Risk Factors Assessment and Screening Procedures

MODULE 2

MODULE 2 Risk Factors Assessment and Screening Procedures

Health workers in their everyday fieldwork engage individuals, families and home care providers toward partnerships in health promotion and wellness. They help people create a sense of awareness in the community to understand health protective behaviors.

The 7th National Nutrition Survey Philippines (2008) shows the increasing trend on prevalence of risk factors of major NCDs compared to the 2003 survey. Research studies have shown the link between NCDs, such as cardiovascular disease, hypertension, diabetes, and certain risk factors.

To be effective in the prevention and control of major NCDs, health workers need competencies in risk factors assessment and screening procedures. This module aims to walk the health worker through the process of gaining the competencies in risk factors assessment and screening procedures. Health workers can contribute towards early identification and in modifying risk factors, and thus help prevent the so-called lifestyle-related diseases.

Prevention of diseases works well to ease the economic and social burden of families brought about by chronic illnesses. Maintaining health facilities for chronic illness demands high economic costs. Strategies to prevent lifestyle related diseases offer a logical alternative.

Objectives

At the end of this module, you should be able to:

1. Explain the importance of risk factors assessment for possible NCDs
2. Discuss common risk factors of major NCDs
3. Performs risk factors assessment for clients based on recommended guidelines and using appropriate tools
4. Discuss the concepts and principles of screening for major NCDs
5. Demonstrate correct techniques of common screening procedures based on current guidelines for early detection of major NCDs.

2.1 Risk Factors and Risk Factors Assessment

The basis of NCD prevention is the identification of the major common risk factors and their prevention and control. A risk factor refers to any attribute, characteristic or exposure of an individual, which increases the likelihood of developing NCD (WHO, 2001). Assessment of these risk factors and screening for NCDs in individuals and communities are important in preventing and controlling future diseases.

A risk factor is different from a causative factor. Etiologic or causative factor provides a direct explanation of a disease, that is, it will definitely lead to disease. On the other hand, the presence of risk factor means the disease is most likely to develop. Risk factors are associated with life-long habits and the process usually begins in childhood. There are two general classifications of risk factors: modifiable and non-modifiable (see Table 2.1).

Table 2.1 Classification of risk factors of NCDs

Non-modifiable risk factors	**Non-modifiable risk factors**	
	Common	*Intermediate*
Heredity/family history	Unhealthy diet	Raised blood sugar
Gender	Physical inactivity	Raised blood pressure
Increasing Age	Tobacco and alcohol use	Abnormal blood lipids
		Overweight/obesity

Risk factors assessment basically involves **history taking**, and **taking of simple measurements**, which become the basis of classifying whether the person is at risk or not. Thus, the health worker is to obtain the health history of the client and get anthropometric measures for more objective data.

Risk factors assessment requires thoroughness, completeness and accuracy in obtaining information and measurements, as well as observation of ethical consideration and cultural sensitivity.

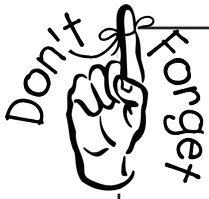
The health history consists of subjective data gathered by interviewing the patient or family member or both. For purposes of risk factors assessment, all that is need is a brief focused interview. However, the way in which interview is conducted directly affects the accuracy and completeness of the information.

The following guidelines are recommended to help ensure that data gathered are accurate and complete.

Table 2.2 Guidelines in Information Gathering

1. Establish rapport. This is an important starting point. One should assume a non-judgmental approach during the interview.
2. Explain the purpose of the interview.
3. Communicate with clarity, orderliness and direction.
4. Allow expression of feelings. This will help establish a better working relationship with patients/ clients and their families
5. Conduct the interview in a quiet, private area to ensure comfort and confidentiality.
6. Use open–ended questions to allow patients to express their thoughts and feelings.
7. Observe too your time management during interview.
8. Show understanding for people of low socioeconomic status, and/ or those with obvious disparities in socioeconomic status, as well as for those with different ethnic or cultural orientation
9. Give attention to women and older persons. Studies have shown that they are part of the high-risk group.
10. Pace the interview for older patients. They may tire easily. Be sensitive to their expressions.
11. Summarize data when interview is complete.

Health workers encounter people of many different backgrounds in their everyday practice. The differences may arise from ethnicity, language or dialect, religion, health practices. Health workers should be aware of the differences and recognize how they affect wellness, illness and health care practices. Health workers are encouraged to extend sensitiveness to cultural differences, show respect of each person's values and respond in a non- judgmental way. Putting some principles on culture-sensitiveness and ethics can help ensure valuing of clients. This also helps in verifying accurateness of information gathered.



Importance of risk factors assessment

The risk factors contributing to NCDs should not be viewed in isolation. It becomes important to look into the whole person and take all the risk factors into consideration. Take for example a person who is a smoker, might be obese and has poor eating habits, and might have developed high blood pressure and raised blood cholesterol. The risk associated with another risk factor is determined by all aspects of lifestyle.

2.2 Common Risk Factors of Major NCDs

To be able to deliver the package of services on risk factors assessment, the health worker need to have a working knowledge of the related attributes of risk factors. Data from the National Nutrition and Healthy Survey (2008) provide bases for the need to look into the risk factors for Filipinos. The study was based on a survey of 7707 adults over 20 years old, from 2859 sampled households.

COMMON RISK FACTORS OF MAJOR NCDs

- Raised blood pressure
- Raised blood sugar
- Abnormal blood lipids
- Overweight/obesity
- Smoking
- Unhealthy diet
- Physical inactivity
- Stress

- Raised blood pressure – The prevalence of hypertension was 25.4% based on a single blood pressure determination of 140/90 mmHg, and a questionnaire if there was a previous diagnosis. See Appendix 2.1 on Blood Pressure Measurement Procedure Checklist.

- Raised blood sugar – The prevalence of diabetes was 7.1%, based on combination of measures – either high levels of fasting blood sugar (FBS) or 2H- PPBS or using diabetes questionnaire.

- Abnormal blood lipids – The prevalence was based on lipid profile: high total cholesterol (>240mg/dl) was 10.2%, high LDL cholesterol (>160 mg/dl) was 11.8%, high triglyceride (>200 mg/ dl) was 14.6% and low HDL (<40 mg/ dl) was 64.4 %. Lipid profile is a battery of tests that measure the most common serum lipids: cholesterol, triglycerides.

- Overweight/obesity - In the NNHeS (2003), the prevalence of obesity was 3.2% in men and 6.6% in women when body mass index (BMI) was used, and the rates rose to 12.1% and 54.8%, respectively when waist- hip ratio (WHR) was used.

Obesity or overweight can best be assessed using the Body Mass Index (BMI). The BMI is a measure of body fat based on height and weight. It is calculated by dividing the person's weight in kilograms (kg) by the height in meters squared (m^2). Central obesity is defined as a waist-to-hip ratio (WHR) of 1.0 and over in men, and 0.85 in women.

When classifying being overweight and obese in children and adolescents, it is important to look into the changes in body composition during growth. Thus, for children, taking the weight measurement and the use of the weight-for-age and weight–for-height tables will help determine the desirable weight.

Table 2.3 Degree of Risk Based on Body Mass Index and Waist Circumference

CLASSIFICATION	WAIST CIRCUMFERENCE	BMI	WAIST-HIP RATIO
Underweight		< 18.5	
Healthy weight	Males: < 90 cm Females: < 80cm	18.6- 22.9	Males: <1.0 Females: <0.85
Overweight		> 23.0	
At Risk	Males: > 90 cm Females: > 80 cm	23.0 – 24.9	Males: > 1.0 Females: > 0.85
Obese 1		25.0 – 29.9	
Obese 2		> 30.0	

Source: DOH Manual of Operations on NCD Prevention and Control, 2009

- Smoking – The prevalence of current smoking was 56.3% in men, 12.1% in women, and 34.8% overall. In assessing use of tobacco or smoking, it is essential to determine: (1) the smoking status (smoker or non-smoker); (2) the trend in client's smoking practice; and (3) exposure to second-hand smoke.

- Unhealthy diet – This normally require a comprehensive assessment, which includes: (1) a detailed food recall, (2) an extensive questionnaire on food frequency, and (3) estimation of food nutrients using the Food Composition Table and Food Exchange List. Ask about the amount and frequency of food eaten particularly vegetables, fruits, fat, sodium or salt, and sugars or simple carbohydrates.

- Physical inactivity – In assessing physical inactivity, obtain information on the following areas: a) occupation or type of work of the individual clients, b) means of transportation, and c) type of leisure activities, like sports and formal exercise.

- Stress - Determine if the individual is suffering from any form of stress. This may come in the form of physical, emotional, psychological, mental problem or issue. Try to establish the degree or extent of stress or pressure the individual is subjected to day to day. Find out the specific factors causing the individual to be stressed or under pressure.

The following table shows eight of the risk factors are associated with the likelihood of developing a cardiovascular disease.

Table 2.4 Common Risk Factors of Leading Noncommunicable Diseases

	Major Noncommunicable Diseases			
Risk Factor	**Cardiovascular diseases+**	**Diabetes**	**Cancer**	**Respiratory conditions++**
Smoking	Yes	Yes	Yes	Yes
Nutrition/ Diet	Yes	Yes	Yes	Yes
Physical inactivity	Yes	Yes	Yes	Yes
Obesity	Yes	Yes	Yes	Yes
Alcohol use	Yes	-	Yes	-
Raised Blood Pressure	Yes	Yes	-	-
Increased Blood Glucose	Yes	Yes	Yes	-
Increased Blood Lipids	Yes	Yes	Yes	-

\+ Coronary Heart Disease, Stroke, Hypertension
++ Chronic Obstructive Pulmonary Disease (COPD), and Asthma
Source: WHO STEPwise Approach to Surveillance of NCD Risk

3. Guidelines and Approaches to Risk Factor Assessment

3.1 WHO STEPwise Approach to Surveillance (STEPS)

The World Health Organization developed a tool to help assess risk factor profiles- the STEPwise approach to Surveillance (STEPS), which collects risk factor data as follows:

- Step 1: Collecting questionnaire-based information about diet and physical activity, tobacco use and alcohol consumption;
- Step 2: Using standardized physical measurements to collect data on blood pressure, height and weight;
- Step 3: Expanding physical measurements with the collection of blood samples for measurement of lipids and glucose status.

An assessment of the physical and social environment can also be done, to include but not limited to the following:

- Determining existence of policies and local legislations that promote healthy lifestyle or discourage NCD risk factors
- Stakeholders profile to map up individuals and groups that can be potential partners, targets or beneficiaries for NCD interventions
- Capability assessment of local health system to respond to NCD prevention and control

3.2 Life span approach

It is important to consider all groups that are most vulnerable to NCDs.

- Pregnant and lactating women
- Parents or care providers of infants and children
- Adolescents
- Older persons

3.3 Guidelines in Risk Factors Assessment

- Risk Factors Assessment must be integrated into the routine history taking of every health facility whether this be a BHS, RHU, hospital or other settings where screening of individuals can take place as in school clinics, corporate clinics, and clinics of private practitioners.
- Risk factors assessment must be administered to all clients who come in for consultations in the health facility, whether for specific complaints related to NCDs or other presentations.
- Risk factors assessment must even be administered to individuals who are well, but come in for follow–up services (e.g. pregnant women, lactating women, children brought in for immunization, etc.)
- Risk factors assessment tool must be harmonized across levels of the health care delivery system.
- Once risk factors assessment has been completed, assess the meaning of the information.
- Validate with the client some of the information that needs clarification. By engaging in an interaction, health workers communicate valuing and good intentions.
- Clients may take opportunity to clarify some symptoms that may have been bothering them or a member of their family. The client now and his family becomes part of the health care delivery scenario
- Maintain a system of monitoring and follow-up visits. Keep records of follow-up and monitor progress of client. The health worker collaborates with other members of the health team to ensure continuity of service.

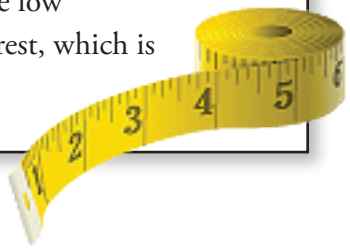
3.4 Guidelines for anthropometric measurements

3.4.1 Waist Circumference

Waist circumference (WC) is the most sensitive indicator of adiposity. It is determined by using a non-extensible/ non-stretchable tape measure that is placed around the waist.

Two suggested points for waist measurement are recommended:

- At the level of the umbilicus. However with this method, in the very overweight people, the "umbilicus" level may be quite low
- Mid way or between the last rib and the supra iliac crest, which is preferred because of more stable landmarks.



3.4.2 Body Mass Index

Body Mass Index (BMI) is defined as the body weight divided by the square of the height (wt/ht^2), and is usually expressed in metric terms (kg/m^2). Weight and height should be determined with calibrated scales.

Measures needed:

- Weight in kilogram (if weight in lbs./ 2.2 = kg. weight)
- Height in centimeters (if height in inches X 2.54 = height in cm.)

3.4.3 Waist-Hip-Ratio (WHR)

This is obtained by dividing the waist circumference at the narrowest point by the hip circumference at the widest point.

$$\text{WHR} = \frac{\text{Waist Circumference (cm)}}{\text{Hip Circumference (cm)}}$$

3.5 Risk Factors Assessment Form

A risk factors assessment form can be designed to collect minimum amount of information about diet and physical activity, tobacco use and alcohol consumption and obtaining data on physical measurements such as blood pressure and anthropometric measurements.

Table 2.5 Guide in Using the Risk FactorsAssessment Form

A. Who shall undergo risk assessment?
   1. All adults/youth except emergency cases who are seeking consultation at the health facility;
   2. All adults/youth accompanying children or other adults/youth;
   3. All adults/youth attending the specialty (diabetes/cardiovascular clinics)

B. When is the risk assessment done?
   1. The risk assessment is done at least monthly or not more than once a month;
   2. The client shall undergo risk assessment after registering.

C. Who does the risk assessment?

   The service provider who admits the client completes the Risk Assessment Form. However, the measurement of height, weight and waist circumference can be done by the barangay volunteer workers.

D. How is the risk assessment done?
   1. Issue one risk assessment form per client.
   2. Record the date – month, day and year.
   3. Ask for the client's complete name: (Last name, First name and Middle initial) and record
   4. Ask for the client's date of birth (month/day/year) and age of his/her last birthday and record.
   5. If the client is a female, ask for the date of the first day of her last menstrual period and record. If client has missed a period and is not aware that she may be pregnant, proceed to confirm the pregnancy and provide prenatal care – issue Mother and Child Book and complete prenatal form.
   6. If client is married or has sexual partner, ask for FP method they are using and where they access FP services and record. If none, ask if he/she desires to practice FP and proceed accordingly.
   7. With the use of the clinical thermometer, take the client's axillary temperature and record
   8. Take the client's radial pulse in one full minute and record.
   9. Take the client's BP (make sure he/she is fully rested for at least 5 minutes) and record. If BP is above 135/80, put a check mark on the box for at risk and manage accordingly. If the blood pressure is equal or below 135/80, put a check mark on the box for not at risk.

10. Using the adult height board, take client's height in centimeters and record. Using the Detecto Weighing Scale, (beam balance), take client's weight in kilograms and record. Compute for the Body Mass Index, and categorize based on the formula below:

Classification	**BMI**
Underweight	< 18.5
Normal	18.6 – 22.9
Overweight	> 23.0
At risk	23.0 – 24.9
Obese I	25.0 – 29.9
Obese II	> 30.0

If the client is overweight (BMI is > 23), check the box for at risk and counsel accordingly.

11. With the use of tape measure, take the client's waist circumference in centimeters and record.

Sex	**Waist Circumference**	
	Not At Risk	**At Risk**
Male	< 90	> 90
Female	< 80	> 80

If the client's waist circumference falls under the at risk classification, check the appropriate box and counsel accordingly.

12. Ask the client if he/she regularly smokes cigarettes. Check appropriate box. If he/she smokes, and has made attempts to quit smoking, put a check mark on "Attempts to Quit Smoking."
13. Ask client if he/she is exposed to second hand cigarette smoke at work and/or at home. If yes, put a check on the appropriate box.
14. Ask client if he/she regularly consumes alcoholic beverages and check the corresponding box.

15. Ask the client if he/she indulges in physical activity for at least 30 minutes per day three or more times a week. If yes, check the box on physically active. If not, check the box for sedentary.
16. Ask the client for the dates of her latest clinical breast examination and acetic acid wash or papsmear exam. If he/she is due for these, provide the services if the timing is appropriate. If not, give her an appointment for these services.
17. Print your name and sign over it.
18. After completing the Risk Assessment Form and counseling, proceed to deliver the services for which the client came to the health facility for.

RISK FACTORS ASSESSMENT FORM

Name:	Birthday/Age:	Date of Visit:
Address:	Civil Status:	Sex:

A. Non-Modifiable Risk Factors

Family History of:	
Hypertension _____yes _____ no	
Cardiovascular disease _____yes _____ no	
Diabetes mellitus _____yes _____ no	
Asthma _____yes _____ no	
Cancer _____yes _____ no	

B. Modifiable Risk Factors

Cigarette/Tobacco Smoking	Alcohol Drinking
☐ Never smoked ☐ Passive smoker ☐ Current smoker No. of cigarettes per day:_____	☐ Never ☐ Alcohol Drinker: In the past month, how many times did you have 5 drinks in one occasion? _____

Age started smoking: _____ No. of Attempts to Quit: _____ Any desire to quit?: ___ Yes ___ No ☐ Ex-smoker Age started smoking: _____ Age quit smoking: _____ No. of cigarettes per day: _____	Type of Alcohol: _____ Frequency of Intake : beer _____/day wine _____/week distilled spirits _____/month
Physical Activity Type of work/occupation: _____ Means of travel to work :_____ Activities other than work: _____ _____ ☐ Sedentary ☐ Active	Intake of High Fat/high Salt Foods How often do you eat fast foods (e.g. instant noodles, hamburgers, french fries, fried chicken skin, etc.) and ihaw-ihaw (e.g. isaw, adidas, etc.)? _____ times per _____
Dietary Fiber Intake: Servings of fruits per day : _____ _____adequate _____inadequate Servings of vegetables per day: _____ _____adequate _____inadequate	Hypercholesterolemia: NValues ☐ elevated total cholesterol ( ) ☐ elevated LDL ( ) ☐ elevated triglycerides ( ) ☐ Low LDL ( )
Diabetes Mellitus: NValues Have you been diagnosed with diabetes mellitus? Yes No Date of Diagnosis: _____ FBS: _____	Stress: Do you often feel stressed? Yes No What are the sources of your stress?

B. Anthropometric Measurement and Blood Pressure

Date	Height (cm)	Weight (kg)	BMI	Waist (cm)	Hip (cm)	W/H Ratio	Nutritional Status			Blood Pressure	Hypertension	
							<N	N	>N		Y	N

D. Cancer Screening

(Specify date last service given if applicable)

FOR MALES
- Digital rectal exam: _____

FOR FEMALES
- Clinical breast exam: _____
- Acetic Acid Wash: _____
- Pap smear: _____

Summary:

CLIENT NOT AT RISK: _____
- ☐ Client DOES NOT have any of the risk factors
- ☐ AFFIRM healthy lifestyle practices, CONGRATULATE client.
- ☐ PROCEED with health education on healthy lifestyle:
    - o REGULAR PHYSICAL ACTIVITY
    - o NUTRITION AND DIET
    - o NO SMOKING
    - o NO ALCOHOL DRINKING

CLIENT AT RISK: _____
- ☐ CLIENT found to have at LEAST ONE of the risk factors.
- ☐ PROCEED with education on LIFESTYLE MODIFICATION.
- ☐ REFER for Screening for NCD and other diagnostic tests

4. Concepts and Principles in Screening

Screening is a service component towards promoting healthy lifestyle and preventive interventions. Risk factor assessment is an important component of screening procedures. Individuals identified with high-risk factors need to be further screened for the possible presence of a disease. Screening focuses on the principle that before a disease develops, there is an asymptomatic period. During this time, risk factors predisposing a person to the pathologic condition sort of builds up to produce certain manifestations. The screening procedures, often in the form of simple tests- when applied during this stage can help identify the individual's chances of becoming ill.

Screening is the "presumptive identification of unrecognized disease or defect by the application of tests, examination or other procedures which can be applied rapidly. The primary goal of screening is to detect a disease in its early stages to be able to treat it and prevent its further development. It must be understood that screening is not a diagnostic measure but it is a preliminary step in the assessment of the individuals' chances of becoming unhealthy.

Individual Screening refers to the testing applied to one person considered to be at high risk for a disease or condition (e.g. Pap smear for possible cervical cancer, digital rectal exam for possible prostate cancer, etc.)

Group or Mass Screening refers to tests applied to a segment of population which portray any of the following situations:

- an increased incidence of a condition;
- a significant prevalence of the condition; and
- a recognized element of high risk within the group.

To really benefit from screening, the health care provider should encourage the individual, if found positive to seek further investigation and/or take direct preventive action. It must be understood that screening is not a diagnostic measure but it is a preliminary step in the assessment of the individuals' chances of becoming unhealthy.

Screening is usually disease-specific. Hence, specific screening tests are applied for each of the following diseases.

Hypertension: A sustained elevation in mean arterial pressure which results from changes in the arterial wall such as loss of elasticity and narrowing of blood vessels, leading to obstruction in blood flow that can damage the heart, kidney, eyes and brain

Elevated Blood Cholesterol: Defined by having cholesterol level higher than normal levels which is either classified as elevated may be at risk (200-239 mg/100 ml) and elevated at risk (≥240 mg/100 ml)

Diabetes Mellitus: A genetically and clinically heterogeneous group of metabolic disorders characterized by glucose intolerance with hyperglycemia present at time of diagnosis elevated amount of sugar in the blood

Cancer: Growth of abnormal cells in specific parts of the body much faster than normal cells do, thus outliving them and continue to compete for blood supply and nutrients that normal cells need

COPD: Characterized by airflow limitation that is not fully reversible. It is usually both progressive and associated with abnormal inflammatory response of the lungs to noxious particles or gases

Asthma: An inflammatory disorder characterized by increased airway hyper-responsiveness manifested by a widespread narrowing of air passages, which may be relieved spontaneously or as a result of therapy. Other clinical manifestations include paroxysm of breathlessness, chest tightness, breathing and coughing.

The screening tests to be applied per disease, the classifications of the results obtained from the tests and guides for frequency of tests or interpretation are summarized in Table 2.6.

The following will guide you as you screen clients:

- Remember that screening is only a way to detect if individuals are at risk or with possible disease. Hence, DO NOT LABEL individuals as "hypertensive" "diabetic" or "asthmatic" at this stage since it may result in extreme anxiety on the part of the client and their families.
- If screening turns out to be positive, there is a need to further confirm the diagnosis and repeat the test or refer clients to appropriate institutions if the condition warrants specialized diagnosis and treatment.
- On the other hand, if the result is negative, it does not also mean that a person is disease free. It is best to schedule client for a repeat testing
- Inform clients of the meaning and limitations of the results. Explain that this can contribute to the development of the disease if not controlled.
- Educate clients how to modify the risk factors and promote positive lifestyle change.
- Monitor and follow-up clients based on the recommended schedule.

If risk factors are present:

- **CONFIRM** re-testing if needed and determine frequency of re-testing. For example, a client with 140/90 BP is classified to be in Stage 1 and needs to be confirmed in two months.
- **EXPLAIN** the significance of the finding as this can contribute to development of disease if not controlled.
- **EDUCATE** client on how to modify risk factors and promote positive lifestyle change.
- **MONITOR** and follow-up client based on recommended schedule.
- **REFER** for confirmation of diagnosis (especially if screening was done by a non- doctor) to a medical specialist or specialized facility if condition warrants specialized diagnosis and treatment.

Table 2.6 Recommended Screening Tests and Classifications by Disease

Disease	Screening Tests Recommended	Classification			Remarks
Hypertension	Determined by taking the blood pressure through the auscultatory method using an aneroid BP apparatus but make sure that the needle points to zero and that it is properly calibrated	**Mean BP in mmHg**		**Classification**	**Recommended Confirmation Schedule**
		systolic	**diastolic**		
		< 120	< 80	Normal	Recheck in 2 years
		120-139	80-89	Prehypertension	Recheck in 1 year
		140-159	90-99	Stage 1	Confirm within 2 months
		≥ 160	≥ 100	Stage 2	Evaluate or refer to source of care within 1 month. For those with higher pressures (e.g. >180/110 mmHg), evaluate and treat immediately or within 1 week depending on clinical situation and complications

Disease	Screening Tests Recommended	Classification		Remarks
Elevated Cholesterol in the Blood	Cholesterol levels are measured by taking a small blood sample and testing for total blood cholesterol including low density lipoprotein (LDL) and high density lipoprotein (HDL)	**Cholesterol Level**	**Interpretation**	**Frequency of Tests**
		<200 mg/100 ml	Normal	Repeat every 5 years
		200-239 mg/100 ml	Elevated, may be at risk	Repeat tests, take average of both tests
		240 mg/100 ml and above	Elevated at risk	Further tests needed (lipid profile and treatment)
Diabetes Mellitus	Fasting Blood Sugar (FBS): defined as no caloric intake for at least 8 hours which means no food, juices, milk but water is allowed Two-Hour Blood Sugar Test: This is performed after using 75g glucose dissolved in water or after a good meal	**FBS Values**	**Classification**	**Criteria for Diagnosis of Diabetes Mellitus**
		109 mg%	Normal	Any of the ff:
		110-125 mg%	Impaired glucose tolerance	(1) symptoms of diabetes plus plus RBS > 200 mg/ dL (11.1 mmol/L)
		126 mg%	Possible diabetes mellitus	(2) FBS > 126 mg/dL (7.0 mmol/L) (3) Two-Hour Blood Sugar > 200 mg/ dL (11.1 mmol/L) during an OGTT (oral glucose tolerance test)

Cancer	Types of Cancer	Screening Tests
	Breast Cancer	(i) Clinical Breast Exam, and (ii) Breast Mammography
	Cervical Cancer	Acetic Acid wash, and (ii) Pap Smear
	Colon Rectal Cancer	Annual Test: (i) digital rectal exam (ii) stool blood test (iii) inspection of colon
	Prostate Cancer	Digital Rectal Exam
	Lung Cancer	(i) Chest X-Ray every 6 months (ii) Sputum cytology
COPD	Spirometry is done to determine the degree of obstruction	Suspect COPD in persons with the following: (i) > 50 years old (ii) smoking for many years (iii) with symptoms of progressive and increasing shortness of breath on exertion and/or (iv) chronic productive cough
Asthma	Spirometry can aid in diagnosis. Can also be achieved by measuring the peak expiratory flow rate using a peak flow meter before and after using a bronchodilator	Suspect asthma person with the following: (i) one or a combination of cardinal symptoms (dyspnea, cough, wheezing, chest discomfort) (ii) temporal waxing and waning and/or nocturnal occurrence of symptoms (iii) a history of any of the following: symptoms triggered by exogenous factors, a family history of asthma or allergy, a personal history of asthma, allergic rhinitis or atopy; an improvement of symptoms with bronchodilator use

4.1 Hypertension

- Blood pressure measurement

Detecting high blood pressure is a form of secondary prevention in relation to hypertension but it is a primary prevention for atherosclerosis, coronary & brain strokes, nephropathy, peripheral vascular disease, and aortic aneurysms. It is in fact considered a silent killer in the etiology of many deaths attributed to coronary and brain strokes.

Diagnostic criteria in terms of SBP and DBP vary according to type of hypertension, whether essential or secondary. In screening, certain cut off points and borderline measures provide a guide for decisions. Management of hypertension based on the Manual of Operations for Prevention and Control of Chronic Lifestyle-Related NCDs in the Philippines are described in Appendix 2.6 of this module.

Table 2.7 Recommendations for follow-up based on initial blood pressure measurements for adults without acute end organ damage

BP Classification (Initial Measure)	Systolic BP* (mmHg)	Diastolic BP* (mmHg)	Follow-up Recommended**
NORMAL	<120	< 80	Recheck in 2 years
Pre Hypertension	120-139	80 - 89	Recheck in 1 year***
Stage 1 Hypertension	140-159	90 – 99	Confirm within 2 months***
Stage 2 Hypertension	≥ 160	≥ 100	Evaluate or refer to source of care within 1 month. For those with higher pressures (e.g. >180/110 mmHg), evaluate and treat immediately or within 1 week depending on clinical situation and complications

* If systolic and diastolic categories are different, follow recommendations for shorter time follow-up (e.g. 160/86 mmHg should be evaluated or referred to source of care within 1 month

**Modify the scheduling of follow up according to reliable information about past BP measurements, other cardiovascular risk factors, or target organ disease

***Provide advice about lifestyle modification

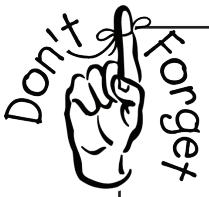
Source: Joint National Commission on Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)

The "Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003)" has the following key messages:

- In persons older than 50 years, systolic BP greater than 140 mm Hg is a much more important cardiovascular disease (CVD) risk factor that diastolic blood pressure.
- The risk of CVD beginning at 115/75 mm Hg doubles with each increment of 20/10 mm Hg; individuals who are normotensive at age 55 have 90 % lifetime risk for developing hypertension
- Individuals with a systolic BP of 120- 139 mm Hg or a diastolic BP of 80-89 mm Hg should be considered as prehypertensive and require health promoting lifestyle modifications to prevent CVD.

Because of the high incidence of increased blood pressure, it should be a major commitment of every health care provider to detect and manage hypertension. There are two major strategies for detection of hypertension which are commonly utilized in community settings:

- Case finding through home visits - Each encounter with clients should always present an opportunity for the nurse to detect hypertension.
- Mass screening- through organized community programs, a bigger majority of community dwellers can be checked for presence of hypertension.



- When assessing for raised blood pressure (BP), indicate whether measurement is for a single visit only, or whether there was a previous diagnosis made by a nurse or a doctor. When situation permits, preferably take 2 BP measurements at different time intervals to ascertain high BP.

- The most accurate and reliable technique for indirect BP measurement is the auscultatory method. It is important that BP apparatus are calibrated regularly for accurate measurement.

4.2. Dyslipidemia

Health care providers should likewise be knowledgeable about blood cholesterol estimation. As blood cholesterol increases, the risk of coronary heart disease (CHD) increases. Cholesterol is an important part of the outer lining or membrane of cells in the body. However, only a small amount is needed to maintain healthy nerve cells and to produce certain hormones.

Cholesterol is produced in the liver but can also be obtained in your diet mainly in foods that come from animals. These include meat, poultry, fish and dairy products. Foods of plant origin have no cholesterol. The recommended amount of dietary cholesterol is not more than 300 mg/day.

Cholesterol is carried in the bloodstream to the body's cells by special proteins called lipoproteins. The two major lipoproteins are low-density lipoprotein (LDL) and high-density lipoprotein (HDL).

- High-density lipoproteins (HDL) have the lowest concentration of cholesterol and transport endogenous cholesterol to body cells. High concentrations of HDL seem to protect against development of CHD.
    - o Lower in men than in women
    - o Increased by exercise, low fat and low cholesterol diet

- Low-density lipoproteins (LDL) have the highest concentration of cholesterol and transport endogenous cholesterol to body cells. It is incorporated in the fatty plaques that develop in the lining of the artery wall.
    - o Higher in men than women
    - o Increased by androgens, smoking, obesity, sedentary lifestyle, high saturated fat intake and certain drugs

LDL is the major cholesterol carrier in the blood. It is one of the most important measures for risk of heart disease. The higher your level of LDL cholesterol, the greater your risk for coronary heart disease. The value of your LDL will likely be used as the starting point for your treatment plan. For people without coronary heart disease a desirable LDL is below 130 mg/dL.

Lipid profile

	Cholesterol level	***Interpretation***	***Frequency of tests***
Measured by taking a small amount of blood sample (7 ml) and testing for total blood cholesterol including LDL and HDL	<200 mg/100 ml	Normal	Repeat every five years
	200-239 mg/100 ml	Elevated, maybe at risk	Repeat tests, take average of both tests
	240 mg/100 ml and above	Elevated at risk	Further tests (lipid profile & treatment)

4.3. Diabetes Mellitus

The most common symptoms of diabetes are:

- *Frequent urination and thirst:* The glucose in the urine draws more water out of the blood, so more urine forms. More urine in the bladder makes one feel the need to urinate more often. As the amount of water in the blood declines, one feels thirstier and drinks much more frequently.

- Weight loss: It is common because of the lack of insulin, which is a builder of hormone. When insulin is lacking, the body begins to break down. One loses muscle tissue as fat tissues break down. Their breakdown products are being used as alternate sources of energy.

Diagnosis and Classification

1. The diagnosis of diabetes is based on **blood testing**, which wherever possible should use venous samples, not capillary.

2. For population screening purposes, the fasting or 2-hour value after 75 g oral glucose may be used alone. For clinical purposes, the diagnosis of diabetes should always be confirmed by repeating the test on another day unless there is unequivocal hyperglycemia with acute metabolic decompensation or obvious symptoms.

3. Most screening programs use either a fasting or a random glucose measurement as the first step. However, studies have shown that a significant proportion of people may be incorrectly classified as normal by a single screening test, unless an oral glucose tolerance test (OGTT) is performed.

It is recommended that OGTT be performed on all people who have high normal fasting or random glucose values: FPG of 5.6-6.90 mmol/L, or a random plasma glucose of 5.6-11.0 mmol/L.

4. The following table shows the values for the diagnosis of diabetes and other categories of hyperglycemia. For the clinical management of diabetes, refer to Appendix 2.3

Type of Testing	FBS Values	Classification	Criteria for Diagnoses of Diabetes Mellitus
Fasting blood sugar (FBS) - no caloric intake for at least 8 hours which means no food, juices, milk, but water is allowed	109 mg% 110- 125 mg% 126 mg%	Normal Impaired glucose tolerance Possible diabetes mellitus	Any of the following: Symptoms of diabetes plus RBS> 200 mg/dL (11.1 mmol/L) FBS> 126 mg/ dL (7.0 mmol)
2-hour blood sugar test: performed after using 75 g glucose dissolved in water or after a good meal			2-hr blood sugar > 200 mg/ dL (11.1 mmol/L) during an oral glucose tolerance test (OGTT)*

* FPG estimation is the biochemical test of choice for screening in all age groups. In adults, FPG measurement has been found to be more reproducible than the 2-hour plasma glucose level following an OGTT.
**OGTT is the gold standard for diagnosing diabetes and can be used as a screening test.

4.4. Cancer

Cancer assessment involves careful systematic evaluation of a person's medical, family, social, cultural, psychological and occupational history and physical examination. The physical examination for a person in whom cancer is suspected should include all body systems with an emphasis on identifying deviations from normal structure and function.

CANCER WARNING SIGNS

- **C**hange in bowel or bladder habits – more frequent stools, as well as a feeling that bowels are not emptying completely or chronic "acid stomach" or feeling full after a small meal
- **A** sore that does not heal – usually sore should heal; like the oral sores, usually it is self limiting and should heal within two weeks
- **U**nusual bleeding or discharge – blood in urine or semen; excessive bruising or bleeding that does not stop

CANCER WARNING SIGNS

- **T**hickening or lump in the breast or elsewhere – scaly or painful nipple or chest, nipple discharge; swollen lymph nodes or lumps on the neck, underarm, or groin
- **I**ndigestion or difficulty of swallowing – frequent feeling of needing to clear your throat or that food is stuck in your chest
- **O**bvious change in wart or mole – change in size, color, characteristics, and sensation should be a concern
- **N**agging cough or hoarseness in voice – problems persist, or go away and come back again in a repeating cycle
- **U**nexplained anemia - especially when it is accompanied with frequent fevers or infections
- **S**udden weight loss

4.4.1 Breast cancer

- Breast cancer is defined as malignancy of the glandular epithelium of the breast
- Warning signs include: skin changes (edema, dimpling or inflammation, orange-peel like skin, ulceration, prominent venous pattern), nipple abnormalities (retraction or discharges) or abnormal contours (variation in size and shape of breasts)

Screening guidelines for Breast Cancer
(targets 15-60 years old and above)

- Monthly breast self-examination
- Breast examination by health worker (annually) for all child-bearing woman
- Annual mammography for women 50 years old and above
- For certain high risk women, baseline mammography at age 35 with repeat upon recommendation of attending physician
- Genetic screening and counseling for high risk patients or if appropriate
- Referral to hospital for further management if found positive (+) for mass or any abnormalities

Breast self-examination (BSE)

The purpose of breast self-examination is for a woman to learn the topography of her breast, know how her breasts normally feel and be able to identify changes in the breast should they occur in the future. Breast self-examination should be used in combination with mammography and clinical breast examination, and not as a substitute for either method. There is inadequate evidence that breast self-examination can reduce mortality from breast cancer. Though it is the easiest method of detection, it also the least precise (WHO, 2006)

Breast self-examination consists of two basic steps: tactile and visual examination of the breast.

Tactile examination:

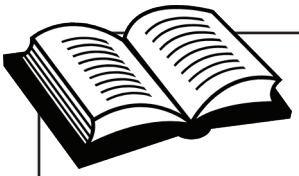
An effective breast self-examination is one that is conducted at the same time each month, uses the techniques appropriately and covers the whole area of each breast, including the lymph nodes, underarms and upper chest, from the collarbone to below the breasts and from the armpits to the breastbone. Each area of examination should be covered three times, using light, medium and firm pressure. Breast self-examination can be done using vertical strip, wedge section, and/or concentric circle detection methods.

In all three methods, the woman should use two or three fingers, thumb extended and using the sensitive palmar pads on the flat, inner surfaces of the fingers for a systematic and careful feel of the breast. It is best to use the palmar pads of the finger because fingertips are less sensitive and long nails can impede the movement of the hand. The breast should also not be compressed between fingers as it may cause the woman to feel a lump that does not really exist (WHO, 2006).

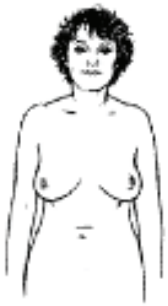
In examining the breast, the woman should feel for changes in the texture and feel of the breast. Among the things that should be noted and reported to a physician are:

- any new lump or hard knot found in the breast or armpit;
- any lump or thickening of the tissue that does not shrink or lessen after her next period;
- any change in the size, shape or symmetry of her breast;
- a thickening or swelling of the breast;
- any dimpling, puckering or indention in the breast;
- dimpling, skin irritation or other change in the breast skin or nipple;
- redness or scaliness of the nipple or breast skin;
- discharge from the nipple (fluid coming from the nipples other than breast milk), particularly if the discharge is clear and sticky, dark or occurs without squeezing the nipple;
- nipple tenderness or pain;
- nipple retraction (turning or drawing inward or pointing in a new direction);
- any breast changes that may cause concern.

Visual examination: The visual examination of the breast is another tool in identifying possible breast disease. It should be noted that no woman has two breasts that are exactly identical; however, once a woman knows what her breasts look like, she is able to identify any changes in the shape, form, coloring or structure of the breast more quickly and can discuss these with the appropriate health care provider. (WHO, 2006)



Steps in Breast Self-Examination (BSE)



Step 1 — Stand in front of a mirror that is large enough for you to see your breasts clearly. Check each breast for anything unusual such as skin that is puckering or dimpling, or has scaliness. Look for a discharge from the nipples.

Step 2 —Watching closely in the mirror, clasp your hands behind your head and press your hands forward. Check for any change in the shape or contour of your breasts.

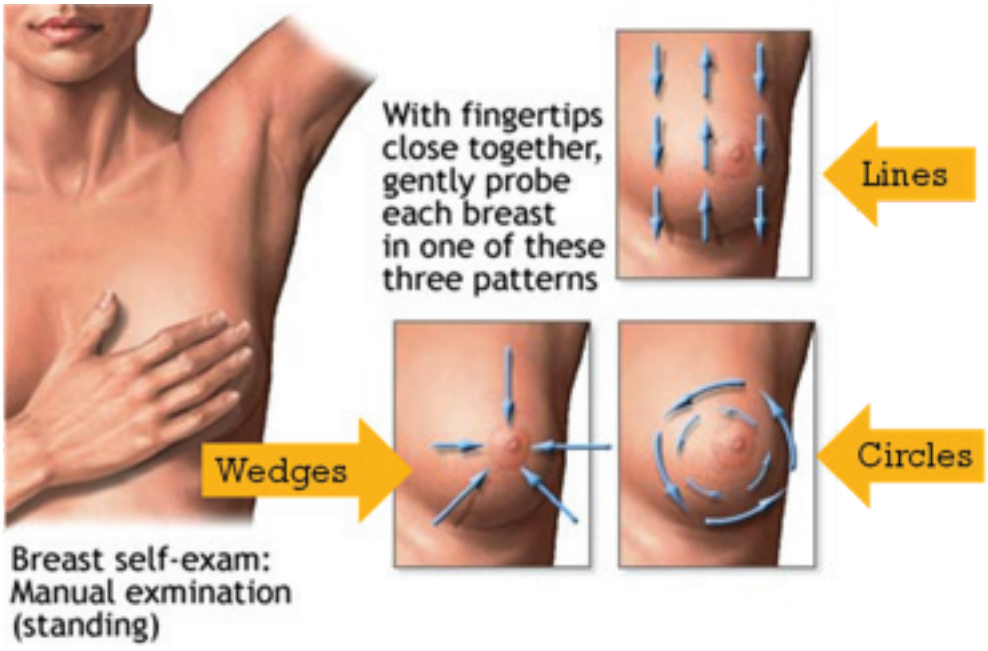
Step 3 —Press your hands firmly on your hips and bend slightly toward the mirror as you pull your shoulder and elbows forward. You should feel your chest muscles tighten.

Step 4 —Gently squeeze each nipple and look for a discharge.

Step 5 —While standing, raise one arm. Use the pads of the fingers of your other hand to check the breast and the surrounding area—firmly, carefully, and thoroughly. Some women like to use lotion or powder to help their fingers glide easily over the skin. Feel for any unusual lump or mass under the skin. Feel the tissue by pressing your fingers in small, overlapping areas about the size of a dime. To be sure you cover your whole breast, take your time and follow a definite pattern: lines, circles, or wedges.

Some research studies suggest that many women do BSE more thoroughly when they use a pattern of up-and-down lines or strips. Other women feel more comfortable with another pattern. The important point is to cover the whole breast and to pay special attention to the area between the breast and the underarm, including the underarm itself. Check the area above the breast, up to the collarbone and all the way over to your shoulder.

Here are some tips on patterns that you can use:



- Lines—Start in the underarm area and move your fingers downward little by little until they are below the breast. Then move your fingers slightly toward the middle and slowly move back up. Go up and down until you cover the whole area.
- Circles—Beginning at the outer edge of your breasts, move your fingers slowly around the whole breast in a circle. Move around the breast in smaller and smaller circles, gradually working toward the nipple. Don't forget to check the underarm and upper chest areas, too.
- Wedges—Starting at the outer edge of the breast, move your fingers toward the nipple and back to the edge. Check your whole breast, covering one small wedge-shaped section at a time. Be sure to check the underarm area and the upper chest.

Step 6 —In this step, you'll repeat step 5 while you are lying down. Lie flat on your back, with one arm over your head and a pillow or folded towel under the shoulder. This position flattens the breast and makes it easier to check. Check each breast and the area around it very carefully using one of the patterns described above.

Step 7 —You may want to repeat step 5 in the shower. Your fingers will glide easily over soapy skin, so you can concentrate on feeling for changes underneath.

It assesses the following:

- Location
- Number of lumps or nodes (solitary or multiple
- Consistency (soft or hard)
- Size
- Fixed or movable
- Tenderness along the area

Clinical Breast Examination. A clinical breast examination by a trained health worker should be a part of a woman's routine check-up. Beginning at the age of 20, women should have a clinical examination every two or three years, increasing to once a year from the age of 40 (WHO, 2006).

Here are some guidelines on physical examination of breasts:

- There is a need to be thorough and systematic when screening for breast cancer using physical examination. It should be more thorough than when examining a client who comes to the health facility with already a mass in the breast detected. This is most important for women who are menopausal considering the incidence and severity of fibrocystic disease is very much higher, making clinical assessment more difficult.
- Do not limit breast examination to the area covered by the bra. Screening must extend from the second to the 6th rib and from the lateral border of sternum to the mid-axillary line.
- There are different methods in doing a proper breast examination but the following two are most commonly used.

    1. Radial Pattern (Alan Basset's Technique)
        - Examine the breast part by part in a radial pattern from the periphery towards the nipple, using the finger pads of the middle three fingers for palpation.
        - Keep the fingers extended but you may slightly flex the finger joints on application of firm but gentle pressure against the underlying chest wall;
        - Note that merely sliding the fingers or finger pads on the skin and underlying surface during palpation results in masses being missed during examination. On the other hand, picking or lifting the breast tissue and examining it between the thumb and fingers results in appreciation of "false masses, " thus missing the tumors;
        - Using the finger pads of the three middle fingers, make small, light circular movements from the periphery towards the nipple, with one to two circles for each area palpated. Using the left hand, rotate the fingers clockwise. Using the right hand, rotate the fingers counter-clockwise.
        - After reaching the nipple, return to the periphery. Lift the finger pads slightly from the skin before moving them into position for the next vector;

- Repeat the procedure along the next vector until the whole breast has been thoroughly examined in a deliberate and an unhurried manner.
- This technique can be applied in three positions: upright position (standing or sitting); supine (lying down on back); or oblique (lying slightly on side)

2. Mamma Care Technique (Transverse or Vertical Lines) – makes use of palpations search strategy and visual inspection techniques

- In palpations, use three middle fingers held together. Concentrating with the flats or pads of the fingers, make a palpation motion consisting of small circles, about the size of a 25-centavo coin. These circular motions should be smooth, well controlled and not jerky.
- For each area of breast tissue that you examine, there must be a series of three distinct pressure levels to be applied but the pressure should always be directed straight down:
  - The first circle at each spot should be made with very light pressure;
  - The second circle should press midway down to the breast tissue;
  - The third circle should press down as firmly into the breast tissue as possible without causing discomfort;
- In the search strategy, position the client on the side for examination of the outer tissue and in a lying position for examination of the inner tissue to distribute the breast tissue as evenly as possible. The breast tissue to be examined includes a roughly rectangular area, which begins laterally with the mid-axillary line and is bounded by the collarbone and approximately the bottom bra line. All tissue within this rectangular area must be examined thoroughly;
- Visual inspection must look at changes on following features of the breast;
  - *Size of the breast:* normally one breast is larger than the other. Breast cancer may increase or decrease the size of the breast;
  - *Contour of the breast:* Breast cancer can cause the contour of the breast become distorted. As the cancer progresses, it may pull the skin inward which causes the loss of normal contour or may cause dimpling or depression in the skin;
  - *Nipple changes:* A cancer may cause the nipple to point in another direction or to be pulled inward. The nipple may also develop a non-healing sore or ulcer. A bloody nipple discharge may also be present;
  - *Skin changes:* sometimes a cancer will cause a rash or changes in the skin on the breast. This may progress to look into an orange peel.

- Note that a single, non-painful lump in the breast is a cause for concern. A subtle change in breast tissue may be the first sign of breast cancer. It is important to do a monthly examination.

- Remember that most breast lumps are not cancer. Advise your client that if she does feel something different in her breast, she need to first check the other breast in the same area. It will probably feel very similar, which is a good sign that what she is feeling is a normal part of her breast tissue. If it is not similar,

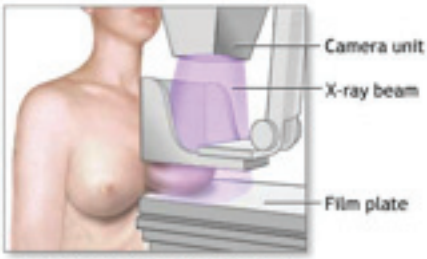
remind her to note of the location and help her make an appointment to be examined by the physician in your facility or in other facilities.

- After arranging for an appointment, advise you client that she should be seen as possible. Her doctor will want to know how long the change in her breast has been present, and whether she has noticed any other changes. A history will be taken of her menstrual cycle pregnancies, or any hormones she is taking or has taken, and if there is any history of breast cancer.

- Test will be ordered only after a history is taken and a thorough examination of her breasts is done. These tests may include a mammogram and/or and ultrasound. After these tests, a fine needle aspiration may be done. An inspiration is performed even if a biopsy is going to be recommended because this provides information to help plan her biopsy.

Breast mammography

- If a mass is detected and confirmed through physical examination, a mammogram usually confirms it.
- Baseline mammogram is suggested for all women between the ages of 35-39 and yearly mammogram after age 40.
- If with family history of breast cancer, mammogram should be started at age 30.



In mammography, each breast is compressed horizontally, then obliquely and an x-ray is taken of each position

4.4.2 Lung cancer

- Cancer that forms in tissues of the lung, usually in the cells lining air passages
- Persons at risk: those with a long history of smoking and/or smoking two or more packs of cigarettes per day
- Early warning signs: chronic cough or nagging cough, dull intermittent localized pain, history of weight loss

Screening guidelines for Lung Cancer

- Screening for lung cancer is still debatable since clinical studies have failed to demonstrate a significant reduction in lung cancer mortality as a result of screening
- If there is a reason a patient may have lung cancer, a number of tests can be done to look for cancerous cells and to rule out other conditions:
  - o Chest x-ray – an X-ray image of lungs may reveal an abnormal mass or nodule.
  - o Chest CT scan - can reveal small lesions in lungs that might not be detected on an X-ray.
  - o Sputum cytology – if patient has cough and producing sputum, microscopy of sputum can sometimes reveal the presence of lung cancer cells

4.4.3 Cervical cancer

- Cervical cancer is a disease in which the cells of the cervix become abnormal and start to grow uncontrollably, forming tumors.
- Early warning signs: often asymptomatic; may cause abnormal vaginal bleeding (e.g. post-coital bleeding) in some women

Screening guidelines

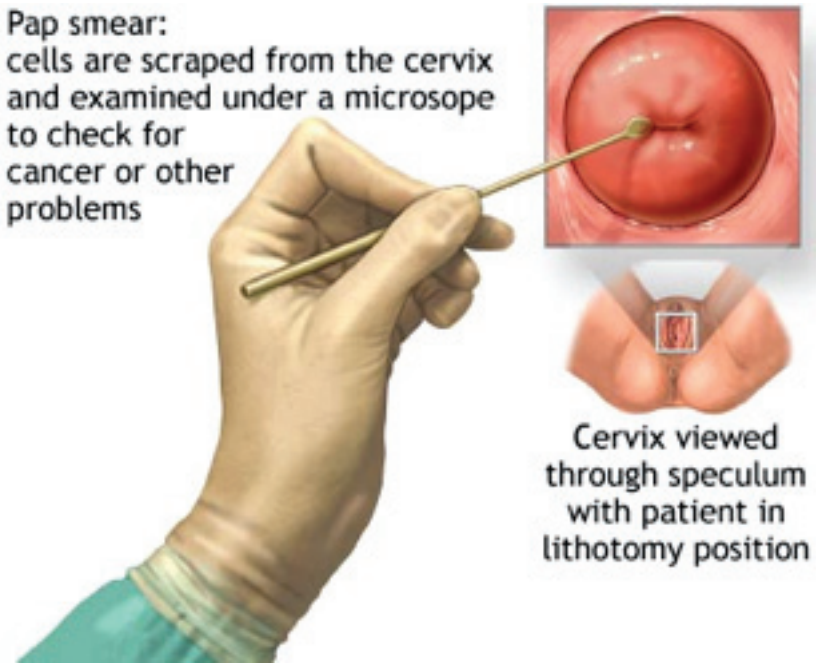
- Papanicolaou or Pap smear
  - o Pap smear is a way to examine cells collected from the cervix to detect cancer or abnormal cells that may lead to cancer. It can also find noncancerous conditions, such as infection and inflammation
  - o Women should have their first screening Pap smear at age 21.

Screening Guidelines for Cervical Cancer

(Target women: 30-55 years old and above)

- Warning signs of cervical cancer
  - ✔ Often asymptomatic
  - ✔ Abnormal vaginal bleeding
- Papanicolau or Pap smear
  - o Sexually active women
  - o Virgin women after 35 years of age
  - o Low risk women with 2 or more successive negative pap smears, may have subsequent smears every 2 -3 years
- Visual inspection with acetic acid (VIA)

- Women in their 20's should have a Pap smear every two years.
- Women age 30 and above who have had 3 normal Pap smears in a row should have a Pap smear every three years.
- Women who had a hysterectomy should no longer have Pap smears if the hysterectomy was for non- cancerous reasons and they don't have a history of severely abnormal Pap smears. However, for women who had a hysterectomy but still have their cervix, they will need to continue routine Pap smears.
- Pap smear screening can be stopped in women 65-70 years old and above who have had three or more normal Pap smears in a row.
- Pap smear should be done in between menstruation (between 10 and 20 days after the first day of the last menstrual period).
- For about 2 days before a Pap smear, a woman should avoid douching or using vaginal medicines or spermicidal foams, creams, or jellies (except as directed by a physician), nor have sexual intercourse as these may wash away or hide abnormal cells.
- Above guidelines should be followed whether one had HPV vaccine or not.



- Visual inspection with acetic acid wash (VIA)
  - Visual inspection of the cervix one minute after application of 3% acetic acid is usually an adjunct procedure to the routine Pap smear to improve detection of cervical disease

o Procedure:

- Instruct client not to douche or use any type of lubricant and preferably refrain from intercourse for at least 24 hours prior to exam;
- Inform the client that you will examine her internally and ask her to assume a lithotomy position so that her hips are slightly over the edge of the table. Reassure her that she will not be hurt and ask her to breathe quietly through her mouth. Do not hurry the procedure to avoid upsetting the client and to gain relaxation of her abdomen;
- Inspect the vulva and the vagina for any signs of abnormality e.g. infection, discharge or bleeding – and gently separate the labia with finger and thumb to expose the entrance of the vagina. Use a light source or a speculight.
- Gently insert the bivalve speculum (appropriate size, moistened with warm water/saline) halfway into the vagina with blades parallel to the labia at the same time gently pressing the area of the posterior angle.
- Gently rotate the speculum about 45 degree clockwise if right handed, counterclockwise if left handed before opening the blades. Open the blades and with little manipulation, till the cervix will come into view. If this proves impossible, use a larger speculum;
- Once the cervix is visualized, lock speculum in the open position. Inspect the vaginal walls, should be normally light pink with longitudinal and circular folds;
- Inspect the cervix with unaided eye:

- It is normally pink in color, with smooth surface. The external os is generally seen as a red, horizontal or oval opening usually about 0.5 cm in size.
- It is not uncommon to see what appears to be cervical erosion – an irregularly shaped red area extending from and surrounding the os.
- The margin however, is clearly defined. This in fact is cervical ectopion (ectopy) – a condition in which cells lining the cervix canal extend beyond the os on to the surface of the cervix.
- Suspect cancer if the any of the following are found: grossly misshapen cervix, ulcer or mass on the cervix, ulcer has raised irregular poorly defined margin, mass is irregular and ragged, tissue is friable and bleeds easily on contact.

- Place a large cotton swab immersed in 3% acetic acid on the cervix for about 2 minutes. Remove the cotton swab and do a visual inspection, with aid of speculoscope if available;
- Abnormal cervical areas would turn whitish (fades in 5 minutes), identified for immediate referral to hospital for colposcopy and biopsy if needed. May see the atypical blood vessels and/or irregular surface contour of cervix, suspicious of cancer;

- If with normal cervical exam, advise patient to have another screen within 1-5 years from last screen.
- For positive findings: referral to hospital for colposcopy and Pap smear

4.4.4 Prostate cancer

- This is an uncontrolled (malignant) growth of cells in the prostate gland which is located at the base of the urinary bladder and is responsible for helping control urination as well as forming part of the semen
- Early warning signs: symptoms of urethral outflow obstruction, such as urinary frequency, nocturia, decrease in stream, post-void dribbling

Screening guidelines

- History taking – determine if positive for having a father or brother who had prostate cancer before age 65
- Digital rectal examination (DRE) – age to begin annual digital rectal examination depends on individual's risk

Screening Guidelines for Prostate Cancer

(Target age: 50 yrs old and up)

- Warning signs of prostate cancer include symptoms of urethral flow obstruction
- According to American Cancer Society (2010), the age to begin screening using the digital rectal examination is linked to risk.
- Prostate-specific antigen (PSA) determination to confirm diagnosis in DRE

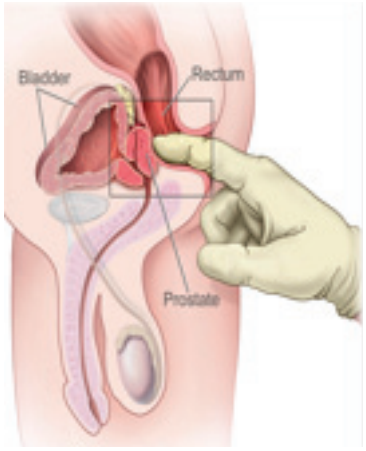
Age to begin DRE	Risk
Age 50	Males with average risk
Age 45	Males with higher risk; i.e., with first degree relative with prostate cancer before age 65 years
Age 40	Males with highest risk; i.e., with multiple family members diagnosed with prostate cancer before age 65 years

Steps in performing Digital Rectal Examination:

o The male rectum can be palpated with the patient lying in a lateral position or standing, hips flexed, and leaning over a table.

o With a gloved, lubricated index finger the rectal examination is carried out in a systematic manner beginning with the right lateral surface and, then proceeding to the posterior, left lateral and anterior surfaces.

o While examining the anterior rectal surface, the lobes of the prostate and the median sulcus separating them should be palpated for size, nodularity and tenderness. The normal prostate size is approximately 2 x 4 x 3 cm and enclosed in a smooth capsule.



- Prostate specific antigen (PSA) determination – a blood test that confirms diagnosis

4.4.5 Colorectal cancer

- Colorectal cancer is defined as common epithelial malignancy, usually adenocarcinoma occurring most frequently in the large bowel including the rectosigmoid area.
- Early warning signs: change in stool, rectal bleeding, pressure on the rectum, abdominal pain

Screening Guidelines for Colorectal Cancer
(Target age: 50 yrs old and up)

- Warning signs of colorectal cancer: change in stool, rectal bleeding, pressure on the rectum and abdominal pain
- Annual digital rectal exam
- Annual stool blood test (fecal occult blood test)
- Inspection of colon or flexible sigmoidoscopy every five years

Screening guidelines

- For adults more than 50 years old, annual fecal occult blood test and flexible sigmoidoscopy every 5 years
- To be completely valid, the test employed must be repeated 3-6 times on different samples. The client's diet should be free of meats, fish and vegetable sources of peroxidase activity.
- Consider that occult blood may appear in stool in diverticulitis, gastric carcinoma, and gastritis
- Drugs taken by clients should be considered because some drugs such as salicylates, steroids, indomethacin, colchicines, iron (when used in massive therapy) and rauwolfia derivatives are associated with increased gastrointestinal blood loss in normal persons and eith even more pronounced bleeding when disease is present.
- Drugs that can cause false positive test for occult blood include: boric acid, bromides, colchicines, iodine, inorganic iron and oxidizing agents.
- Liquid stool may cause false negatives with filter paper methods.

4.5. COPD

- The characteristic symptoms of COPD are cough, sputum production, and dyspnea upon exertion. Chronic cough and sputum production often precede the development of airflow limitation by many years and these symptoms identify individuals at risk for developing COPD.

- Initial diagnosis using questionnaire: Diagnose POSSIBLE COPD if yes to the following. (Need to be confirmed with spirometry)
  - o Over 40 years old
  - o positive history of smoking
  - o Yes to any of the following item:
    - cough as much as 4-6 times a day, 4 or more days out of the week
    - cough on most days for 3 consecutive months or more
    - cough for more than 3 years
    - phlegm as much as 2 times a day, 4 or more days out of the week
    - phlegm on most days for 3 consecutive months or more during the year
    - phlegm for more than 3 years
    - shortness of breath when hurrying on the level or walking up a slight hill
    - walk slower than people of your age on the level because of breathlessness
    - stop for breath when walking at own pace on the level
    - stop for breath after walking about 100 yards or after a few minutes on the level
    - breathless to leave the house or breathless on dressing or undressing
    - emphysema or chronic bronchitis or COPD diagnosed by a doctor

Screening Guidelines f or COPD

- Initial diagnosis using questionnaire
- Spirometry
- Use of peak flow meter to measure peak expiratory flow meter (PEFR)

- Spirometry is done to determine degree of obstruction and client can be diagnosed and categorized as having restrictive, obstructive or mixed pattern of ventilatory defect. Spirometric values vary with age, height, sex and race. Airway obstruction is evident if the Forced Expiratory Volume (FEV1) is reduced to <80% of predicted values

- Use of a peak flow meter to measure peak expiratory flow rate (PEFR) is the simplest test of lung function applicable to COPD and asthma. PEFR refers to the maximum velocity of air from the lungs when exhaled at maximum effort. Its measurement has consistently been shown to correlate with the degree of airway obstruction and forced expiratory volume (FEV1) in spirometry.

- Techniques in using peak flow meter:

1. Perform hand hygiene and observe other appropriate infection control measures.
2. Properly position the patient. The patient maybe standing or sitting with the chest free from contact with the chair.
3. Fit disposable mouthpiece to peak flow meter. Ensure that the marker on the flow meter is on the zero position (bottom of the scale).

4. Ensure patient holds peak flow meter horizontally without restricting movement of the marker.
5. Ask patient to breathe in deeply, seal lips around the mouthpiece, and breathe out as quickly as possible. If you suspect the client is exhaling a significant amount of air through the nose, apply a nose clip
6. Record the result.
7. Repeat steps 3 to 5 twice more, choose the highest of the three readings and compare with predicted readings.

Refer to Appendix 2.4 for management of COPD.

4.6. Asthma

- The hallmark of asthma diagnosis is demonstration of reversibility of airway obstruction.

Screening for Asthma

- Initial diagnosis using questionnaire: diagnose asthma if yes to any of the following:
  - Ever Asthma : Yes to (a)
  - Current Asthma: Yes to any of (b) – (g)
  - Diagnosed Asthma: Yes to any of (h) – (j)

(a) wheezing or whistling in the chest at any time in the past
(b) wheezing or whistling at any time in the last 12 months
(c) breathless during wheezing attack in the last 12 months
(d) whistling or wheezing in the absence of a cold time in the last 12 months
(e) feeling of tightness in the chest at anytime in the last 12 months
(f) woken up by an attack of shortness of breath at any time in the last 12 months
(g) woken by an attack of coughing at any time in the last 12 months
(h) diagnosis of asthma confirmed by a doctor
(i) currently taking any medicine for asthma prescribed by a doctor
(j) attack of asthma confirmed by doctor in the last 12 months

- Suspect asthma in persons with the following:

Screening for Asthma *(continued)*

- o One or a combination of cardinal symptoms (dyspnea, cough, wheezing, chest discomfort).
- o Temporal waxing and waning and/or nocturnal occurrence of symptoms.
- o A history of any of the following:
  - symptoms triggered by exogenous factors
  - a family history of asthma or allergy
  - a personal history of asthma, allergic rhinitis or atopy
  - an improvement of symptoms with bronchodilator use

- Spirometry can aid diagnosis but this can also be achieved by measuring the person's maximum speed of expiration or peak expiratory flow rate (PEFR) using a peak flow meter before and after using a bronchodilator.

- Peak flow readings are higher when patients are well, and lower when the airways are constricted. Obstruction is reversed if improvement is 15% or > 200 ml.

- Refer to Appendix 2.5 for management of asthma.

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Appendix 2.0
Risk Factors Assessment Form

Name:	Birthday/Age:	Date of Visit:
Address:	Civil Status:	Sex:

A. Non-Modifiable Risk Factors

Family History of:	
Hypertension _____yes _____ no Cardiovascular disease _____yes _____ no Diabetes mellitus _____yes _____ no Asthma _____yes _____ no Cancer _____yes _____ no	

B. Modifiable Risk Factors

Cigarette/Tobacco Smoking	Alcohol Drinking
☐ Never smoked ☐ Passive smoker ☐ Current smoker No. of cigarettes per day:_____	☐ Never ☐ Alcohol Drinker: In the past month, how many times did you have 5 drinks in one occasion? _____
Age started smoking: _____ No. of Attempts to Quit: _____ Any desire to quit?: ___ Yes ___ No ☐ Ex-smoker Age started smoking: _____ Age quit smoking: _____ No. of cigarettes per day: _____	Type of Alcohol: _____ Frequency of Intake : beer _____/day wine _____/week distilled spirits _____/month

Physical Activity Type of work/occupation: _____ Means of travel to work :_____ Activities other than work: _____ _____ ☐ Sedentary ☐ Active	Intake of High Fat/high Salt Foods How often do you eat fast foods (e.g. instant noodles, hamburgers, french fries, fried chicken skin, etc.) and ihaw-ihaw (e.g. isaw, adidas, etc.)? _____ times per _____
Dietary Fiber Intake: Servings of fruits per day : _____ _____adequate _____inadequate Servings of vegetables per day: _____ _____adequate _____inadequate	Hypercholesterolemia: NValues ☐ elevated total cholesterol ( ) ☐ elevated LDL ( ) ☐ elevated triglycerides ( ) ☐ Low LDL ( )
Diabetes Mellitus: NValues Have you been diagnosed with diabetes mellitus? Yes No Date of Diagnosis: _____ FBS: _____	Stress: Do you often feel stressed? Yes No What are the sources of your stress?

B. Anthropometric Measurement and Blood Pressure

Date	Height (cm)	Weight (kg)	BMI	Waist (cm)	Hip (cm)	W/H Ratio	Nutritional Status			Blood Pressure	Hypertension	
							<N	N	>N		Y	N

D. Cancer Screening

(Specify date last service given if applicable)

FOR MALES

- Digital rectal exam: _____

FOR FEMALES

- Pap smear: _____
- Acetic Acid Wash: _____
- Clinical breast exam: _____

Summary:

CLIENT NOT AT RISK: _____

- ☐ Client DOES NOT have any of the risk factors
- ☐ AFFIRM healthy lifestyle practices, CONGRATULATE client.
- ☐ PROCEED with health education on healthy lifestyle:
    - o REGULAR PHYSICAL ACTIVITY
    - o NUTRITION AND DIET
    - o NO SMOKING
    - o NO ALCOHOL DRINKING

CLIENT AT RISK: _____

- ☐ CLIENT found to have at LEAST ONE of the risk factors.
- ☐ PROCEED with education on LIFESTYLE MODIFICATION.
- ☐ REFER for Screening for NCD and other diagnostic tests

Appendix 2.1
Blood Pressure Measurement Procedure Checklist

Taking the blood pressure is the simplest method and the cornerstone of determining the presence of hypertension. To ensure that correct BP measurement is taken, check whether the procedure outlined here is followed or not.

Procedure	Yes	No
I. *Preparatory Phase* • Introduce self to client • Make sure client is relaxed and has rested for at least 5 minutes and should not have smoked or ingested caffeine within 30 minutes before BP measurement • Explain the procedure to the client at his/her level of understanding • Assist to seated or supine position *II. Applying the BP cuff and stethoscope* • Bare client's arm • Apply cuff around the upper arm 2-3 cm above the brachial artery • Apply cuff snugly with no creases • Keep the manometer at eye level • Keep arm level with his/her heart by placing it on a table or a chair arm or by supporting it with examiner's hand. If client is in recumbent position, rest arm at his/her side • Palpate brachial pulse correctly just below or slightly medial to the antecubital area *III. Estimating systolic BP using palpatory method* • While palpating the brachial or radial pulse, close valve of pressure bulb and inflate the cuff until pulse disappears • Note the point at which the pulse disappeared. This is the palpated systolic BP. • Deflate cuff fully • Wait 1-2 minutes before inflating cuff again		

Procedure	Yes	No
IV. Obtaining the BP reading by auscultation • Place earpieces of stethoscope in ears and stethoscope head over the brachial pulse • Use the bell (or diaphragm for obese persons) of the stethoscope to auscultate pulse • Watching the manometer, inflate the cuff rapidly by pumping the bulb until the column or needle reaches 30 mm Hg above the palpated SBP • Deflate cuff slowly at a rate of 2-3 mm Hg/beat • While the cuff is deflating listen for pulse sounds (Korotkoff sounds) • Note the appearance of the 1st clear tapping sound. Record this as systolic BP (Korotkoff Phase I) • Note the diastolic BP which is the disappearance of sounds (Korotkoff Phase V) unless sounds are still heard near 0 mm Hg in which case softening/ muffling of sounds is noted (Korotkoff Phase IV) *V. Recording BP and Other Guidelines* • For every first visit of the client: Take the mean of 2 readings, obtained at least 2 minutes apart, and consider this as the client's blood pressure • If the first 2 readings differ by 5 mm Hg or more obtain a 3rd reading and include this in the average • If first visit, repeat the procedure with the other arm. Subsequent BP readings should then be performed on the arm with a higher BP reading • Document Phases I, IV and V by following the format for recording BP: systolic/ muffling/ disappearance (e.g. 120/80/76) • Inform client of result and stay for a while to answer client's questions/ concerns.		

Note: In recent years, mercury manometer units have been replaced with aneroid instruments and electronic manometers. Justifications for the replacement of mercury manometers have included concerns about the safety of mercury, concerns about regulations regarding the use of mercury in the workplace, and attempts to eliminate human error involved in the reading of measurements. Whether using aneroid manometer, the above procedure checklist still apply. For those using electronic manometers, skip steps III and IV. Health workers should also be aware of validation and calibration issues with aneroid and electronic manometers.

Appendix 2.2
Management of Hypertension in Adults (18 Years or Older)

(Manual of Operations, Prevention and Control of Chronic Lifestyle-related Noncommunicable Diseases in the Philippines; DOH, 2009)

Majority of patients will require two medications:

- Without compelling indications:

  Stage 1 Hypertension (SBP 140-159 or DBP 90-99 mmHg):

  - o Thiazide-type diuretics for most
  - o May consider ACE Inhibitor, Angiotensin Receptor Blocker, or Beta Blocker, Calcium Channel Blocker or combination

  Stage 2 Hypertension (SBP >160 or DBP >100 mm Hg):

  - o Two-drug combination for most, usually thiazide-type diuretic, and ACE Inhibitor or Angiotensin Receptor Blocker or Beta Blocker, Calcium Channel Blocker

- With compelling indications: drugs for compelling indications and other hypertensive drugs (diuretics, ACE Inhibitor, Angiotensin Receptor Blocker, Beta Blocker, Calcium Channel Blocker) as needed

- Hypertensive emergencies can be managed with oral antihypertensive drugs. The initial goal of therapy is to reduce BP to between 160-180/ 100-110 mmHg within 2 hours, and to <160 and <100 by 6 hours. Excessive fall of BP that may precipitate coronary, cerebral and renal ischemia should be avoided. Diuretics, ACE Inhibitor, Beta Blocker, Calcium Channel Blocker, methyldopa can be used alone or in combination. Sublingual administration of fast-acting Nifedipine should be avoided as degree of fall of BP may be too rapid.

Appendix 2.3
Management of Diabetes Mellitus

(Manual of Operations, Prevention and Control of Chronic Lifestyle-related Noncommunicable Diseases in the Philippines; DOH, 2009)

Sulphonylureas and glinides directly stimulate insulin secretion, while thiazoli-dinediones and metformin improve insulin sensitivity.

- Metformin: It is recommended as the first line therapy for obese and overweight patients, and is recommended as the first-line therapy among the non-obese patients in some countries. It is the only hypoglycemic agent that has been shown to reduce CVD. It does not cause hypoglycemia or weight gain but often leads to troublesome gastrointestinal side effects which are frequently dose-dependent
- Sulphonylureas. They stimulate insulin secretion by the beta cells and lower HBA1c by 1-2%. They usually lead to weight gain, and can cause hypoglycemia especially among the elderly and those with renal or liver disease. Hence, they must only be used as second or third hand line agents.
- Thiazolidinediones. They improve insulin sensitivity by improving cellular response to insulin action. However, they do not enhance insulin production. They decrease HBA1c by 1-2% and do not cause hypoglycemia. One of the common side effects is weight gain, fluid retention may also occur, and may precipitate cardiac failure among those with pre-existing heart disease.
- Alpha-Glucosidase Inhibitors. They slow down carbohydrate absorption from the jejunum, and hence decrease postprandial blood glucose, and to a lesser degree fasting glucose, thus improving overall glycemic control. They have a weight-reducing effect, and can be used as first line therapy in association with diet, or in combination with sulphonyureas, metformin and insulin.
- Glinides. These are a new generation of sulphonylurea-like agents. They may be used as monotherapy or in combination therapy with biguanides or thiazolidinediones. They resude postprandial hyperglycemia, hence have to betaken with each meal.
- Combination Oral Therapy. Metformin, suplhonylureas, thiazolidinediones and a-glucosidase inhibitors may be used in various combinations with each other or with insulin when treatment targets are not achieved. Combination therapy capitalizes on the complimentary modes of action of the different drug classes. There is some evidence to show that the use of combination therapy is superior to monotherapy in terms of glycemic control, with no increase in side effects. Insulin is often needed to achieve good glycemic control, and should be considered for all patients on maximum oral therapy whose HBA1c is > 6.5 %. Early treatment of insulin should be strongly considered when unintentional weight loss occurs at any time during the course of diabetes, including at the time of diagnosis. Insulin is administered SC wither through a syringe or pen. The following are several forms of insulin:
  - rapid-acting insulin analogues
  - short-acting regular insulin
  - intermediate-acting insulin
  - premixed insulin
  - long acting insulin analogues

Appendix 2.4
Management of COPD

(Manual of Operations, Prevention and Control of Chronic Lifestyle-related Noncommunicable Diseases in the Philippines; DOH, 2009)

Bronchodilators are central to symptom management in COPD

- Inhaled therapy is preferred
- Give "as needed" to relieve intermittent or worsening symptoms, and on a regular basis to prevent or reduce persistent symptoms
- The choice between beta2 agonists, anti-cholinergics, methylxanthines, and combination therapy depends on the availability of medications and each patient's individual response in terms of both symptom relief and side effects
- Regular treatment with long-acting bronchodilators is more effective and convenient than treatment with short-acting bronchodilators
- Combining bronchodilators of different pharmacologic classes may improve efficacy and decrease the risk of side effects compared to increasing the dose of a single bronchodilator

Glucocorticosteroids

- Regular treatment with inhaled glucocorticosteroids does not modify the long term decline in FEV1 but has been shown to reduce the frequency of exacerbations and thus improve health status for symptomatic patients with an FEV1 < 50% predicted and repeated exacerbations
- Long term treatment with oral glucocorticosteroids is not recommended

Vaccines - Influenza vaccines reduce serious illness and death in COPD patients by 50%

Antibiotics - Not recommended except for treatment of infectious exacerbations and other bacterial infections

Mucolytic agents - Patients with viscous sputum may benefit from mucolytics but overall benefits are very small. Use is not recommended.

Antitussives - Regular use contraindicated in stable COPD

Appendix 2.5
Management of Asthma

(Manual of Operations, Prevention and Control of Chronic Lifestyle-related Noncommunicable Diseases in the Philippines; DOH, 2009).

The CONTROLLER medications include the following group of drugs with examples that are available in the country:

Corticosteroids
- oral formulations: Prednisone, Prednisolone
- inhaled formulations: Beclomethasone, Budesonide, Fluticasone

Non-steroidal anti-inflammatory agents
- sodium cromoglycate
- nedocrimil sodium

Anti-allergic agents
- ketotifen

Long-acting and sustained release bronchodilators
- oral formulations: Bambuterol, sustained release formulation of short acting beta 2-agonist (salbutamol, terbutaline) and theophyllines

The RELIEVER medications include the following sub-classifications with examples that are available in the country

Short-acting bronchodilators
- Beta-2 agonists: Fenoterol, Clenbuterol,Procaterol, Metaproterenol, Salbatumol, Terbutaline, Pirbutero
- Non selective beta-agonist: Isoprenaline, Epinephrine (with alpha stimulation effect as well)
- Anti-cholinergic drugs: Ipatropium bromide (inhaled only) Atropine

Systemic corticosteroids (used in high doses as pulse therapy lasting for a few days)
- oral formulations: Prednisone, Prednisolone
- parenteral formulations: Hydrocortisone

Management of Exacerbations. The overall objective in managing asthma exacerbations is rapid relief of symptoms and prevention of asthma death.

- Pay particular attention to subgroup of patients who are particularly prone to life threatening asthma. These patients should be watched carefully since their conditions can quickly deteriorate. The following are their characteristics:
    - o current use of or recent withdrawal from systemic corticosteroids
    - o hospitalization for asthma in the past year
    - o emergency room visit for asthma in the past year
    - o prior intubation for asthma
    - o psychiatric disease or psychosocial problems
    - o non-compliance with anti-asthma medication plan
- All patients should have a written action plan on how to recognize and grade the severity of the exacerbations and what to do next. The intensity of the treatment will depend on the initial severity score, the degree of response to initial therapy, and the presence or absence of factors associated with asthma deaths.
- Emergency Room Treatment of Asthma Exacerbations. There is a need for the emergency room officer to make a rapid diagnosis and institute immediate treatment of asthma in the ER. A chest x-ray may be indicated in some instances to rule out pneumothorax. The intensity of treatment will depend on the severity score on arrival, the degree of response to initial therapy, and the presence or absence of factors associated with asthma deaths;
- With ward admissions, the following are the recommended criteria for admitting patients to the regular rooms or wards:
- inadequate response to therapy within 1-2 hours
- persistent PEF < 50 % after 1 hour of treatment
- presence of risk factors as previously defined
- prolonged symptoms prior to emergency room consultation
- inadequate access at home to medical care and medications
- difficult home conditions
- difficulty in obtaining transport to hospital in the event of further deterioration
- ICU admission is recommended if in addition to the criteria of admission is that the response to the initial therapy is poor, the patient's sensorium has deteriorated, and there is evidence of impending respiratory arrest;
- Upon discharge, the patient's action plan must be re-explained and maintenance therapy must be well understood. Trigger avoidance must be re-emphasized.