

# CARDIOVASCULAR DISEASE

*magnitude, Causes and Control programmes*

By

Dr. Omagino O O John

Consultant Cardiothoracic Surgeon,  
Executive Director, Uganda Heart Institute

*A public lecture to Judiciary staff on 28<sup>th</sup>  
January 2020*



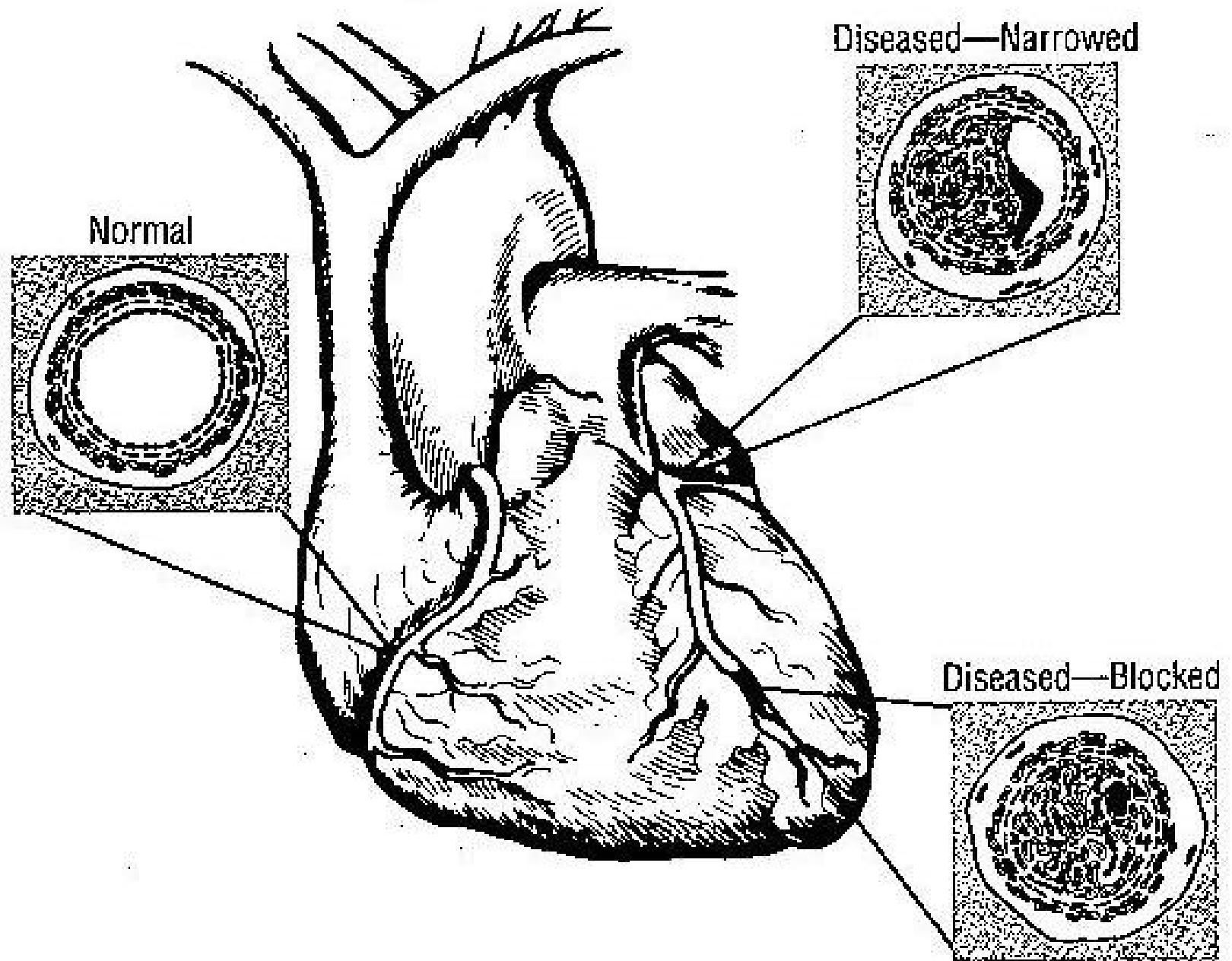
**PROPOSED UGANDA INSTITUTE OF CARDIO THORACIC DISEASES PROJECT (UICDP)  
DESIGNED BY ARCH DESIGN LIMITED**



# Introduction

- ▶ CVD is due to shortage of blood supply to the heart muscle and other organs arising from blocking of its arteries (coronary arteries) by cholesterol or clots
- ▶ CVD is a leading cause of death and disability in the industrialized world
- ▶ The Incidence of CVD in the developing world is rising due to adaptation of affluent lifestyle
- ▶ CVD is largely preventable

# Front View of Heart Showing Cross Sections of Arteries



# TYPES OF HEART DISEASE

## A. Congenital (ASD, VSD, TOF etc)

- *1% all birth(16,000)*
- *50% require surgery*

## B. Acquired

- *RHD (300,000)*
- *Coronary Heart Disease*
- *Hypertensive Heart Disease*
- *Rhythm defects*
- *Chronic Heart Failure*
- *others*

# CARDIOVASCULAR DISEASE BURDEN IN UGANDAN CHILDREN

## ▶ CHD

- ▶ Ugandan population -40 million
- ▶ Annual growth rate -3.2% (1,600,000 births)
- ▶ CHD (1% births) =16,000
- ▶ Surgical Correction (50%) =8,000 per year

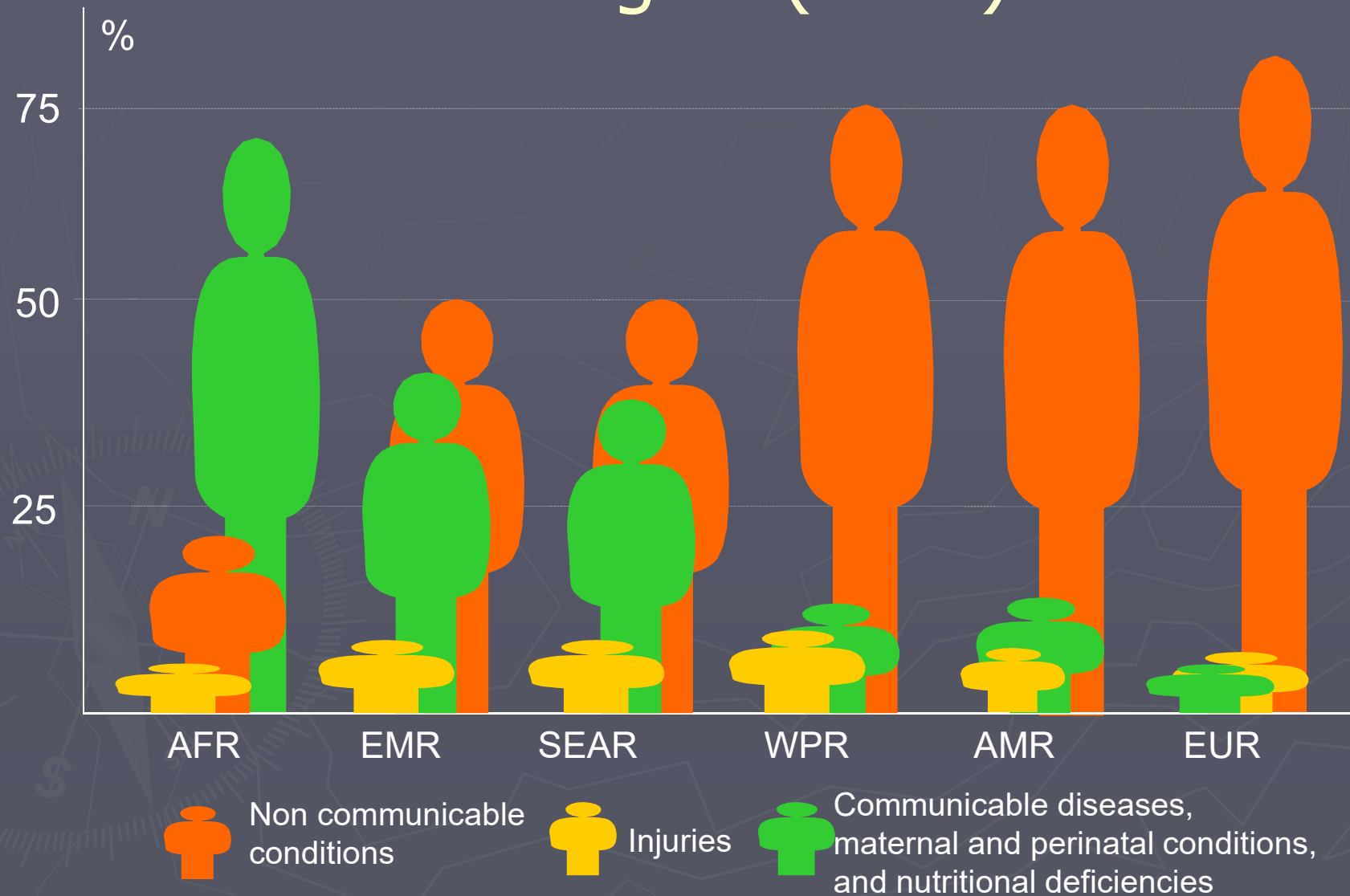


# The Five Major Messages

#1

Cardiovascular diseases are not the leading cause of death in sub-Saharan Africa today.

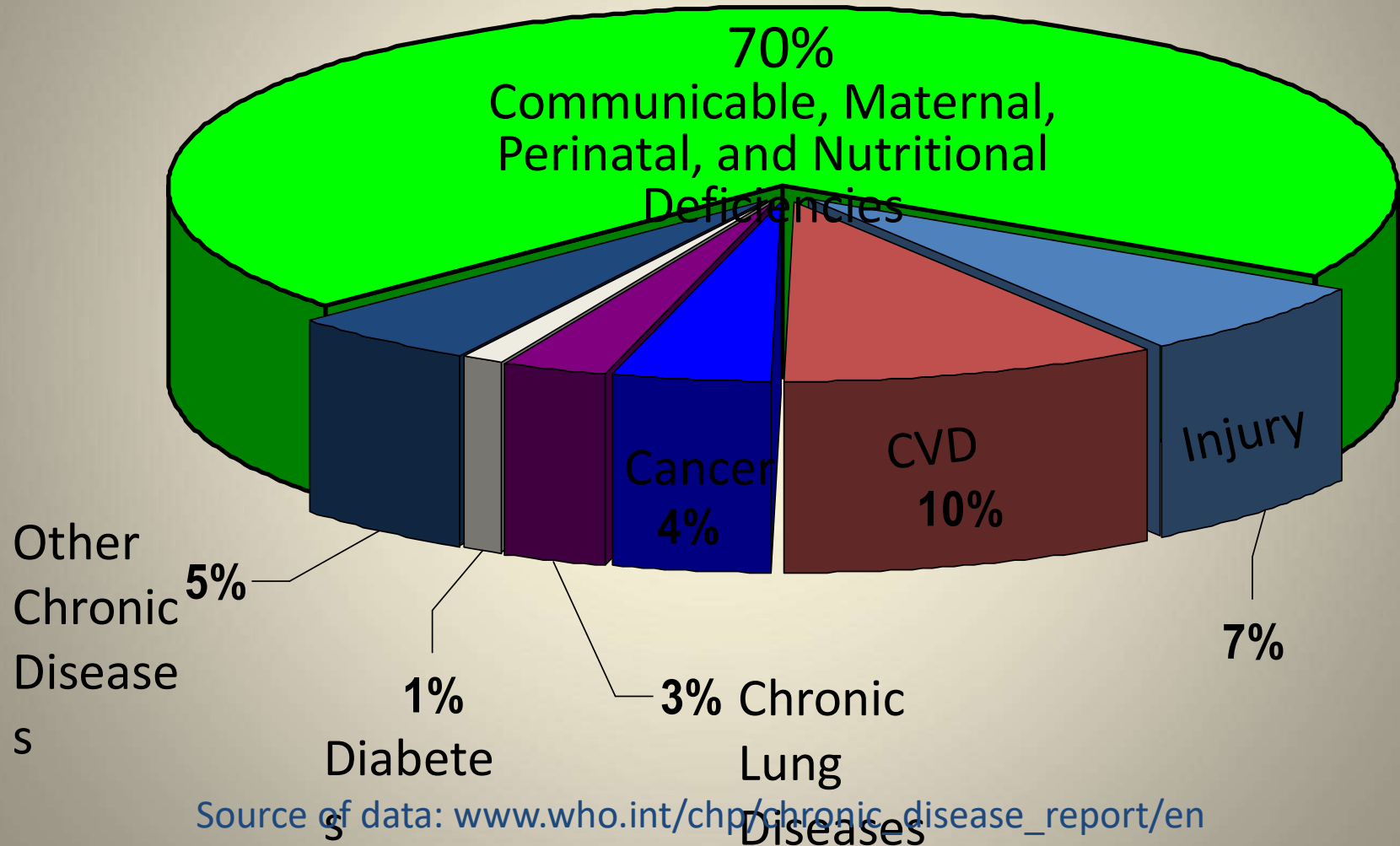
# Deaths by Broad Cause Group and WHO Region (2000)



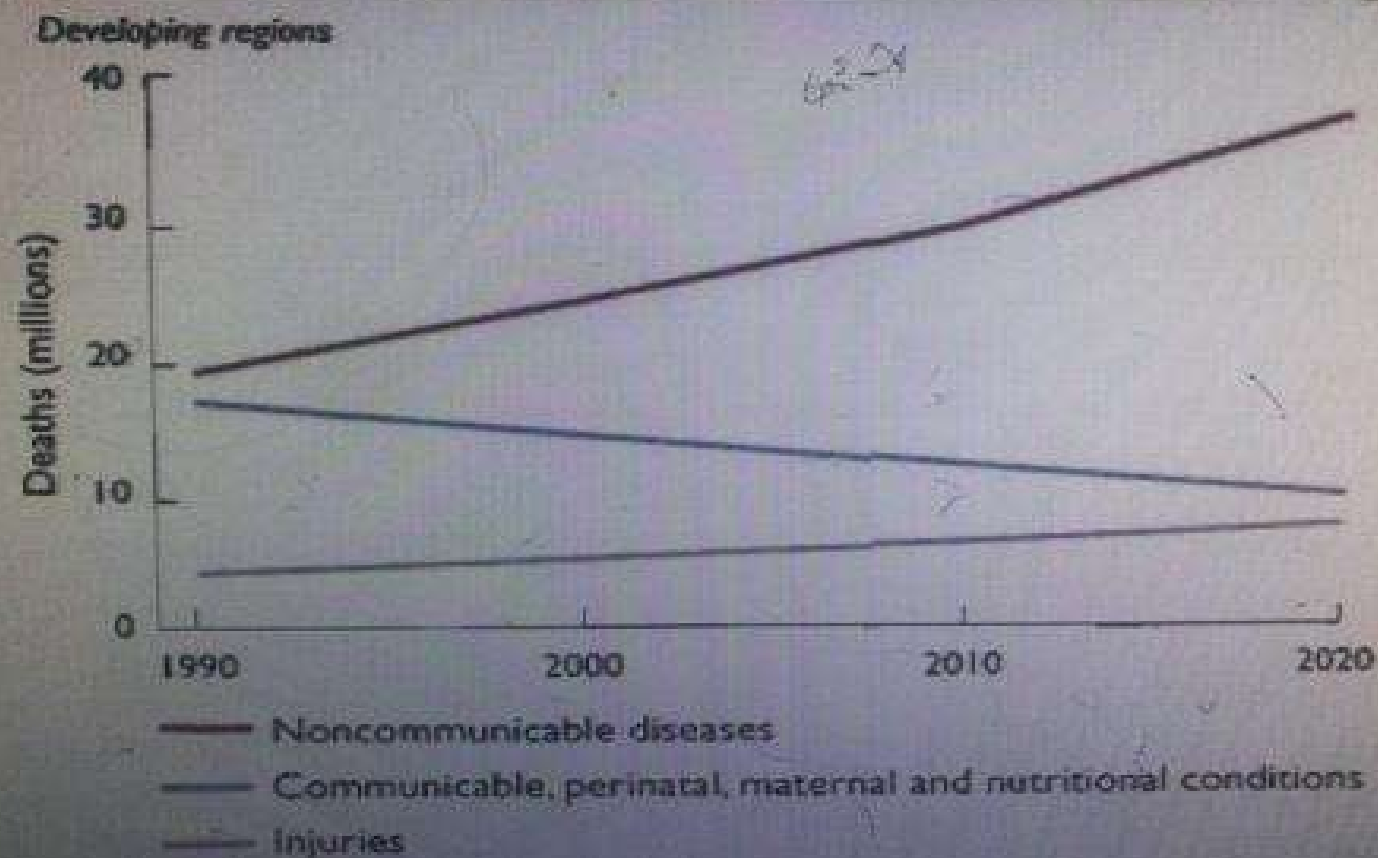
Source: WHO, World Health Report 2001



# The Impact of Chronic Diseases in the WHO Region for Africa



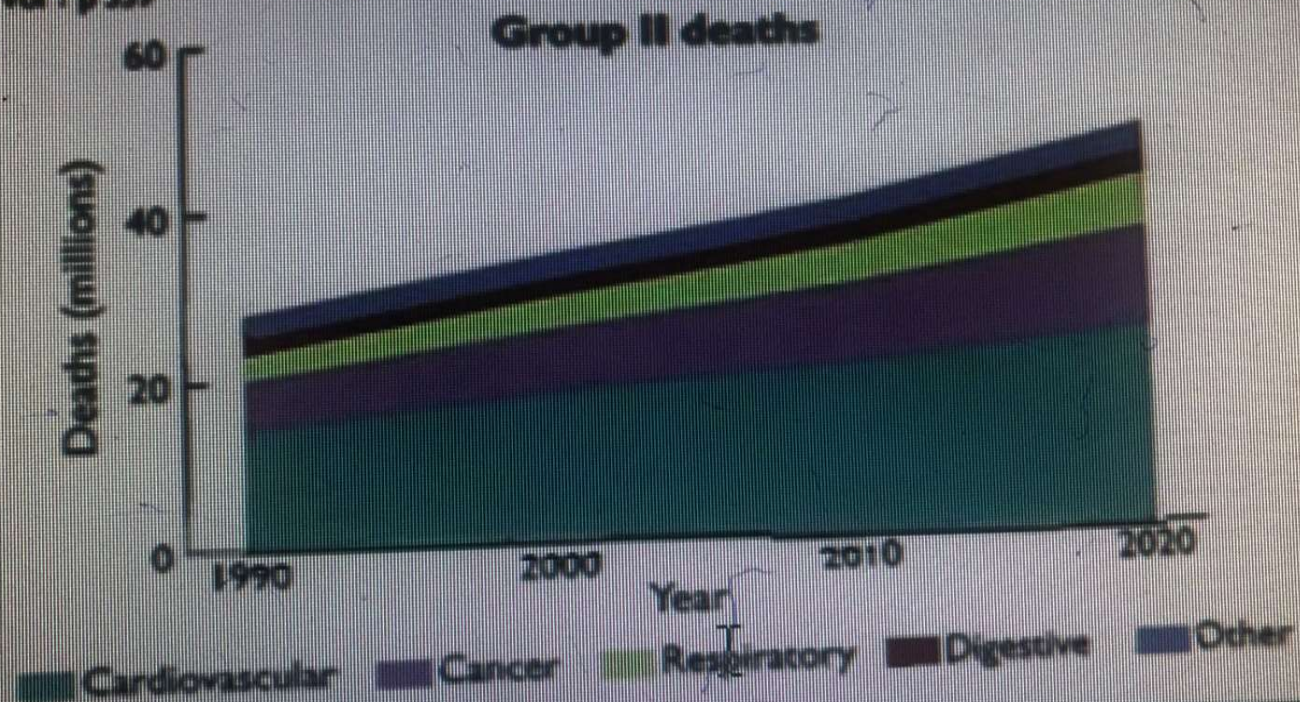
**Figure 1** Projected trends in death by broad cause Group, developing regions



**Figure 21**

**The rise of noncommunicable diseases: Group II deaths by causes, world, 1990–2020**

Vol 1 p 359



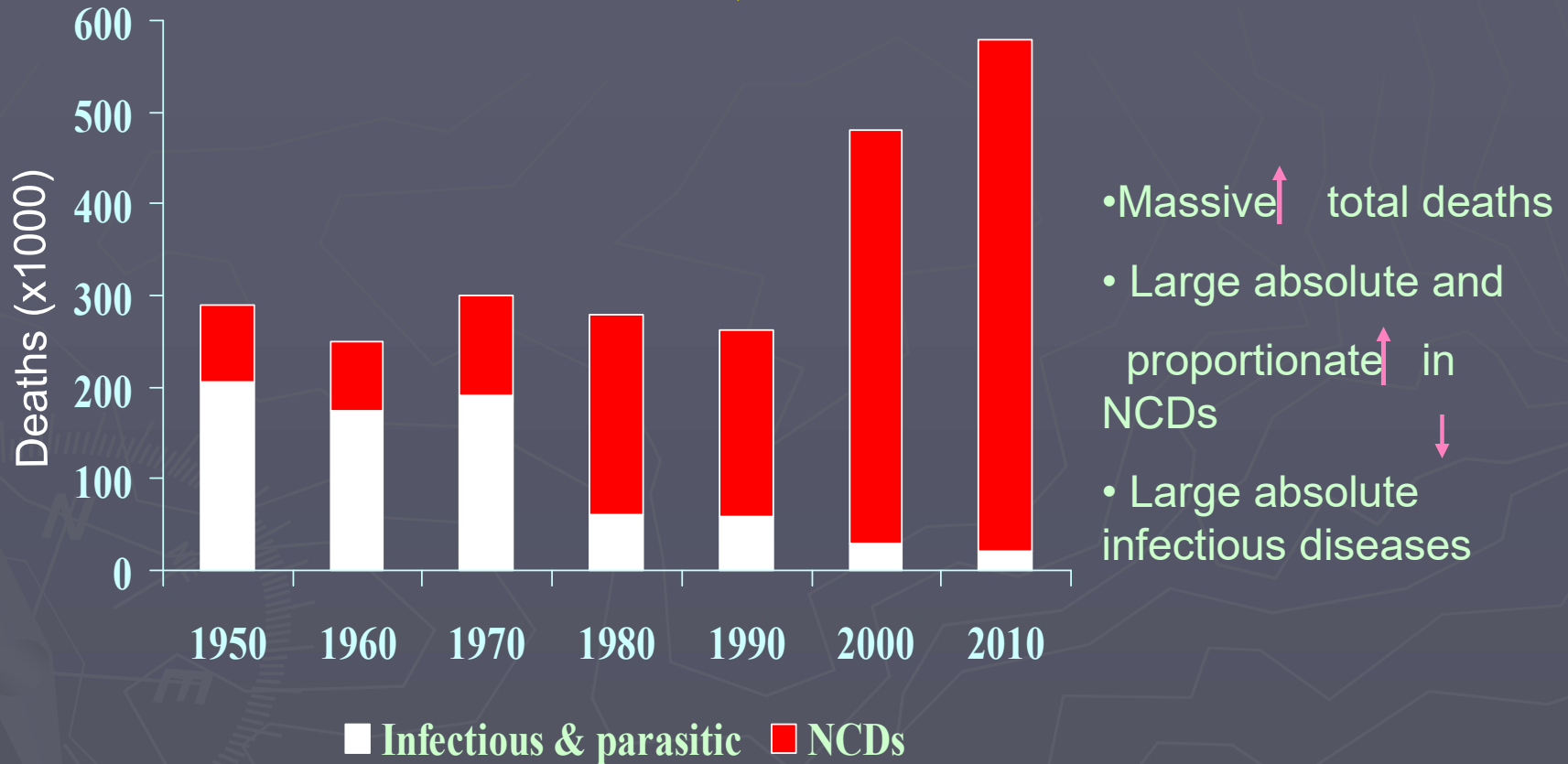
# The Five Major Messages

## #2

An epidemiological transition is occurring rapidly in sub-Saharan Africa; as a result, CVD is likely to become the leading killer by 2020.



# RAPID EPIDEMIOLOGIC TRANSITION FROM INFECTIOUS AND NON-COMMUNICABLE CAUSES, MEXICO, 1950-2010



Bobadilla et al, In Jamison ed, Disease Control

Priorities in DC, Oxford UP, WB, 1993

# The Evolution of Obesity

the 33-year-old Spurlock's physical condition collapse, day by day. "My body just basically falls apart over the course of this diet," Spurlock told *Newsweek*. "I start to get tired, I start to get headaches, my liver basically starts to fill up with fat because there's so much fat and sugar in this food. My blood sugar skyrockets, my cholesterol goes up off the charts, my blood pressure becomes completely unmanageable. The doctors were like, 'You have to stop.'" In one month on the fast-food regime, he gained 25 pounds.

Spurlock's total immersion in fast food was a one-subject research study, and his body's response a warning about the way we eat now. "Super Size Me" could be a credo for the United States, where people, like their automobiles, have become gargantuan. "SUVs, big homes, penis enlargement, breast enlargement, bulking up with steroids—it's a context of everything getting bigger," says K. Dun Gifford '60, LL.B. '66, president of the Oldways Preservation and Ex-

sources, and obese American travelers waddling through international airports and hotel lobbies only reinforce that image. Yet our fat problem is becoming a global one as food corporations export our sugary, salty, fatty diet: Beijing has more than a hundred McDonald's franchises, which advertise and price the same food in the same way, and with the same level of success.

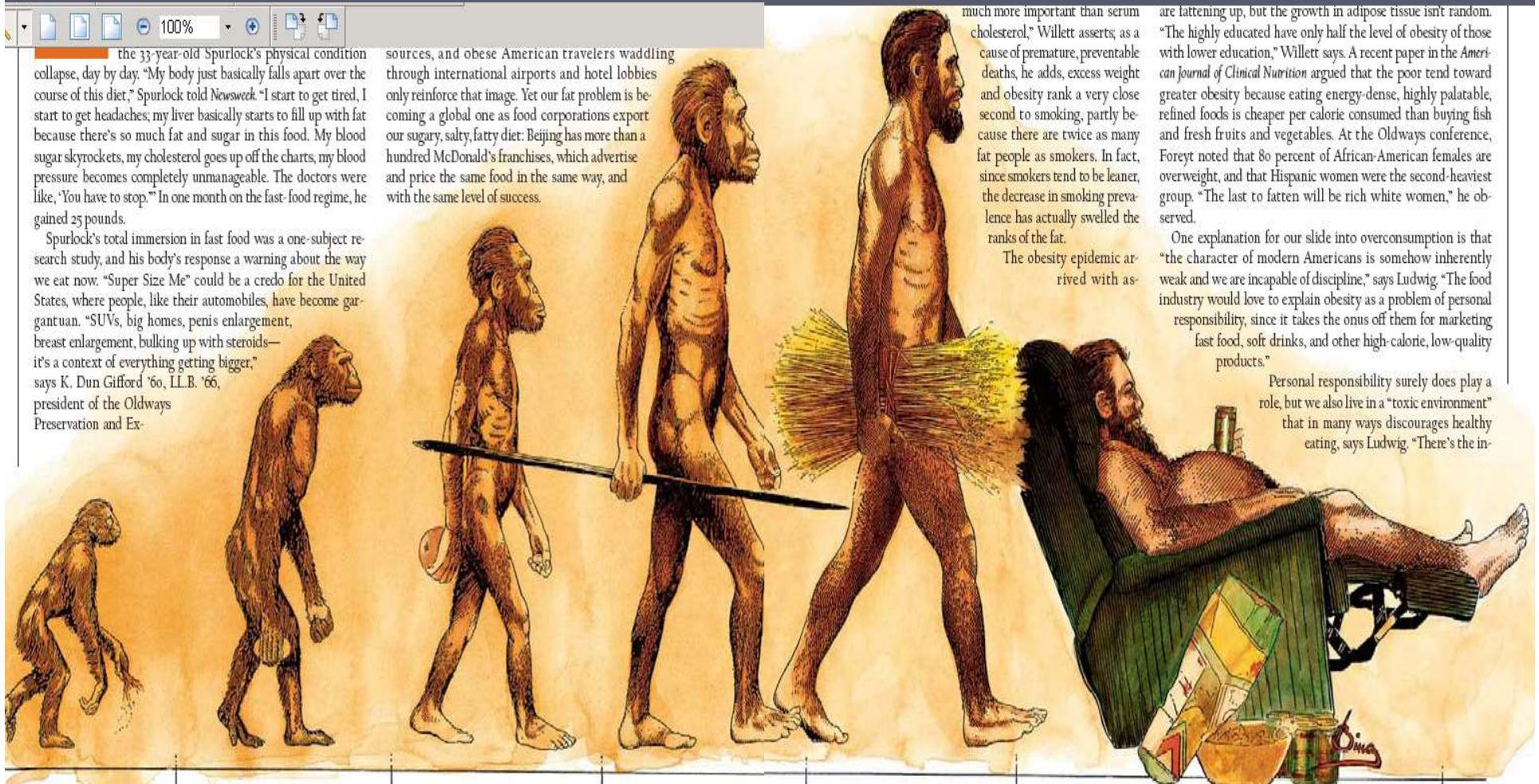
much more important than serum cholesterol," Willett asserts, as a cause of premature, preventable deaths, he adds, excess weight and obesity rank a very close second to smoking, partly because there are twice as many fat people as smokers. In fact, since smokers tend to be leaner, the decrease in smoking prevalence has actually swelled the ranks of the fat.

The obesity epidemic arrived with as-

are fattening up, but the growth in adipose tissue isn't random. "The highly educated have only half the level of obesity of those with lower education," Willett says. A recent paper in the *American Journal of Clinical Nutrition* argued that the poor tend toward greater obesity because eating energy-dense, highly palatable, refined foods is cheaper per calorie consumed than buying fish and fresh fruits and vegetables. At the Oldways conference, Foreyt noted that 80 percent of African-American females are overweight, and that Hispanic women were the second-heaviest group. "The last to fatten will be rich white women," he observed.

One explanation for our slide into overconsumption is that "the character of modern Americans is somehow inherently weak and we are incapable of discipline," says Ludwig. "The food industry would love to explain obesity as a problem of personal responsibility, since it takes the onus off them for marketing fast food, soft drinks, and other high-calorie, low-quality products."

Personal responsibility surely does play a role, but we also live in a "toxic environment" that in many ways discourages healthy eating, says Ludwig. "There's the in-



Harvard Magazine, May-June 2004; p 50







# Magnitude of problem

- ▶ Heart disease and strokes kill 12 million persons each year
- ▶ 100 million lost healthy life years
- ▶ 25% increase by 2020
- ▶ Brunt of increase will be in developing countries
- ▶ Heart disease and strokes no longer a Western problem

***(WHO press/83 of 17<sup>th</sup>-oct-2002)***

# Risk Factors

- ▶ High blood pressure -50%
- ▶ Cholestrol -33%
- ▶ Low phyisical activity -20%
- ▶ Smoking -20%
- ▶ Low fruit and vegetable intake -20%

- *Total. > 100% due to overlap*

***(LIFE STYLE BASICALLY)***

# The Five Major Messages

#3

Many effective interventions exist and must be explored for their health impact in Africa.

# Control/prevention of CHD

- ▶ Regular Health Audit
- ▶ Life Style modification
- ▶ Government Policies

# Regular Health Audit

- ▶ **BMI** =  $\frac{Wt(kg)}{Ht(m)^2}$  (NR = 18-25, overwt 26-28, 28-30 pre, above 30 obesity)

- (For a 70kg at 1.75m, BMI =  $70/1.75 \times 1.75 = 22.9$ )

- ▶ BP ( NR = 110/70 – 130/84 mmHg)

- ▶ PR ( NR = 60 – 99, Sinus rhythm)

- ▶ Lipid profile, Cardiac Enzymes, RFT, LFT, Sugar etc

- ▶ Total Cholesterol (NR = 3.5 – 5.7 mmol/l)

- ▶ HDL (NR = 0.90 – 1.68 mmol/l )

- ▶ **LDL (NR = 0.00 – 3.37 mmol/l)**

# **Other tests**

## **ECG (Electrocardiogram)**

**Assessing electrical activity of heart;  
(rate, rhythm, strength, blocks, injuries,  
etc)**

## **ECHO (Echocardiography)**

**Assessing structure (Anatomy) and  
function (Physiology)**

**Resting and Stress (Latent lesions)**

# Other tests

- ▶ Coronary Angiography and Cardiac catheterization
  - Blockage and extent
  - Interventions
  - Not available yet in Uganda
- ▶ Radio isotope Perfusion tests (function)



# Echocardiography



# Open Heart Surgery in progress





# Open Heart Surgery



# ICU nursing



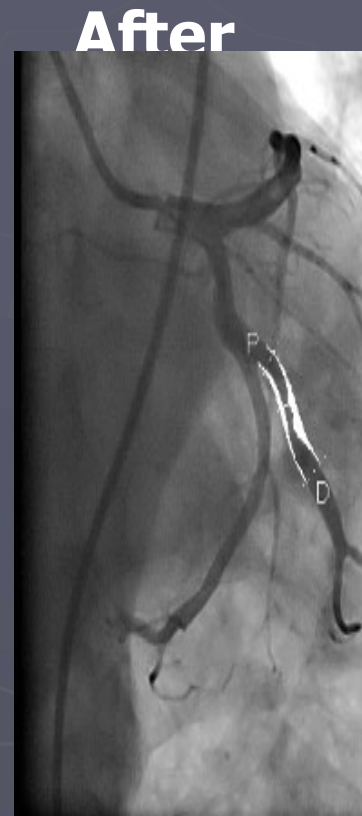




# Blocked Heart Artery



**Before**



# Life Style Modification

## ***DIET:***

- ▶ Amounts (Balance sheet at 3000 kcal)
- ▶ Low animal fat (LDL)
- ▶ Vegetable fat (HDL)
- ▶ High vegetable and fruits
- ▶ Low salt
- ▶ Reduce fried food



# Salt content

(Ref. Sea food=1gm/ 100gm)

▶ Bread & Crackers	50%
▶ Cornflakes	100%
▶ Soups	300%
▶ Sausages	50-100%

■ *WHO/83 2002*

# Habit adjustment

- ▶ *Avoid Tobacco*
- ▶ *Ensure Regular Exercise*

# Government Policies

- ▶ Manufacturing industries to reduce on fat, sugar & salt in processed foods & drinks
- ▶ Promotion of traditional foods diets and methods of cooking plus support of local farmers
- ▶ Public Health Education/Awareness/Nutrition labeling
- ▶ Recreation facilities
- ▶ Taxes on Tobacco
- ▶ Enforce/ Popularize Health Audit

# Examples of successful Control of CHD

- ▶ In the United Kingdom, a government – promoted program in consort with the food and drink manufacturing industry successfully reduced salt content in almost a quarter of manufactured foods. This occurred gradually over several years and examples included an agreement among members of the Bakers Federation and reductions within products produced by several major supermarket chains.



# Examples of Control of CHD

- ▶ Korea has worked to retain elements of the traditional diet. Civil society and government initiatives led mass media campaigns, such as television programs, to promote local foods, traditional cooking methods and the need to support local farmers.

# Examples of Control of CHD

- ▶ In Mauritius, cholesterol reduction was achieved largely by a government-led effort switching the main source of cooking oil from palm to soya bean oil.



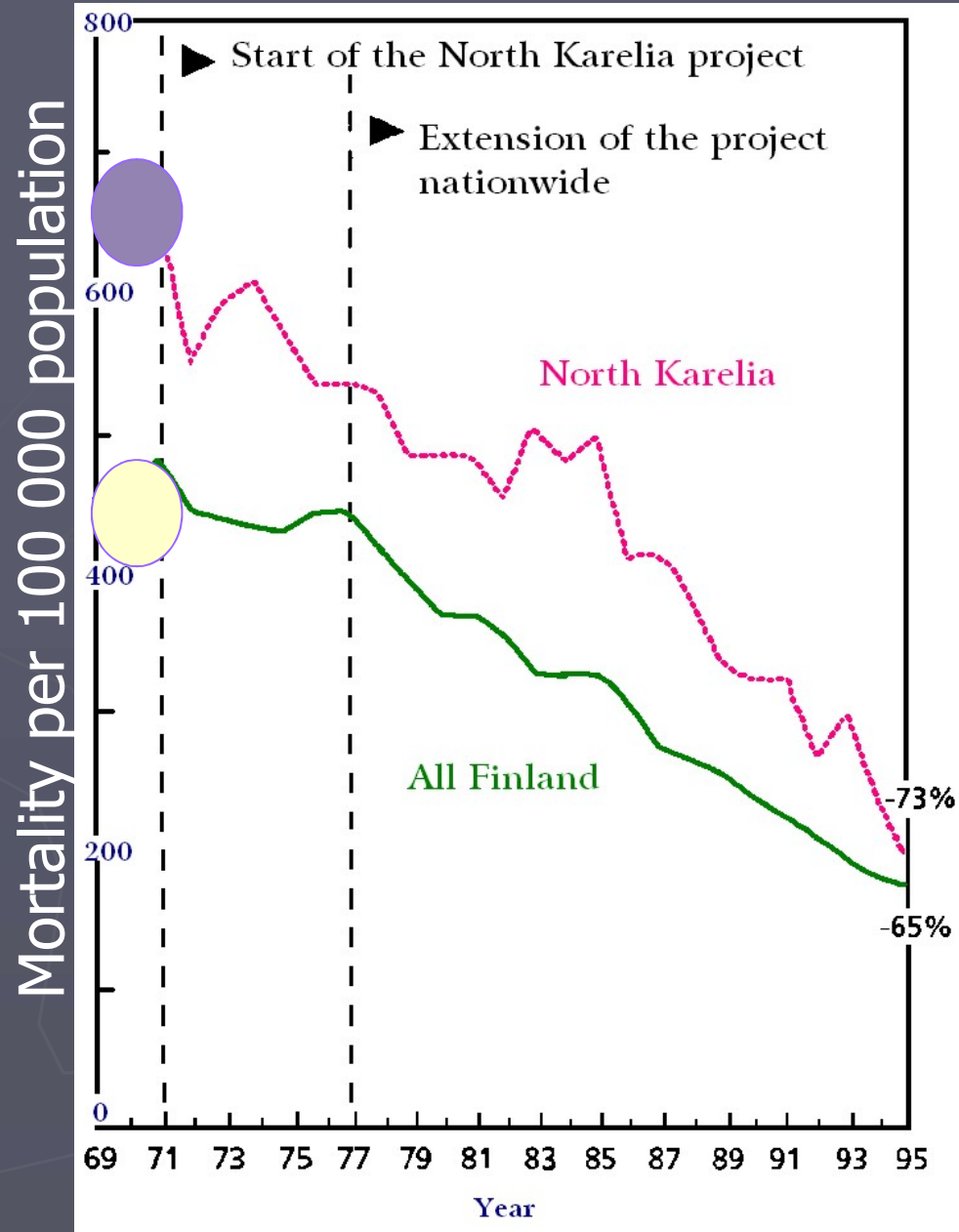
# Examples of Control of CHD

- ▶ In the USA, a decrease in saturated fat intake in the late 1960s began the large decline in coronary heart disease (CHD) deaths seen in the last few decades there.
- ▶ In New Zealand and Finland introduction of a recognizable food labelling logos for healthier foods led many companies to reformulate their products. The benefits included large decreases in the salt content of processed foods.

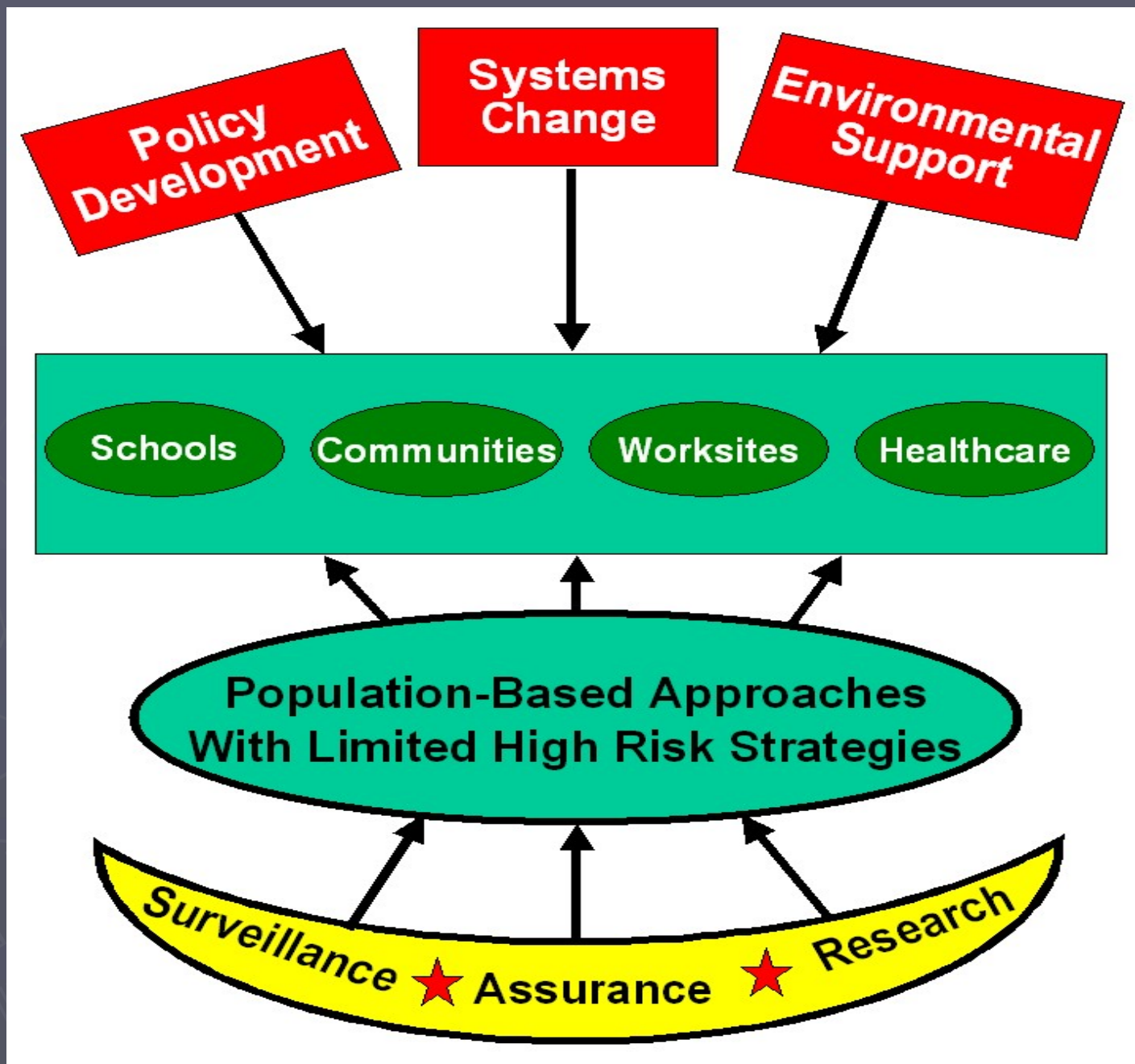


# Success Story from Finland

Age-adjusted mortality rates of CHD in North Karelia and the whole of Finland among males aged 35-64 years from 1969 to 1995.



Source: WHO



# The Five Major Messages

## #4

Without an appropriate clinical and public health infrastructure, significant impact cannot be made.

# Major Challenges Requiring Action

1. Lack of awareness.
2. Lack of ideal surveillance.
3. Urbanization & health transition.
4. Enabling govt policies
5. Clinical and public health infrastructure

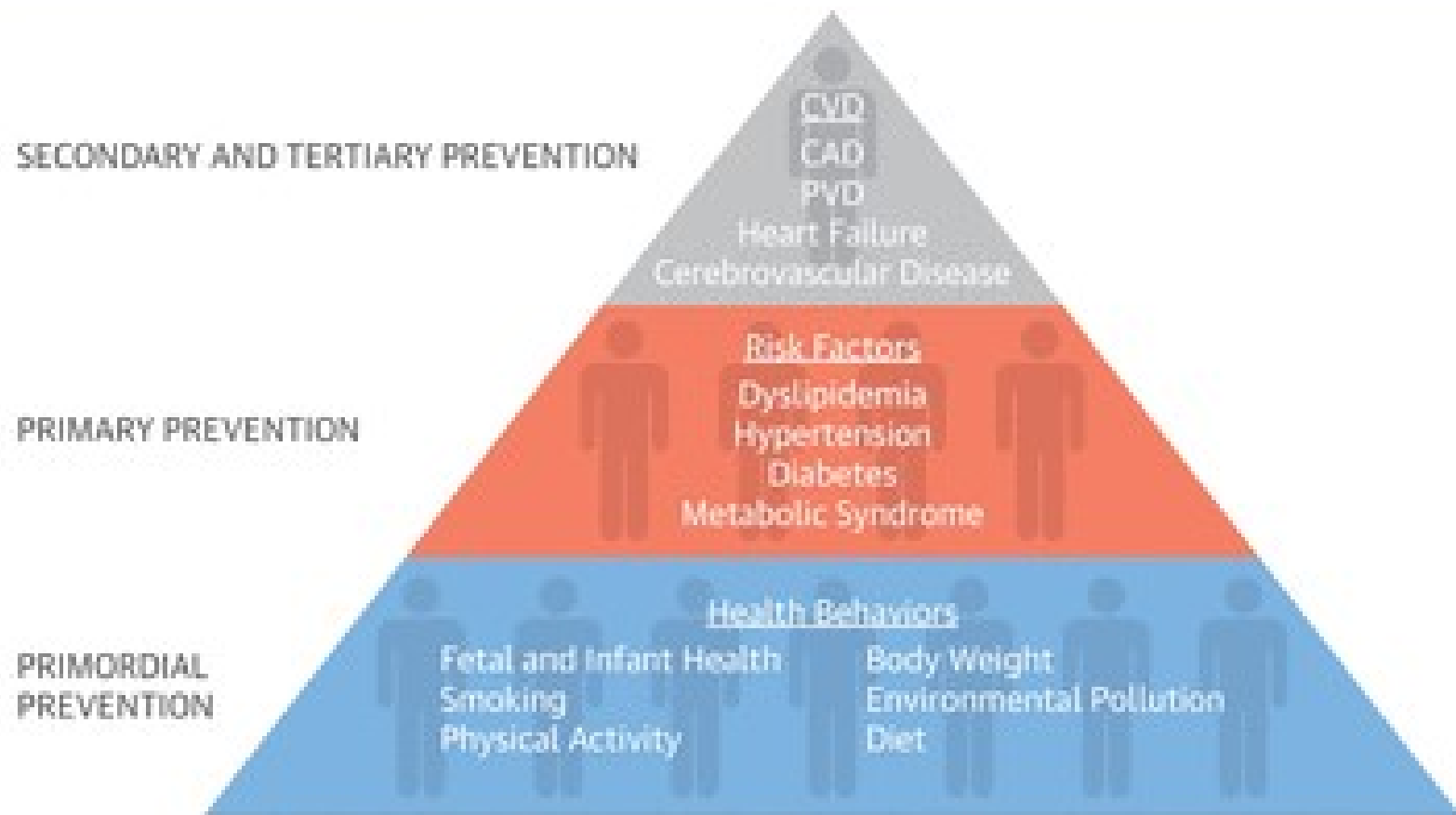
# The Five Major Messages

#5

As country teams, we can  
make a difference;

Now is the time for action!

## CENTRAL ILLUSTRATION: Cardiovascular Disease Prevention and Health Promotion



Hong, K.N. et al. J Am Coll Cardiol. 2017;70(17):2171-85.





**PROPOSED UGANDA INSTITUTE OF CARDIO THORACIC DISEASES PROJECT (UIC TDP)  
DESIGNED BY ARCH DESIGN LIMITED**



**THANK YOU**  
**THE END**

