonates

PATIENT EDUCATION MESSAGES

- Osteoporosis is a silent part of aging, but the cause of significant disability
- Fractures of osteoporosis can be decreased with simple changes in life style and medication
- All women with risk factors for osteoporosis should consider beginning hormone replacement therapy if no contraindications exist
- All men and women with risk factors for osteoporosis should consider taking calcium and Vitamin D supplements regularly.

CRITICAL ELEMENTS FOR REFERRAL

- Significant fracture in the elderly
- Multiple risk factors for osteoporosis that may require bone density measurement and bisphosphonate therapy

Breast Lump

BREAST DISORDERS

LEARNING OBJECTIVES

- Significance and evaluation of breast complaints
- Epidemiology of breast diseases
- Describe the diagnostic evaluation and initial management of breast lumps
- Review the benign breast disease, its etiology and treatment
- Screening for cancer of the breast
- Identify high risk groups for breast problems

EQUIPMENT AND MATERIAL NEEDED

- Over head projector
- Flip Chart and markers

LEARNING POINTS:

- Breast pain (mastalgia)
  - Very common in pre-menopausal women
  - May be cyclic (60% - related to menstrual cycle) or non-cyclic
  - Common causes of cyclic breast pain:
    - Hormonal changes
    - Fibrocystic breasts
  - Common causes of non-cyclic breast pain
    - Costochondrititis
    - Chest wall pain
    - Trauma
    - Breast cancer
  - History and evaluation of breast pain
    - Age of patient (generally non-malignant in patient <40 years)
    - History of trauma, breastfeeding
    - Relationship to menstrual cycles
    - Relationship to movement of arms or chest wall
    - Palpation of breast - presence of nodularity, tenderness in breast, breast mass
    - Palpation of chest wall - presence of tenderness in chest wall
  - Management of breast pain (no masses palpable)
    - Cyclic – properly fitted brassiere, low fat diet, caffeine avoidance, Vitamin E supplementation, mammogram in women >40 years, consider low dose oral contraceptives if appropriate
    - Non-cyclic – NSAID for chest wall tenderness, mammogram in women > 40 years
    - Refer to specialist if no relief from above measures
- Nipple discharge
  - Bilateral discharge – non-bloody
    - Common causes – physiologic (post breast-feeding), medications (anti-psychotics, Aldomet, cimetidine, antidepressants, oral contraceptives), nipple stimulation, irregular menses

    - Dangerous causes – tumor of pituitary (headache, high prolactin, irregular menses), thyroid disease (hypothyroidism)
    - Evaluation – should always include complete breast palpation, and mammogram in women > 40 years, absence of blood in discharge
    - Management – modify medications, reassurance
  - Unilateral discharge
    - Common causes if non-bloody – ductal papilloma, ductal ectasia, fibrocystic breast disease, eczema
    - Dangerous causes, especially if bloody – ductal or breast carcinoma, eczema, Paget's disease (malignant disease of nipple)
    - Evaluation - should always include complete breast palpation, and mammogram in women > 40 years. May require surgical excision of involved duct. Note – cytology of breast fluid very rarely helpful, unless discharge is bloody
- Breast mass
  - Significance of breast mass in any woman:
    - Take it seriously in any age woman
    - Follow up closely and often
    - Learn about possibilities of the local referral
    - Communicate closely and carefully with patient
    - Physician must be the patient's advocate through the whole process
  - Common causes in women < 40 – fibrocystic changes (single or multiple cysts very common), fibroadenoma, previous scar from trauma or infection, breast cancer (less than 10% risk)
  - Common causes in women > 40 – breast cyst, breast cancer
  - Risk factors for breast cancer
    - Unilateral, non-cyclic pain
    - Unilateral, bloody nipple discharge
    - Age > 40
    - Obesity
    - Nulliparity
    - Absence of history of breast feeding
    - Family history of breast cancer (especially 1st degree relatives)
    - History of endometrial or ovarian cancer
  - History in woman with breast mass – ask about:
    - Age – risk of cancer greater if > 40 years
    - Pain or tenderness to palpation – more common with cysts than with cancer
    - Nipple discharge – unilateral or bloody discharge suggests papilloma, may be benign or malignant
    - Similar, mirror-image mass in opposite breast – suggests benign fibrocystic disease
  - Palpation of breast mass
    - Technique – use flat part of fingers, use powder or soap solution to allow fingers to slide smoothly over skin, palpate breast in systematic fashion to not miss any part, check nipples for discharge or skin changes
    - Always palpate axillary lymph nodes (palpable nodes suspicious for cancer) and axillary tail of breast
    - Findings suggestive of malignancy – single mass, immobile, fixed to chest wall, rock hard, irregular borders, overlying skin changes of thickening or

dimpling or redness, non-tender to palpation, palpable lymph nodes in axilla
    - Findings suggestive of benign mass – multiple masses, similar mass in opposite breast, tender to palpation, mobile, smooth borders, dense but not rock hard
- Evaluation of breast mass – Triple diagnosis
    1. Breast palpation (clinical breast exam)
    2. Mammogram
    3. Fine needle aspiration (FNA) with cytology of aspirate
    - Ultrasound often used in addition, especially in younger women, to evaluate for possibility of breast cysts
    - In general, any woman with a palpable, dominant breast mass must be referred to specialist to begin triple diagnosis process.
    - Any abnormality in any of three parts of triple diagnosis should be further evaluated by biopsy – core needle or open biopsy
    - A woman > 40 years, with a negative triple diagnosis, or with a negative biopsy, should be reevaluated with mammogram every year.

PREVENTION ISSUES AND HEALTH EDUCATION MESSAGES:

- Breast cancer screening is important, especially in women with one or more risk factors
- Screening in women < 40 years – teach Breast Self-Examination (BSE), clinical breast exam every 1 to 2 years by physician or midwife
- Screening in women > 40 years – teach BSE, clinical breast exam every year by physician or midwife, mammogram every 1-2 years beginning > 50 years of age
- Emphasize that:
    - All lumps are not cancerous, but do need to be evaluated for possible cancer
    - Important to seek out medical advice if lump is detected on BSE
    - Men and adolescents can occasionally get breast cancer
    - Breast cancer detected in early stage can be cured >90% of cases

CRITICAL ELEMENTS OF COMPETENCE FOR EVALUATION

- Signs of possible malignancy in a breast lump
- Understanding the importance to do a physical examination of the lump
- Proper method of examination of breast by provider
- Proper method of teaching Breast Self-Examination (BSE)
- When to refer to a specialist

Attachment 1
Breast Examination Guidelines

1. General Approach
2. Appearance of Breasts
3. Feeling for Lymph Nodes
4. Feeling for Breast Lumps
5. Examination of Nipples
6. Self-Exam Guidance

1. General Approach

This section is written as if you were examining a woman's breasts. To reassure the client, do the following:

- Provide good light.
- Explain the breast examination procedure to client and answer questions.
- Keep the exam private. Have people leave the room, if not needed. If you are a man, you may want to have a female nurse or nursing assistant in the room with you.
- Ask client to uncover her chest from waist up, so that you can see the whole area well. Give the woman a drape to cover herself.
- Wash hands and dry completely.

As you examine:

Purpose: to examine breasts visually for: symmetry, identify any dimpled areas, localized skin changes, or nipple abnormalities.

- Explain to the client what you are doing. Teach the client and let her practice the self-exam.
- If there are abnormal findings, be sure to report to a referral doctor

2. Appearance of Breasts

- Compare one side of the body to the other.
- Look at the breasts, skin and nipples.
- Look carefully and ask the client to do the following:
  - Sit with arms at sides.
  - Raise arms over head.
  - Lean over, with arms stretched forward.
  - Tighten chest muscles by pushing palms of hands together.

If breasts are large, lift them up to see all areas of skin.

<u>Normal includes:</u>

- Size and shape of breasts may not be exactly the same but are normal for the client.
- In adolescent girls, one breast may be enlarged more than the other or both breasts may appear equal size.

<u>Abnormal includes:</u>

- Change in shape of breast, skin change such as redness, thickening, scaliness, or skin in any spot looks pulled in (retraction, dimpling, puckering).

- Nipples discharge or bleeding.
- Nipple change, such as if one nipple sticks out more than the other (elevation), if nipple turns inwards or rash.

3. Feeling for Lymph Nodes

- Have client sit with arms at sides.
- Support the client's arms while you feel in each armpit area for lymph nodes:
  - Insert your hand as far into the armpit as you can.
  - Press your hand against the chest wall, feeling for lymph nodes.
- Continuing to feel for lymph nodes, slowly remove your hand from armpit.
- Note lymph nodes, size, mobility and presence of tenderness.

4. Feeling for Breast Lumps

There are a number of ways to do this exam. Compare the way you have been taught with the following way that is recommended:

- Have the client lie down on her back with arms behind her head. If breasts are large, to make the breast lie flat, place a folded towel under the shoulder area on side you are examining, so that breast is tipped forward toward the center and flattened.
- Feel for lumps in each breast with you finger tips:
  - Place the flat part of your fingertips on the skin.
  - Press gently but firmly.
  - Use the middle three fingers to move the skin over the tissue underneath. Use a circular motion.
  - Pretend that the breast is like the face of a clock as you examine the outermost part of the breast.
  - Begin feeling for lumps at the 12 o'clock position. Move to 1 o'clock, and move around the "clock," feeling for lumps. Include breast tissue near the armpit. It is normal to feel a ridge of firm tissue at the lower curve of each breast.
  - When you get back to 12 o'clock, move in an inch toward the nipple. Examine around the edges of a smaller clock.
  - Continue to feel for lumps in this way until you have examined every part of the breast, including the nipple area.
- To do a complete exam of large breasts, feel for lumps with the woman in other position in the next drawing.
- If you feel a lump, carefully examine and report to your referral doctor. Document findings on referral form:
  - Exact location: make a drawing with an "**X**" where the lump is.
  - Size and shape: measure in mm. or cm.
  - Is it tender to the touch? If so, check for other signs of inflammation or infection. Is it warm, red, swollen?
  - What does it feel like? For example, is it soft, firm, hard?
  - It is mobile or attached to something?
- Try to pick up or move skin over the lump:
  - <u>Mobile Lump</u> – skin moves over the lump or attached to skin (lump moves with the skin). Try to move or slide the lump over the tissue underneath it.
  - <u>Fixed Lump</u> does not slide over tissue that is underneath it, feels attached to some thing or lump does not slide over tissue that is underneath it.

If it is near the woman's period, plan to recheck the lump right after the period ends and report again to your referral doctor even if exam is normal.

5. Examination of Nipples

- If nipples are turned inward (inverted), try to manipulate them to turn back out:
  - Gently press or pull on edge of nipple
  - Abnormal includes if nipple recently turned inward on one side and you cannot get it to turn back out.
- Check each nipple for discharge or blood.
  - Press around the edges of nipple (nipple line).
  - Gently squeeze nipple between your thumb and pointer finger.
  - Abnormal includes discharge or blood. If so, examine:
    - How much is there?
    - What does it look like (color, clear or cloudy, thick or thin)?
    - What does it smell like?

6. Self-Exam Guidance

- Encourage client to do a self-exam; have her demonstrate how she will examine her breasts. Correct or reinforce as necessary.
- Discuss findings of examination with client.

Attachment 2

Guidelines for Breast Self-Exam

BREAST SELF-EXAMINATION (BSE)

A woman should have a clinical breast exam by her health provider at least once a year and should do a breast self-exam (BSE) once a month. BSE may help a woman detect a change in her breast.

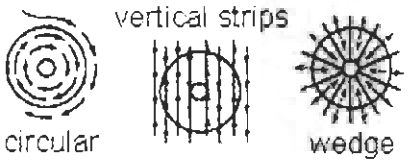
1. While taking a shower or bath, gently explore the breast and underarm areas with fingertips.

2. Raise arms in front of a mirror to check for changes in size, shape and contour of each breast. Gently squeeze both nipples and look for discharge.

3. Lie with an arm tucked behind the head, and with the other hand, examine the opposite breast for lumps, thickening or other changes.

USE OF FINGER PADS

Press with top third of fingers. Use the same pattern to feel every part of the breasts.



Abnormal Uterine Bleeding

ABNORMAL UTERINE BLEEDING AND AMENORRHEA

LEARNING OBJECTIVES:

- Terminology of uterine bleeding disorders
- Differential diagnosis of abnormal uterine bleeding
- Evaluation and management of abnormal uterine bleeding

TEACHING STRATEGIES:

- Interactive lecture
- Small group discussion
- Discussion of case study

MATERIALS AND EQUIPMENT NEEDED:

- White board for summarizing major points
- Overhead projector and transparencies

LEARNING POINTS:

- Terminology of uterine bleeding disorders

Term	Definition
Menorrhagia -	Prolonged or excessive bleeding at regular intervals
Metrorrhagia -	Irregular, frequent uterine bleeding of varying amounts but not excessive
Menometrorrhagia -	Prolonged or excessive bleeding at irregular intervals
Polymenorrhea -	Regular bleeding at intervals of less than 21 days
Oligomenorrhea -	Bleeding at intervals greater than every 35 days
Amenorrhea -	No uterine bleeding for at least 6 months
Intermenstrual -	Uterine bleeding between regular cycles

- Evaluation of abnormal bleeding – Key elements of History
  - Age of patient (pre-menopausal, peri-menopausal, post-menopausal)
  - Length of abnormal bleeding – acute or chronic or intermittent
  - Is patient ovulating?
    - Ovulating – patient has symptoms such as cyclic mood swings, premenstrual breast tenderness, mild edema, pain with bleeding

        - Not ovulating – long periods of amenorrhea, with very irregular bleeding, and none of the above symptoms
    - History of bleeding disorders (frequent nosebleeds or bleeding gums, family history of bleeding problems)
    - Sexual and reproductive history
    - Use of contraceptives (especially oral contraceptives, injectables or Norplant, and IUD)
- Evaluation of abnormal bleeding – Key elements of physical examination and initial laboratory evaluation
    - Vital signs, especially postural blood pressure changes suggesting hypovolemia
    - Heart and lungs
    - Thyroid abnormalities (goiter, nodules, evidence of hyper or hypothyroidism)
    - Abdomen – especially evaluation of liver and possible hepatic disease (jaundice, evidence of cirrhosis)
    - Evidence of bleeding disorder (bruises, petechiae)
    - Pelvic examination
        - Evaluate cervix for polyps, inflammation, lacerations, masses or abnormal tissue
        - Evaluate uterus for size, regularity (fibroid tumors), tenderness
        - Evaluate adenexae for possible cysts, abcess, inflammation or tenderness
    - Initial laboratory evaluation on all women:
        - Hemoglobin to evaluate anemia and chronic blood loss
        - Pregnancy test in all women except those clearly post-menopausal
        - Pap smear (taken during pelvic examination)
        - Other tests as indicated by history and examination, especially thyroid studies (TSH, T4) and prolactin level
- Differential diagnosis – most common possibilities

Infection
Cervicitis
Pelvic Inflammatory Disease

Trauma
Laceration, abrasion
Foreign body

Malignant neoplasm
Cervical
Endometrial
Ovarian

Benign pelvic pathology
Cervical polyp
Endometrial polyp
Fibroid tumor

Systemic disease
Hepatic disease
Renal disease
Coagulation disorder
Leukemia

Medications/Other
Intrauterine device
Hormones (oral contraceptives, estrogen, progesterone)
Anovulatory cycles
Hypothyroidism
Hyperprolactinemia
Cushing's disease
Polycystic ovarian syndrome
Adrenal dysfunction/tumor
Stress (emotional, excessive exercise)

Management of abnormal vaginal bleeding in the pre-menopausal woman

- Identify and treat possible anemia – usually with iron supplements
- If patient appears to be ovulating:
  - Evaluate for possible bleeding disorder, hypothyroidism, cervical polyp or fibroid, cervical or uterine cancer
  - Remove IUD if present, and offer patient another method of contraception
  - If none of the above found, treat for 3 months with combined oral contraceptives, or with NSAID such as naproxyn 250 mg bid.
  - Refer to specialist if no response
- If patient appears to NOT be ovulating:
  - Evaluate for general disease (infection, hepatic, renal), for stress or overwork, or recent weight loss
  - Evaluate TSH and T4 level for thyroid abnormality, and prolactin level (prolactinoma)
  - In women > 35 years, evaluate for cervical disease or fibroid tumor, or cancer of cervix or uterus
  - If none of the above found, can use one of the following treatments:
    - 3 – 6 months with combined oral contraceptives
    - Progesterone withdrawal every month (10 mg/day of medroxyprogesterone X 10 days every month)
  - Refer to specialist if no response

Management of abnormal vaginal bleeding in the peri-menopausal woman (generally between age 45 – 50):

- Most commonly due to anovulatory bleeding (dysfunctional uterine bleeding)
- However, risk of bleeding from malignancy (cervical or uterine or ovarian cancer) or from structural problem (fibroid tumor of uterus, or cervical polyp) is higher
- Evaluate for anemia and treat with iron supplementation if necessary
- Exclude pregnancy in all women up to age 50
- Refer patient for endometrial biopsy and Pap smear before beginning trial of hormonal methods

Evaluation and management of amenorrhea

Primary Amenorrhea – no menstrual periods at all since adolescence

- Usually concerning if no menses by age 15, definitely abnormal if no menses by age 16
- Multiple possibilities for primary amenorrhea, including:
  - Imperforate hymen
  - Genetic abnormalities (Turners, Kalliman's syndrome)
  - Hypothalamic or pituitary abnormalities
  - Adrenal gland abnormalities (adrenal hyperplasia)
  - Absent or malformed uterus or ovaries
- Generally should be referred to specialist for evaluation

Secondary Amenorrhea – normal or irregular menses followed by > 6 months of no vaginal bleeding

- Common causes are often benign, such as:
  - Amenorrhea of lactation (may be prolonged even after breastfeeding stopped)

- Overly vigorous exercise
- Significant emotional stress
- Recent weight loss (dieting, eating disorders)
- Hormonal contraceptives (combined or progesterone only contraceptives, injectables, Norplant)

- Other possible causes that require investigation and referral to specialist:
  - Premature menopause (prior to age of 45)
  - Pituitary tumor (prolactin secreting adenoma) – often associated with spontaneous galactorrhea – clear or milky nipple discharge

CASE STUDY:

Name of patient	Muna
Sex	Female
Date of Birth	[redacted]
Date of visit	5 April 2000

Vital Signs	pulse 82/min B/p 120/80 weight 80 kg height 168

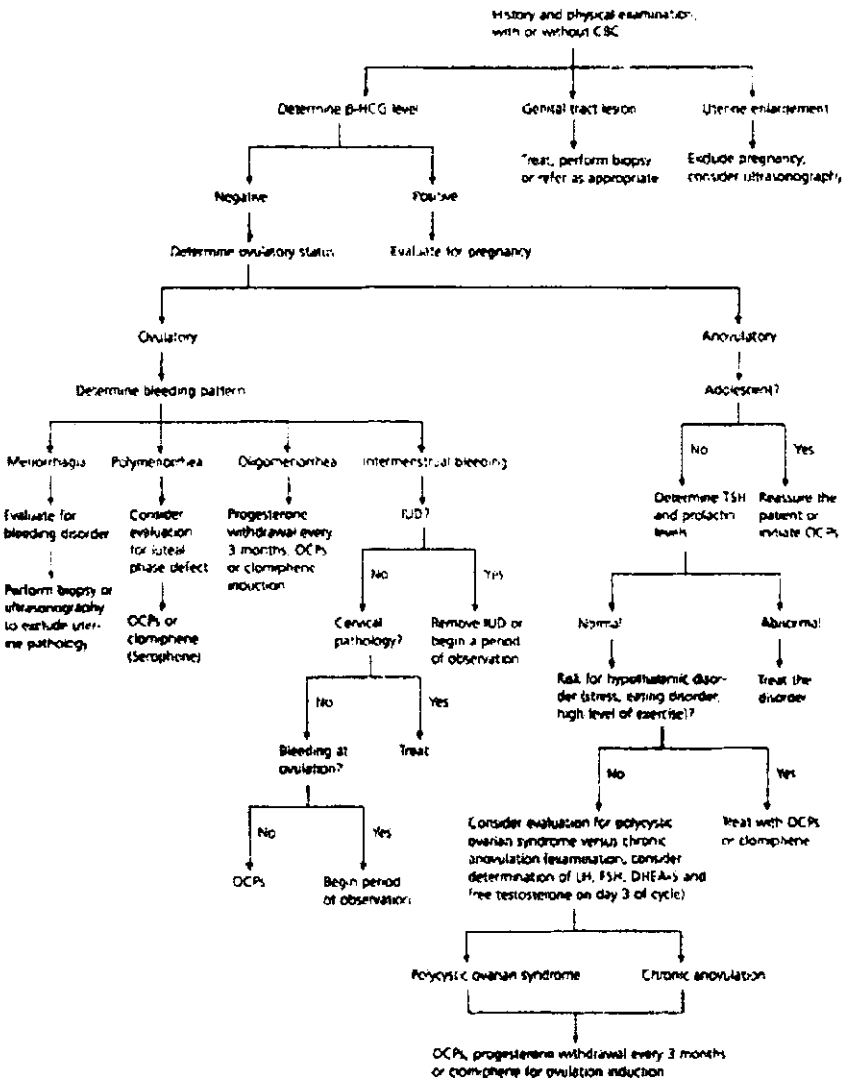
Medical History: She is complaining heavy infrequent periods, which has been worse over the past year. She has a period every 40 to 60 days which lasts for 10-14 days.
Upon questioning, she has suffered from irregular periods for the past 20 years, uses barrier contraception.
Mother of three children, she had fertility treatment prior to the first pregnancy.

Physical examination:
Over weight, acne but not hirsute.
Pelvic examination revealed no abnormality

Topics of discussion regarding case study:
- What additional elements in the history should be asked?
- What additional elements in the examination should be done?
- What is the appropriate plan of management?

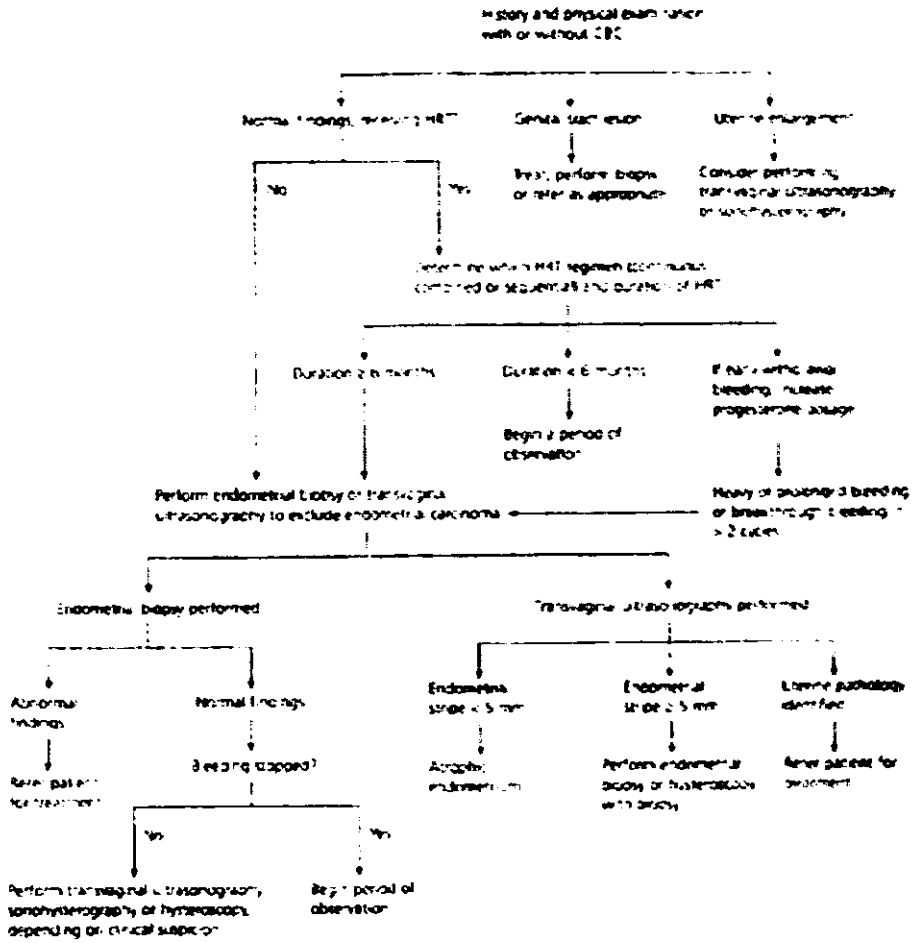
CRITICAL ELEMENTS FOR REFERRAL
- Presence of structural abnormality such as cervical polyp, cervical or vulvar mass, etc.
- Suspicion of bleeding abnormality
- Suspicion of malignancy such as cervix or endometrium
- Bleeding during pregnancy
- Evidence of systemic disease, such as thyroid, hepatic, or renal disease
- Persistant irregular bleeding in a peri-menopausal woman, or in any woman who is post-menopausal

Initial Approach to Abnormal Uterine Bleeding in Premenopausal Patients



BEST AVAILABLE

Initial Approach to Abnormal Uterine Bleeding in Postmenopausal Patients



BEST AVAILABLE

TREATMENT OPTIONS FOR ABNORMAL UTERINE BLEEDING

Age group	Treatment*	Comments
Premenopausal	Oral contraceptives	Low-dose (35 µg) monophasic or triphasic oral contraceptives can regulate cycles while providing contraception.
	Medroxyprogesterone, 10 mg per day for 10 days	If contraception is not an issue, medroxyprogesterone can be used to regulate cycles. In a woman who has amenorrhea or oligomenorrhea, medroxyprogesterone every 3 months can protect against endometrial hyperplasia.
	Clomiphene, 50 to 150 mg per day on days 5 to 9	Can induce ovulation in a woman who desires pregnancy. If no response or no pregnancy in 3 to 6 months, referralis appropriate.
Perimenopausal	Medroxyprogesterone, 10 mg per day for 10 days	May use monthly to regulate bleeding patterns.
	Oral contraceptives	Usually use 20-µg pills. Can continue oral contraceptives until a woman has finished menopause and then change to HRT. (May be a relative contraindication in women >35 years of age who smoke.)
Postmenopausal (receiving HRT)	Cyclic HRT	May consider increasing the progesterone dose if early withdrawal bleeding occurs. Increase the estrogen dose if intermenstrual bleeding is present.
	Continuous combined HRT	May increase the estrogen dose for 1 to 3 months to stabilize the endometrium. May also try increasing the progesterone dose. If bleeding continues, consider changing regimen to cyclic HRT or using a different type of estrogen.

HRT = hormone replacement therapy.
*--All pathologic, structural and iatrogenic causes excluded.