

# Leading Chronic & Age-Related Diseases Part I: An Introduction

## Course

World Health  
Research

## Unit VI

Leading Chronic  
& Age-related  
Diseases

## Essential Question

Why has there  
been a dramatic  
increase in  
chronic diseases  
and how can this  
trend be  
reversed?

## TEKS

130.209.(c)  
1C, 1F, 7B

## Prior Student Learning

Unit V – Public  
Health &  
Epidemiology

## Rationale

As improved sanitation and health practices reach developing countries, a shift away from infectious and acute illnesses can be seen. This has resulted in an epidemic of chronic illnesses that have gotten far less attention than communicable diseases like HIV/AIDS and multi-drug-resistant tuberculosis.

## Objectives

Upon completion of this lesson, the student will be able to:

- Identify and describe the most common chronic diseases around the world
- Explain why chronic diseases have reached epidemic proportions in developing countries
- Discuss why chronic diseases are so costly
- Investigate strategies that help slow the spread of chronic diseases

## Engage

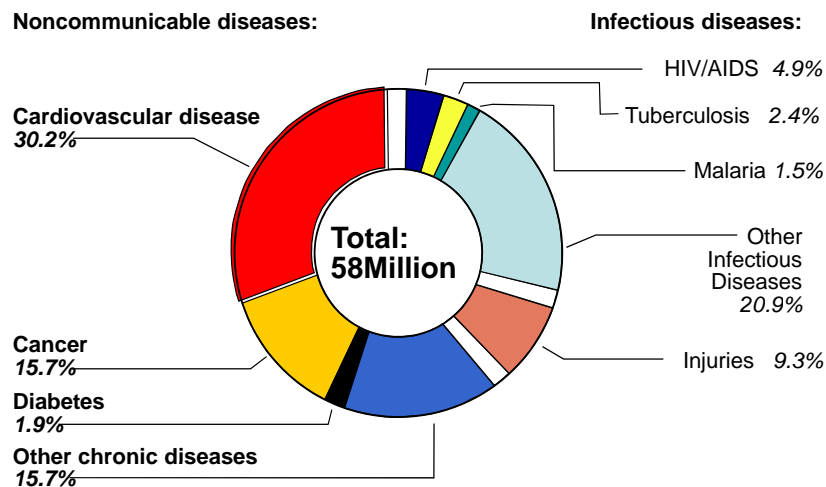
"The rise of chronic non-communicable diseases presents an enormous challenge. For some countries, it is no exaggeration to describe the situation as an impending disaster; a disaster for health, for society, and most of all for national economies." ~Dr. Margaret Chan, WHO Director-General

## Key Points

- Chronic diseases also referred to as non-communicable diseases (NCDs)
  - These are diseases of long duration and generally slow progression
  - Almost half of all Americans have a chronic condition
  - Chronic diseases are the leading cause of mortality in the world

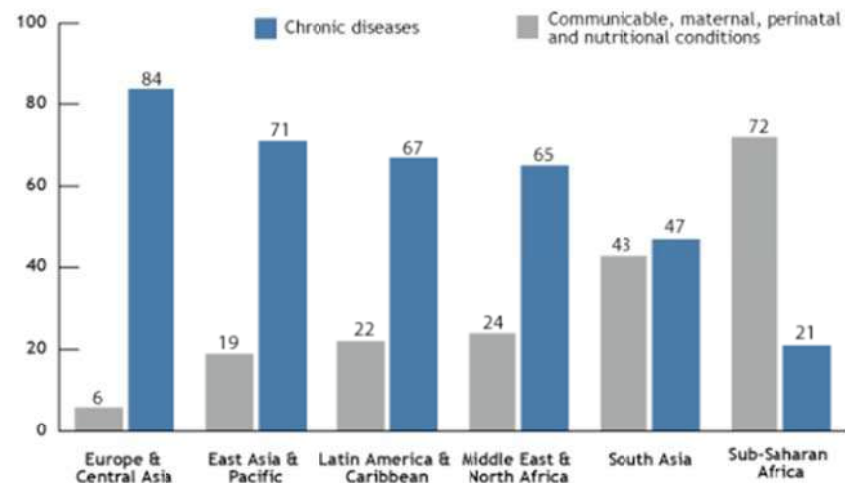
(images below from WHO)

## Deaths by cause in the world



II. The only continent where infectious diseases out-number chronic disease is Sub-Saharan Africa.

**Worldwide Share of Deaths, by Cause**



Source: Colin D. Mathers et al., "The Global Burden of Disease in 2002: Data Sources, Methods, and Results," *GPE Discussion Paper 54* (Geneva: World Health Organization, 2003), available at [www.who.int/evidence](http://www.who.int/evidence).

III. Reasons for shift from infectious diseases

- A. Sanitation and better living conditions
- B. Better health practices and improved medical care
- C. Worldwide health education

IV. Common causes for the increase of chronic diseases

- A. People living longer
  - 1. Prone to chronic disease as we age
  - 2. About 80% of senior population has one or more chronic conditions
    - a. twenty-five% are limited in their ability to perform activities of daily living
- B. Poor eating habits (fast foods, not enough fruits & vegetables)
- C. Lack of physical activity
- D. Rise in obesity
- E. Tobacco use (rising consumption in developing countries)
- F. Excessive alcohol consumption
- G. Pollution
- H. Globalization

V. Most common NCDs:

- A. Cardiovascular disease
  - 1. Primarily myocardial infarction and stroke
  - 2. Valve disease and congenital heart anomalies

- a. over past two decades cardiovascular disease has decreased in high-income countries, but increased in low- and middle-income countries largely due to lifestyle choices (poor diet, lack of exercise, smoking, excessive use of alcohol)
- B. Lung disease
  - 1. Chronic obstructive pulmonary disease (COPD): chronic asthma, chronic bronchitis, emphysema
  - 2. Incidence of these diseases increasing throughout the world due to smoking and air pollution
- C. Diabetes
  - 1. World Health Organization reports that 4.6 million people die each year from diabetes.
  - 2. Most of these cases are related diabetes type II
  - 3. Diabetes type II is linked to obesity, poor diet, and lack of exercise
- D. Cancer
  - 1. Number of cancer deaths worldwide is projected to increase by 45% by 2030
  - 2. Deadly cancers that are increasing at a high rate: lung, stomach, colon, liver, and breast
  - 3. Most cancer cases are now found in the developing world
  - 4. Only 30% of cancer cases are linked to behavioral or environmental factors (tobacco being the single largest preventable behavior)
- VI. The burden of chronic disease
  - A. People with chronic conditions account for 83% of all health care spending in the United States
  - B. Projected that by 2020, chronic diseases will account for almost  $\frac{3}{4}$  all deaths worldwide
  - C. Globally speaking, 60% of the burden of chronic diseases will occur in developing countries
  - D. People with chronic diseases are heaviest users of health care services
    - 1. Fill more prescriptions
    - 2. Visit physicians more frequently
    - 3. Likely to be hospitalized and have more inpatient stays
    - 4. Have more home health care visits
  - E. People with chronic illness tend to have activity limitations
- VII. The future cost of chronic diseases
  - A. The economic burden of chronic disease is rapidly increasing worldwide
  - B. The proportion of the burden of NCDs is expected to increase to 57% by 2020

**Estimated time****Activity I:**

Investigation: 55 min  
 Presentation &  
 Discussion: 35 min

**Activity II:**

Investigation: 15 min  
 Discussion: 15 min

**Activity III:**

Investigation: 55 min  
 Project: 55 min

**Activity IV:**

Investigate & design  
 project: 3-4 classes  
 Coordinate &  
 implement project:  
 teacher's discretion

**Activity**

- I. Groups will investigate, present and discuss how chronic diseases affect the Native American populations. Some good resources to help students get started:
  - <http://www.cdc.gov/minorityhealth/populations/REMP/aian.html>
  - <http://ruralhealth.und.edu/projects/nrcnaa>
  - [http://en.wikipedia.org/wiki/Native\\_American\\_disease\\_and\\_epidemics](http://en.wikipedia.org/wiki/Native_American_disease_and_epidemics)
  - <http://www.nativevillage.org/Libraries/Health%20Library.htm>
  - video: <http://www.bhcaih.org/protectvideo.html>
- II. Investigate and discuss major CDC efforts to help prevent chronic diseases. (see list under Major Programs at the following site: <http://www.cdc.gov/chronicdisease/about/programs.htm>)
- III. Following the [HOSA Public Service Announcement event guidelines](#) and [rating sheet](#), groups will create a public service announcement about one of the following chronic illnesses: myocardial infarction, stroke, asthma, skin cancer, diabetes.
- IV. Following the [HOSA Community Awareness event guidelines](#) and [rating sheet](#), the class will develop and sponsor a project to promote community awareness about one of the chronic diseases that is prevalent in Texas.

**Assessment**

Successful completion of ☒ CheckPoint Test

**Materials**

PowerPoint & KEY

Student computers

[HOSA Public Service Announcement event guidelines](#)

HOSA Public Service Announcement grading rubric (Judge's Rating Sheet)

[HOSA Community Awareness event guidelines](#)

HOSA Community Awareness grading rubric (Judge's Rating Sheet)

**Accommodations for Learning Differences**

For reinforcement, the student will view one of the following global chronic disease online videos: [WHO: Unite in the fight against NCDs](#) (runtime: 6:22); [WHO: Global Noncommunicable Disease Network](#) (runtime: 6:22); [Obesity and Type 2 Diabetes \(HBO: The Weight of the Nation\)](#) (runtime: 12:21); [Land of Tobacco: China's deadly addiction](#) (runtime: 2:02) and summarize video.

For enrichment, the student will complete a disease report for one of the following chronic illnesses: myocardial infarction, stroke, asthma, skin cancer, diabetes.

## **National and State Education Standards**

### **National Health Science Cluster Standards**

#### **HLCO2.01**

Health care workers will know the various methods of giving and obtaining information. They will communicate effectively, both orally and in writing.

#### **HLCO4.01**

Health care workers will use information technology applications required within all career specialties. They will demonstrate use as appropriate to health care applications.

## **TEKS**

130.209 (c)(1)(C) contrast health problems in developing and developed countries;

130.209 (c)(1)(F) identify and describe the challenges in global health, which have the greatest impact on health in developing nations;

130.209 (c)(7)(B) presents project to classmates.

## **Texas College and Career Readiness Standards**

### **English Language Arts**

III. A. Understand the elements of communication both in informal group discussions and formal presentations (e.g., accuracy, relevance, rhetorical features, and organization of information).

III. B. Develop effective speaking styles for both group and one-on-one situations.

IV. A. Apply listening skills as an individual and as a member of a group in a variety of settings (e.g., lectures, discussions, conversations, team projects, presentations, interviews).

IV. B. Listen effectively in informal and formal situations.

V. B. Select information from a variety of sources.

### **Cross-Disciplinary**

I. A. 1. Engage in scholarly inquiry and dialogue.

1. E. 1. Work independently.

1. E. 2. Work collaboratively.

1F.2. Evaluate sources for quality of content, validity, credibility, and relevance.

II. C. 1. Understand which topics or questions are to be investigated.

II. C. 2. Explore a research topic.

II. C. 5. Synthesize and organize information effectively.

II. C. 8. Present final product

II. E. 1. Use technology to gather information.

## References:

Centers for Disease Control and Prevention (CDC): <http://www.cdc.gov/>

World Health Organization (WHO): <http://www.who.int/en/>

National Cancer Institute: <http://www.cancer.gov/>

National Association of Chronic Disease: <http://www.chronicdisease.org/>

The Silver Book—Aging and Chronic Disease: [www.silverbook.org/SilverBook.pdf](http://www.silverbook.org/SilverBook.pdf)

*The Value of Elderly Disease Prevention*, Goldman et al. 2005

PBS News Hour – Non-Communicable Disease Primer: *Where Does the World Stand?*

<http://www.pbs.org/newshour/rundown/2011/09/non-communicable-disease-primer-where-does-the-world-stand.html>

NAME \_\_\_\_\_ CLASS \_\_\_\_\_ DATE \_\_\_\_\_

**☑ CheckPoint Test**  
**Chronic & Age-Related Diseases**

1. What is another name for *chronic diseases*?
2. How would you define chronic disease?
3. Approximately how many people in the U.S. have a chronic condition?
4. What is the only continent in the world where infectious diseases outnumber chronic conditions?
5. Name one reason for the shift from infectious diseases to chronic diseases.
6. Which of the following is not a cause of a chronic disease.
  - a. rise in obesity
  - b. increased travel around the world
  - c. not eating enough vegetables & fruits
7. What % of world's elderly has one or more chronic diseases?
8. In the past 2 decades cardiovascular disease has decreased in: (select all that apply)
  - a. low-income countries
  - b. middle-income countries
  - c. high-income countries
  - d. sub-Saharan Africa

9. Name two lifestyle choices that largely contribute to cardiovascular disease.
10. What does COPD stand for?
11. What are the 2 major causes of COPD around the world?
12. What type of diabetes is linked to poor diet and obesity?
  - a. Diabetes Type I
  - b. Diabetes Type II
13. Name one of the top 11 countries where there is a high prevalence of diabetes.
14. Name 2 of the deadly forms of cancer that are increasing at a high rate around the world.
15. What % of cancer cases are linked to behavioral or environmental factors?
16. Name 2 ways in which people with chronic conditions burden our health care system.



## ☑CheckPoint Test -- KEY

### Chronic & Age-Related Diseases

1. What is another name for *chronic diseases*?  
**non-communicable diseases**
2. How would you define chronic disease?  
**a non-infectious disease of long duration and slow progression**
3. Approximately how many people in the U.S. have a chronic condition?  
**almost half of all Americans**
4. What is the only continent in the world where infectious diseases outnumber chronic conditions?  
**Sub-Saharan Africa**
5. Name one reason for the shift from infectious diseases to chronic diseases.  
**people living longer**  
**poor eating habits**  
**lack of physical activity**  
**rise in obesity**  
**tobacco use**  
**excessive alcohol consumption**  
**pollution**  
**globalization**
6. Which of the following is not a cause of a chronic disease.
  - a. rise in obesity
  - b. increased travel around the world**
  - c. not eating enough vegetables & fruits
7. What % of world's elderly has one or more chronic diseases?  
**80%**
8. In the past 2 decades cardiovascular disease has decreased in: (select all that apply)
  - a.** low-income countries
  - b.** middle-income countries
  - c. high-income countries
  - d. sub-Saharan Africa

9. Name two lifestyle choices that largely contribute to cardiovascular disease.  
**poor diet, lack of exercise, smoking, excessive alcohol**
10. What does COPD stand for?  
**Chronic Obstructive Pulmonary Disease**
11. What are the 2 major causes of COPD around the world?  
**smoking & air pollution**
12. What type of diabetes is linked to poor diet and obesity
  - a. Diabetes Type I
  - b. Diabetes Type II**
13. Name one of the top 11 countries where there is a high prevalence of diabetes.  
**Nauru, UAE (United Arab Emirates), Saudi Arabia, Bahrain, Kuwait, Oman, Tonga, Mauritius, Egypt, Mexico, India**
14. Name 2 of the deadly forms of cancer that are increasing at a high rate around the world.  
**lung cancer, stomach cancer, colon cancer, liver cancer, breast cancer**
15. What % of cancer cases are linked to behavioral or environmental factors?  
**30%**
16. Name 2 ways in which people with chronic conditions burden our health care system.  
**fill more prescriptions, visit physicians more, likely to be hospitalized more, have more home health care visits**

## PUBLIC SERVICE ANNOUNCEMENT JUDGE'S RATING SHEET

Section \_\_\_\_\_

Level: \_\_\_\_\_ SS \_\_\_\_\_ PS/C

Team # \_\_\_\_\_

Judge's Signature \_\_\_\_\_

Areas Evaluated		Points Possible					Points Awarded
		Superior	Excellent	Good	Fair	Poor	
Organization and Content	<b>Purpose</b> (relevant, powerful message, important information)	10	8	6	4	2	
	<b>Effectiveness</b> (captures attention, the critical message stands out, evokes emotion)	10	8	6	4	2	
	<b>Treatment</b> (effective for target audience, encourages positive behavior)	5	4	3	2	1	
	<b>Writing</b> (clear wording, appropriate language, accurate information)	5	4	3	2	1	
	<b>Originality</b>	10	8	6	4	2	
	<b>Visual imagery</b> (visuals support message, realistic setting)	5	4	3	2	1	
	<b>Talent</b> (actors believable and realistic)	5	4	3	2	1	
Technical Quality	<b>Audio</b> (balanced background music, silence used effectively)	5	4	3	2	1	
	<b>Exposure/Focus/Color</b> (sharp images, good lighting)	5	4	3	2	1	
	<b>Camera Technique/Composition</b> (movement, appropriate angles)	5	4	3	2	1	
	<b>Editing/clean transitions/synchronization</b>	5	4	3	2	1	
Presentation	Demonstrated a clear understanding of subject/theme and purpose of the PSA	10	8	6	4	2	
	Described the creative process and how they think the public has/will respond to their PSA.	5	4	3	2	1	
	Spoke clearly and distinctly with good grammar and articulation	5	4	3	2	1	
<b>PSA is 29-31 seconds in length</b>		5					
<b>Presentation by at least 3 team members</b>		5					
<b>Points Possible</b>		100	72	54	36	18	
<b>Total Points</b>							

## COMMUNITY AWARENESS JUDGES' RATING SHEET

Team #: \_\_\_\_\_

Level \_\_\_\_\_ SS \_\_\_\_\_ PS/Collegiate

Section \_\_\_\_\_

Judge's Signature: \_\_\_\_\_

Items Evaluated	Points Possible					Awarded
	Superior	Excellent	Good	Fair	Poor	
1. Scope and intensity of project. Development and implementation.	10	8	6	4	2	
2. Understanding of the specific health issue.	10	8	6	4	2	
3. Cooperative work with other groups to reach goals of project	10	8	6	4	2	
4. Impact on groups & individuals within the community. (Increased public awareness of the health-related issue.)	10	8	6	4	2	
5. Imagination and creativity of the project.	10	8	6	4	2	
6. Interview Presentation	5	4	3	2	1	
• Organization/teamwork	10	8	6	4	2	
• Delivery (poise, speaking skills)						
7. Responses to judge questions	5	4	3	2	1	
8. Portfolio	5	4	3	2	1	
• Written summary	10	8	6	4	2	
• Project documentation	10	8	6	4	2	
• Neatness, design, appearance						
9. Followed guidelines for portfolio	5					
<b>TOTAL SCORE</b>	100	76	57	38	19	

## Disease Report

<b>Disease</b>
<b>Alternate Names</b>
<b>Definition</b>
<b>Etiology</b>
<b>Signs &amp; Symptoms</b>
<b>Diagnostic Tests</b>
<b>Treatment</b>
<b>Complications</b>
<b>Prognosis</b>
<b>Bibliography</b>

## Disease Report Rubric

Criteria	Possible Points	Points Awarded
<b>Disease</b> Correctly names the disease.	3	
<b>Alternate Names</b> If applicable, includes any alternate names for the disease/disorder.	2	
<b>Definition</b> Includes in-depth discussion of the history and general description of the disease with interesting facts.	10	
<b>Etiology</b> Includes the cause or origin of the disease/disorder.	15	
<b>Signs &amp; Symptoms</b> Accurately describes common physical and medical symptoms.	15	
<b>Diagnostic Tests</b> Identifies tests performed to aid in the diagnosis or detection of disease/disorder.	15	
<b>Treatment</b> Identifies the mode or course pursued for remedial ends for the disease/disorder.	15	
<b>Complications</b> Identifies any diseases or injuries that may develop during the treatment of the disease/disorder.	10	
<b>Prognosis</b> Includes the prediction of the probable course, outcome, frequency, and life expectancy of the disease/disorder.	10	
<b>Bibliography</b> Follows proper format and includes more than 3 sources.	5	
<b>TOTAL</b>	<b>100</b>	