
# Preventive Medicine


# Non-communicable disease management



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# Outline

- Noncommunicable diseases
- Challenges
- Risk factors
- Prevention and controls
- Self-management of chronic diseases

# Noncommunicable diseases (NCDs)

- also known as chronic diseases
  - not passed from person to person
  - long duration
  - generally slow progression
  - often lengthy and expensive treatment

# Examples?

# Noncommunicable diseases (NCDs)

- Main types:
  - Cardiovascular diseases
  - Cancers
  - Chronic respiratory diseases
  - Diabetes

# NCDs

- Cardiovascular diseases account for most NCD deaths, or 17.5 million people annually, followed by cancers (8.2 million), respiratory diseases (4 million), and diabetes (1.5 million).
- These 4 groups of diseases account for 82% of all NCD deaths.
- Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from an NCD.

# The Challenges of NCDs

- Every day, millions of people with chronic conditions struggle to manage their symptoms.
- 92% of older adults have at least one chronic condition; 77% have at least two
- Four chronic conditions—cause almost two thirds of all deaths each year.
  - heart disease
  - cancer
  - stroke
  - diabetes

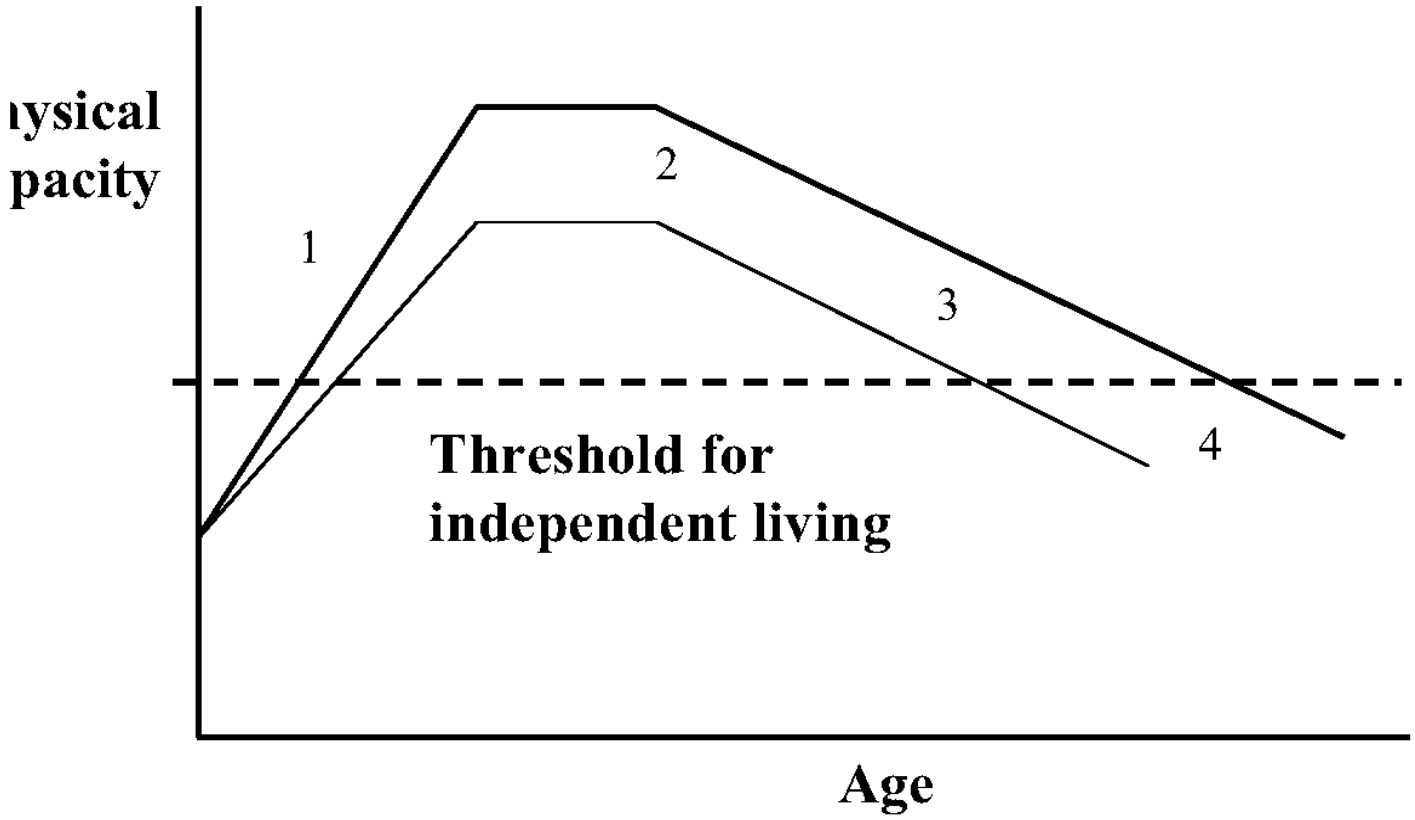
# The Challenges of NCDs

- Diabetes affects 12.2 million Americans aged 60+, or 23% of the older population.
- An additional 57 million Americans aged 20+ have pre-diabetes, which increases their risk of developing type 2 diabetes, heart disease, and stroke.
- 90% of Americans aged 55+ are at risk for hypertension, or high blood pressure. 77% of women aged 75+ have this condition, as do 64% of men aged 75+.

# Key facts

- NCDs kill 38 million people each year.
- Almost three quarters of NCD deaths - 28 million - occur in low- and middle-income countries.
- 16 million NCD deaths occur before the age of 70; 82% of these "premature" deaths occurred in low- and middle-income countries
- Chronic conditions make life unmanageable for millions of older adults—and force them to give up their independence too soon.

# Life course development in physical capacity and effects of a threshold for independent living.

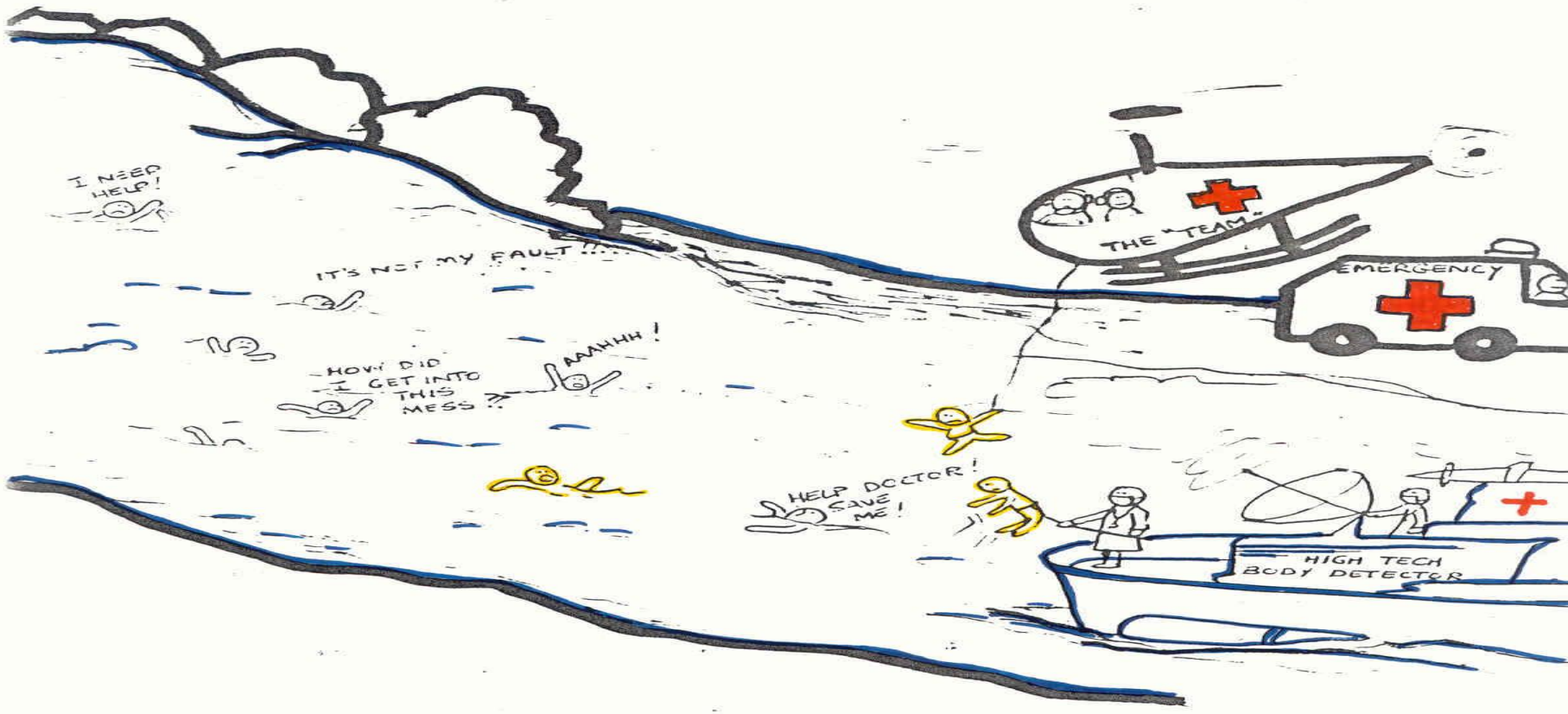



1 = Early life interventions to ensure max. peak capacity

2 = Adult interventions to slo rate of decline in capacity

3 = Late life interventions to maintain capacity above thresholds

4 = remedial therap to restore quality o life

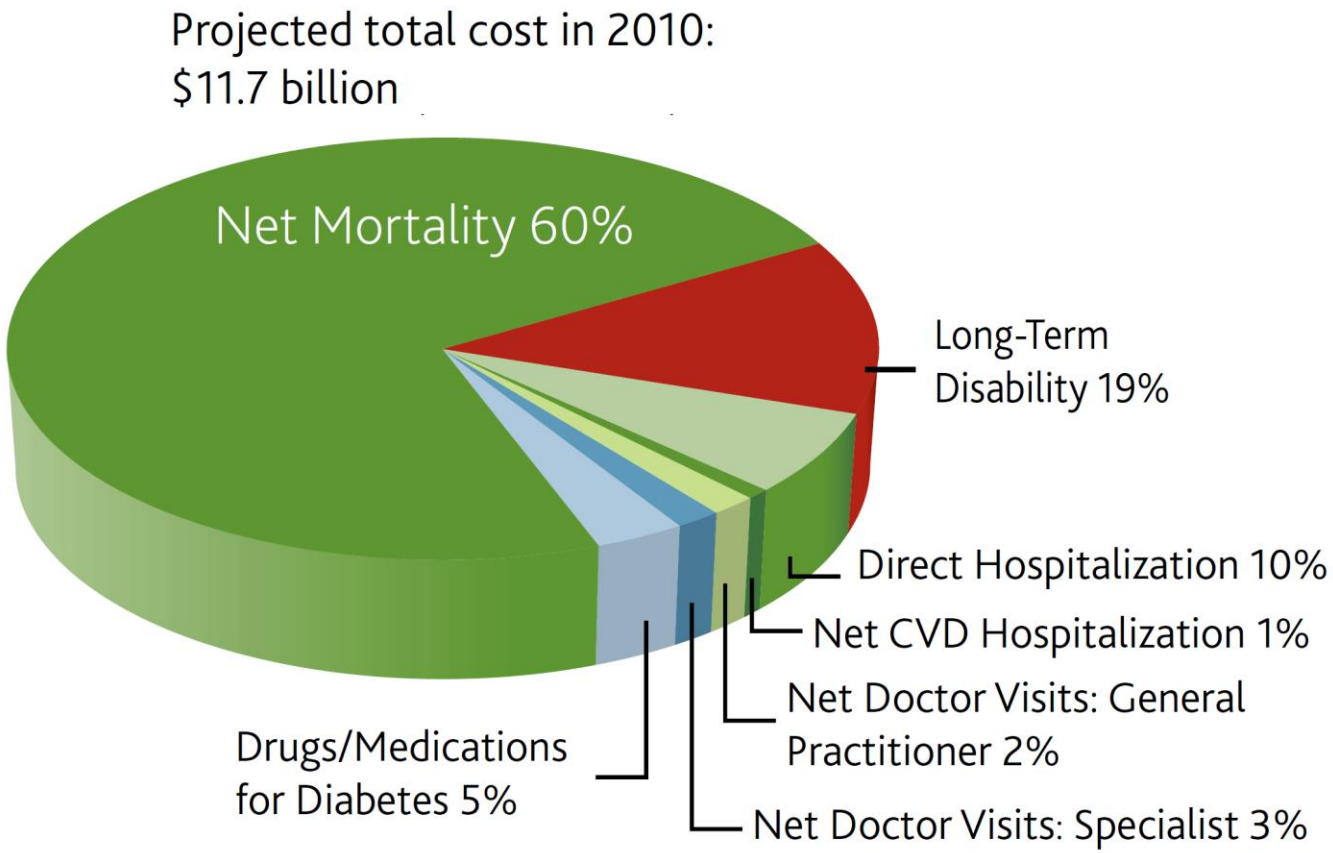


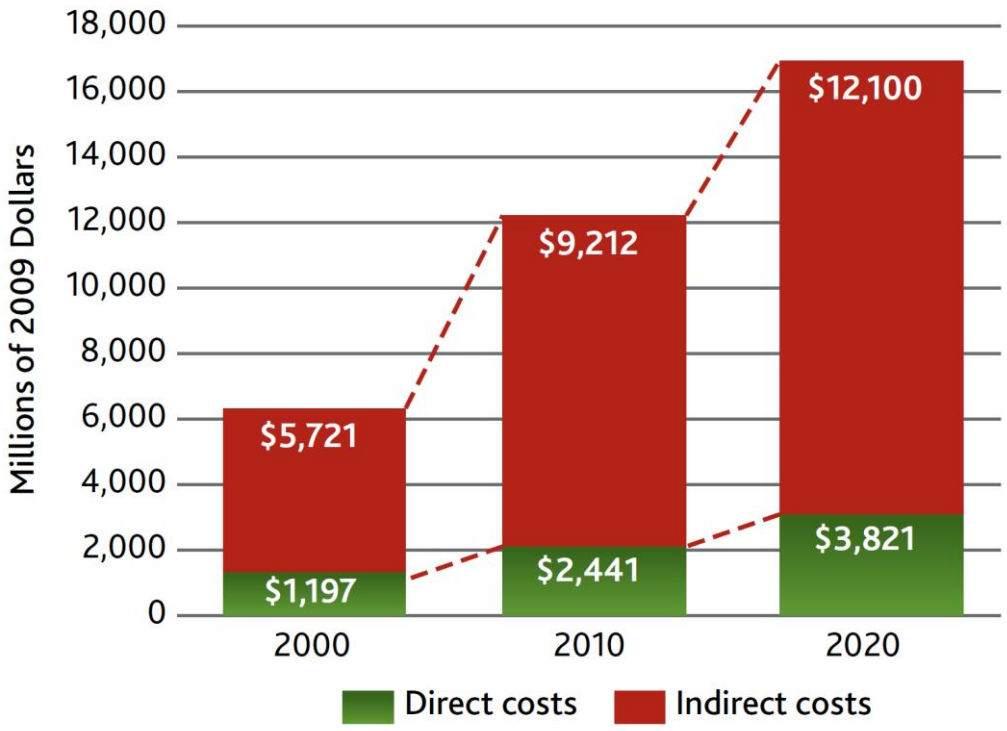

# THE MEDICAL MODEL OF HEALTH

# Cost of Chronic Conditions

- The traditional medical model —focuses more on the illness than on the patient
  - is expensive and often ineffective
- Chronic diseases account for 75% of the money spends on health care
- Yet only 1% of health dollars are spent on public efforts to improve overall health.

# Diabetes cost-Canada




18,000
16,000
14,000
12,000
10,000
8,000
6,000
4,000
2,000
0
Millions of 2009 Dollars
$5,721
$1,197
$9,212
$2,441
$12,100
$3,821
2000
2010
2020
Direct costs
Indirect costs

# Harms for the population

- Significantly reduced productivity
- Living with less income
- Accomplishing less
- Spending more time in bed sick
- Having poor mental health

Sources: Stanford University (Lorig, K.); Center on an Aging Society, National Institute on Aging

# Who is at risk of such diseases?

- All age groups and all regions are affected by NCDs.
- NCDs are often associated with older age groups
  - but 16 million of all deaths attributed to NCDs occur before the age of 70. These deaths 82% occurred in low- and middle-income countries.

- Children, adults and the elderly are all vulnerable to the risk factors that contribute to NCDs
  - from unhealthy diets, physical inactivity, exposure to tobacco smoke or the effects of the harmful use of alcohol

# Potential reasons

- Ageing
- Rapid unplanned urbanization
- Globalization of unhealthy lifestyles
  - Example: unhealthy lifestyles may show up in individuals as raised blood pressure, increased blood glucose, elevated blood lipids, and obesity
  - These are called 'intermediate risk factors' which can lead to cardiovascular disease, a NCD.

# Leading causes of attributable global mortality and burden of disease, 2004

## Attributable Mortality

| | | % |
|---|---|---|
| 1. | High blood pressure | 12.8 |
| 2. | Tobacco use | 8.7 |
| 3. | High blood glucose | 5.8 |
| 4. | Physical inactivity | 5.5 |
| 5. | Overweight and obesity | 4.8 |
| 6. | High cholesterol | 4.5 |
| 7. | Unsafe sex | 4.0 |
| 8. | Alcohol use | 3.8 |
| 9. | Childhood underweight | 3.8 |
| 10. | Indoor smoke from solid fuels | 3.3 |

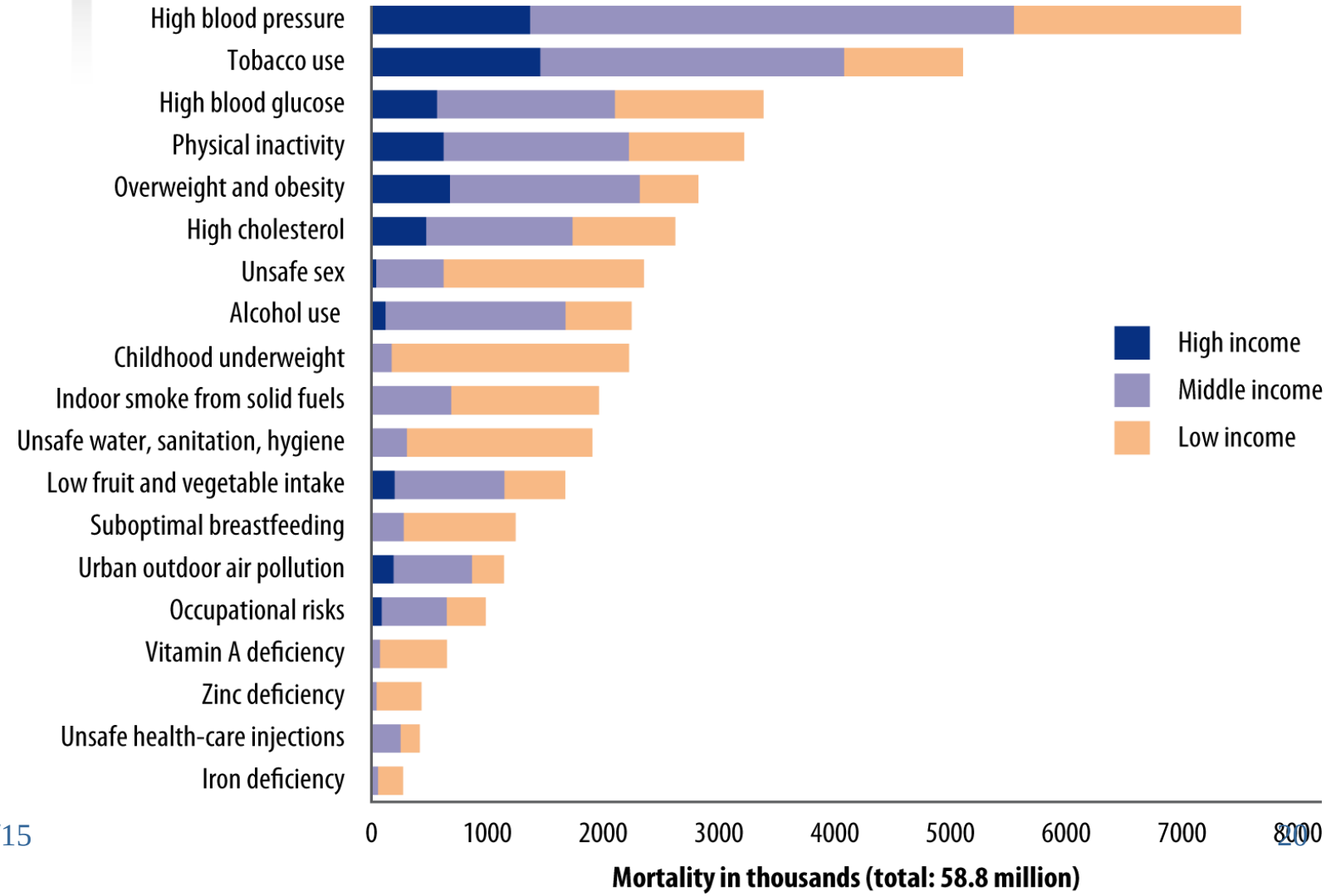
59 million total global deaths in 2004

## Attributable DALYs

| | | % |
|---|---|---|
| 1. | Childhood underweight | 5.9 |
| 2. | Unsafe sex | 4.6 |
| 3. | Alcohol use | 4.5 |
| 4. | Unsafe water, sanitation, hygiene | 4.2 |
| 5. | High blood pressure | 3.7 |
| 6. | Tobacco use | 3.7 |
| 7. | Suboptimal breastfeeding | 2.9 |
| 8. | High blood glucose | 2.7 |
| 9. | Indoor smoke from solid fuels | 2.7 |
| 10. | Overweight and obesity | 2.3 |

1.5 billion total global DALYs in 2004

# Deaths attributed to 19 leading factors, by country income level, 2004



# Risk factors

## Modifiable behavioral risk factors

- Tobacco accounts for around 6 million deaths every year and is projected to increase to 8 million by 2030.
- About 3.2 million deaths annually can be attributed to insufficient physical activity.
- More than half of the 3.3 million annual deaths from harmful drinking are from NCDs.
- 1.7 million annual deaths from cardiovascular causes have been attributed to excess salt/sodium intake in 2010

# Metabolic/physiological risk factors

- These behaviors lead to four key metabolic/physiological changes:
  - raised blood pressure
  - overweight/obesity
  - hyperglycemia (high blood glucose levels)
  - hyperlipidemia (high levels of fat in the blood)

# Metabolic/physiological risk factors

- the leading metabolic risk factor globally
  - elevated blood pressure: 18% of global deaths
  - overweight and obesity
  - raised blood glucose.
- Low- and middle-income countries are witnessing the fastest rise in overweight young children.

# What are the socioeconomic impacts of NCDs?

- NCDs threaten progress towards the UN Millennium Development Goals and post-2015 development agenda.
- Poverty is closely linked with NCDs.
  - In low-resource settings, health-care NCDs can quickly drain household resources, driving families into poverty.
  - The exorbitant costs of NCDs, including often lengthy and expensive treatment and loss of breadwinners, are forcing millions of people into poverty annually, stifling development.

- Vulnerable and socially disadvantaged people get sicker and die sooner than people of higher social positions
  - at greater risk of being exposed to harmful products: tobacco or unhealthy food
  - have limited access to health services

# What do you think?

# Prevention and control of NCDs

- A comprehensive approach is needed
- All sectors, including health, finance, foreign affairs, education, agriculture, planning and others, work together to reduce the risks associated with NCDs, as well as promote the interventions to prevent and control them.

# Prevention and control of NCDs

- An important way to reduce NCDs is to focus on lessening the risk factors associated with these diseases.
- Low-cost solutions exist to reduce the common modifiable risk factors (mainly tobacco use, unhealthy diet and physical inactivity, and the harmful use of alcohol) and map the epidemic of NCDs and their risk factors.

- NCD interventions
  - delivered through a primary health-care approach
  - strengthen early detection and timely treatment
  - excellent economic investments
  - These measures can be implemented in various resource levels.
  - Eg. healthy public policies prevention and control reorienting health systems to address the needs of people with such diseases.


# PUBLIC HEALTH PERSPECTIVE

# Unbalanced distribution

- Lower-income countries generally have lower capacity for the prevention and control of NCDs
- High-income countries are nearly 4 times more likely to have NCD services covered by health insurance than low-income countries.
- Countries with inadequate health insurance coverage are unlikely to provide universal access to essential NCD interventions.

# Theoretical and methodological issues

- High risk approach
  - Intervention appropriate to individual
  - Subject motivation
  - Physician motivation
  - Cost-effective use of resources
  - Benefit/risk ratio favorable
- BUT
  - Difficulties and costs of screening
  - Palliative and temporary
  - Behaviorally inappropriate

# Theoretical and methodological issues

- The population-based approach
  - Radical
  - Large potential for a population
  - Behaviorally appropriate
- BUT
  - Small benefit to individual
  - Poor motivation of subject
  - Poor motivation of physician
  - Benefit/risk ratio worrisome

# Limitations of established theories in NCD

- The focus on the individual
  - patient
  - exposure of individuals
- Focus on disease
  - Not on health and health resources
- Focus on linear causal thinking

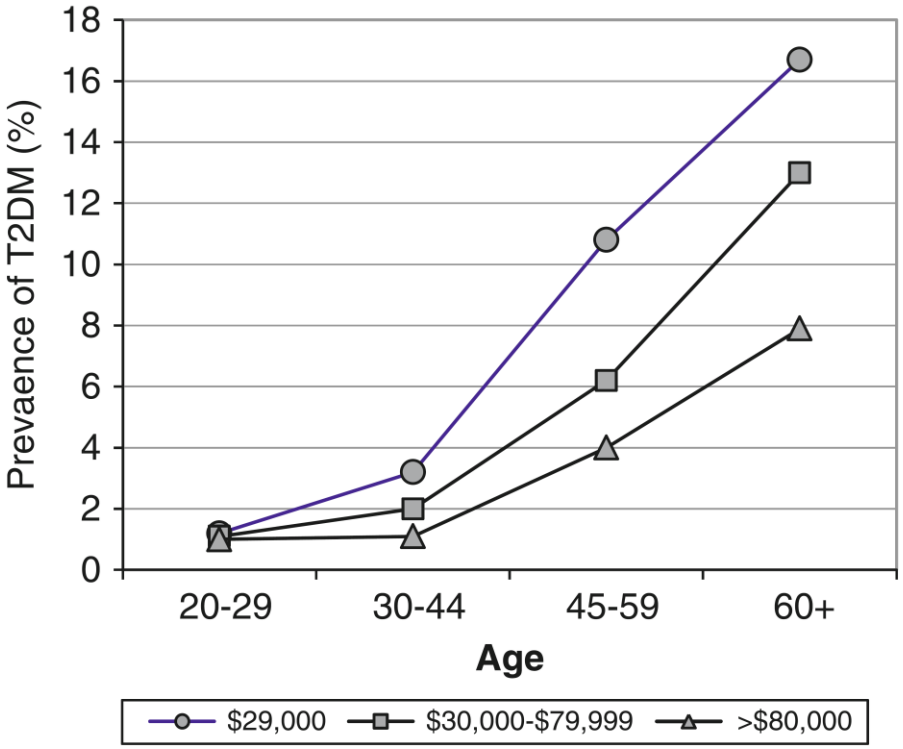
# Lenses for understanding NCDs

- Learning from social sciences
- Modern sociology question confounding informed populations

  Informed → acting
- Distributive justice and health promotion
- Health capabilities:
  - the ability of individuals to achieve certain health
  - the freedom they have to achieve these functioning

# Social determinants

- Living and working conditions → Health outcomes




prevalence of T2DM among Canadians by age and annual family income 2005

# What can we do?

- Redirecting research activities
  - to take seriously the view that living and working conditions shape the incidence and prevalence as well as the management of chronic disease
- Undertake investigation of the public policies and the economic and political structures

# NGOs addressing NCDs

- The structural, organizational and environmental conditions for life
- Focus:
  - Equity and the equitable distribution of wealth, resources and services
  - The Ottawa Charter key areas of health promotion
  - Shanghai declaration: health in all , healthy city, health literature

# NGOs addressing NCDs

- Producing ideas, methods and tools close to public decision-making
- Understanding and anticipating
- Debating and enlightening

# Health literacy

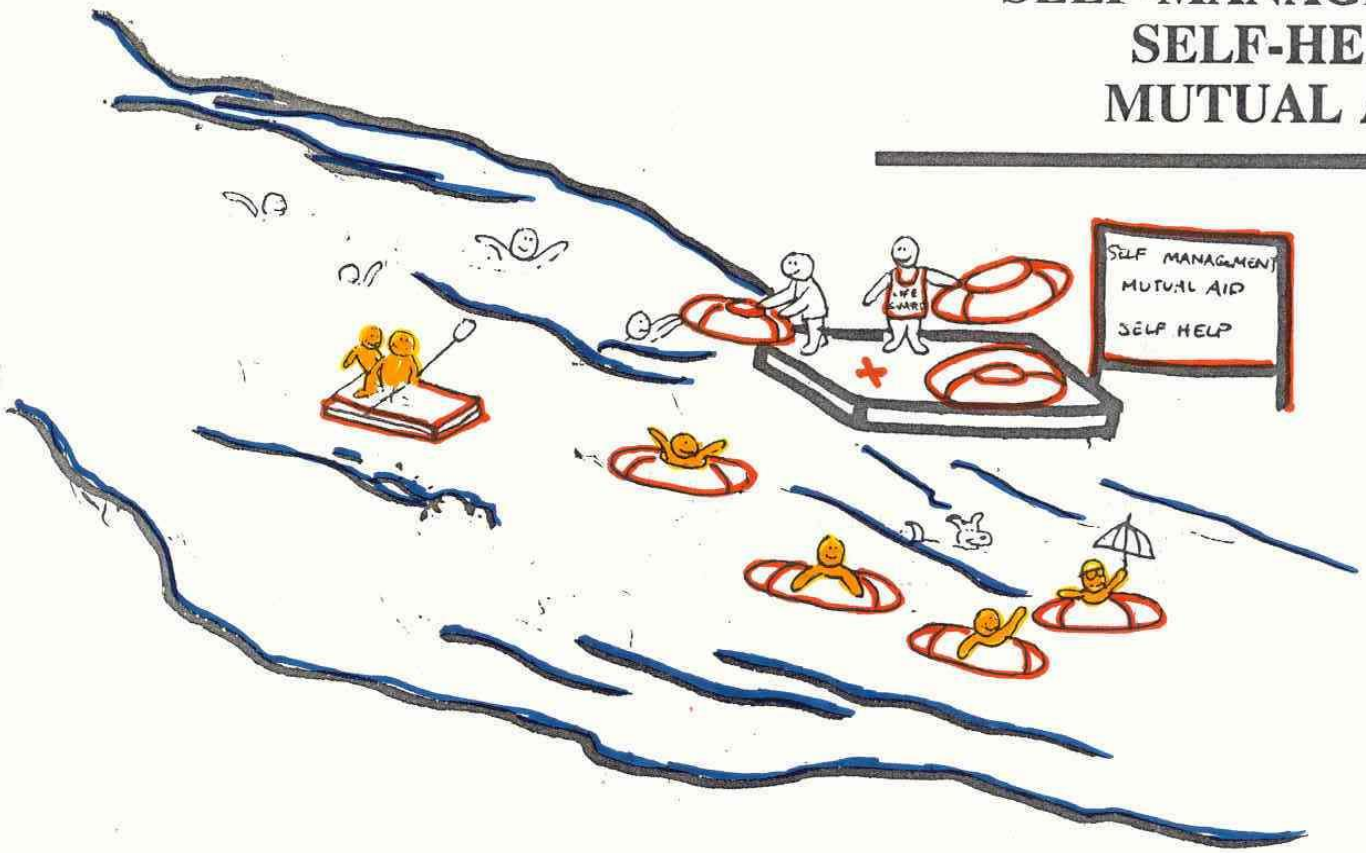
- Has the potential to increase our understanding of NCDs
- Definition
  - The degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions.----Institute of Medicine 2004

# Health literacy interventions

- Improve knowledge and skills of individuals for decision making
- Build the knowledge and skills of health providers
- Improve access to accurate, appreciate and relevant health information
- Improve usability of health-care services


SELF HELP!
SELF HELP!

# SELF-MANAGEMENT
# SELF-HELP
# MUTUAL AID



# Self management

- Chronic Disease Self-Management (CDSM)
- is what the person with a chronic disease does to manage their own illness, not what the health clinician does.
- is a lifelong practice for the individual, not something that is completed in a time-limited intervention.
- is an ongoing collaborative process between the health care practitioner and person with a chronic disease;

# Objectives of CDSM

- Healthy lifestyle choices
- Informed decisions regarding ongoing treatment options that fit within the person's broader social context
- Actively monitoring and managing symptoms and impacts of chronic health conditions
- Working in partnership with a team of health care workers.

# Health promotion - CDSM




Frieden TR. A framework for public health action: the health impact pyramid. Am J Public Health 2010;100(4):590–5.

# Self-Management Benefits Patients…

- Builds confidence (self-efficacy) to perform 3 tasks
  - Disease management
  - Role Management
  - Emotional Management
- Focuses on improved health status and appropriate health care utilization

# CDSM

- Requires lifelong choices, skills and strategies on the part of the individual for optimal management of their health condition in the long term

# Characteristics

- The patient and health professional working together.
- Often involves the family.
- An holistic approach to care (i.e., medical and psycho-social components of a condition).
- Pro-active and adaptive strategies that aim to empower the individual.

# CDSM

- not only provision of information, but also assistance in practical application of health information in the individual context through goal setting and problem solving
- is not just an intervention, it is a philosophy or entire approach to how a health care practitioners works in partnership with people with chronic diseases.

# Self-Management Assumptions

- Patients with different chronic diseases have similar self-management problems and disease-related tasks.
- Patients can learn to take day-to-day responsibility for their diseases.
- Confident, knowledgeable patients practicing self-management will experience improved health status and use fewer health resources.

# Confidence

# Not only health education…

- Self-Management
  - Manage life with disease
  - Increase skills & self-confidence
  - Problem solve and make decisions
- Patient Education
  - Change behaviors
  - Increase knowledge
  - Use specific tools (e.g., Care Plans, Action Plans)

# Self-Management Framework

- Patients accept responsibility to manage or co-manage their own disease conditions
- Patients become active participants in a system of coordinated health care, intervention and communication.
- Patients are encouraged to solve their own problems with information, but not orders, from professionals

Stanford University Patient Education Center; Center for Healthy Aging (NCOA)

# What does it mean?

- Taking care of your illness
- Carrying out normal activities
- Managing emotional changes (anger, uncertainty about the future, changed expectations and goals, and depression)
- It means having a combination of …

SKILLS, SUPPORT, PRACTICE and CONFIDENCE

# Skills

- Problem-solving
- Decision-making
- Resource Utilization
- Formation of a patient-provider partnership
- Action-planning
- Self-tailoring

# Self-management support

- health care practitioners provide to assist a person with their self-management practices
- to support their self efficacy and ability to effectively self-manage
- needs to be available when the person needs support in maintaining this approach.

# Strategies and approaches

- individual and group based
- face-to-face
- telephone
- as part of clinical intervention
- as a separate interaction with the person with a chronic disease

# Essential characteristics of self-management support

- respects choices and individual circumstances of the person with a chronic disease
- assists to address barriers to self-management
- involves goal setting and problem solving as key components

# Evidence

- Cochrane reviews on self-management strategies for COPD, diabetes and arthritis have demonstrated evidence of:
  - decreased presentations to hospital
  - improved clinical indicators (such as HBA1C)
  - increased self-efficacy and wellbeing

# CDSM Program

- A low-cost program that helps individuals with chronic conditions learn how to manage and improve their own health, while reducing health care costs.
- The program focuses on problems that are common to individuals dealing with any chronic condition, such as pain management, nutrition, exercise, medication use, emotions, and communicating with doctors.

# CDSM Program

- An effective self-management education program for people with chronic health problems.
- The program specifically addresses arthritis, diabetes, lung and heart disease, but teaches skills useful for managing a variety of chronic diseases.

# CDSM Program

- Led by a pair of trained facilitators, one or both of whom manage a chronic condition themselves
- The workshops cover 15 hours of material over a six-week period and meet 2 1/2 hours per week
- During the program, approximately 10-15 participants focus on building the skills they need to manage their conditions by sharing experiences and providing mutual support

# CDSM Program

- Helps people with diverse medical diagnoses such as diabetes, arthritis, and hypertension develop the skills and coping strategies they need to manage their symptoms.
- Employs action planning, interactive learning, behavior modeling, problem-solving, decision making, and social support for change.

# CDSM Program

- online
- in-person, community-based settings such as senior centers, churches, community health clinics, and libraries.

# Subjects covered

- Techniques to deal with problems such as frustration, fatigue, pain and isolation
- Appropriate exercise for maintaining and improving strength, flexibility, and endurance
- Appropriate use of medications
- Communicating effectively with family, friends, and health professionals
- Nutrition
- Decision making
- How to evaluate new treatments

# Health Benefits

- Improvement in exercise and ability to participate in one's own care over a two-year period.
- Improved health status in seven of nine variables: fatigue, shortness of breath, pain, social activity limitation, illness intrusiveness, depression, and health distress.
- Improved health behaviors and self-efficacy in variables related to exercise, cognitive symptom management, communication with physicians, and self-efficacy.

- measurable improvements in the health and quality of life of people with chronic conditions.
- spent fewer days in the hospital
- a trend toward fewer outpatients visits and hospitalizations
- reductions in health care expenditures to pay for itself within the first year.

- Cost Savings
  - $714 per person savings in emergency room visits and hospital utilization.
  - $364 per person net savings after considering program costs at $350 per participant.
  - Potential savings of $6.6 billion by reaching 10% of Americans with one or more chronic conditions.

# The Stanford CDSMP Model

- Peer educators
- Constant modeling
- Active problem-solving
- Formal brainstorming
- Goal-setting
- Action planning

# Participant's Learn How to Manage the Symptom Cycle

- Techniques to deal with frustration, fatigue, pain, and isolation.
- Exercises/activities for maintaining and improving strength, flexibility, and endurance.
- Medication management.
- Approaches for improving communication with friends, family and health professionals.
- Nutrition information.
- Treatment evaluation information.

# Health benefits

- Findings included:
  - Improved self-efficacy
  - Reduced use of doctors, hospital emergency rooms
  - Improvements in health status - identified by BOTH the participant and the health provider

behavior, health status and utilization

Stanford University Patient Education Center; Society of Behavioral Medicine publication (2003)

# Health benefits

- Improved quality of life
- Specific improvements in healthful behaviors
- Improvement in overall health status
- Decreased hospital stays: 49 days per patient, over a two year time period
- Decreased physician/emergency room use: 2.5 fewer visits to the emergency room and to physicians, per patient, over a two year time period

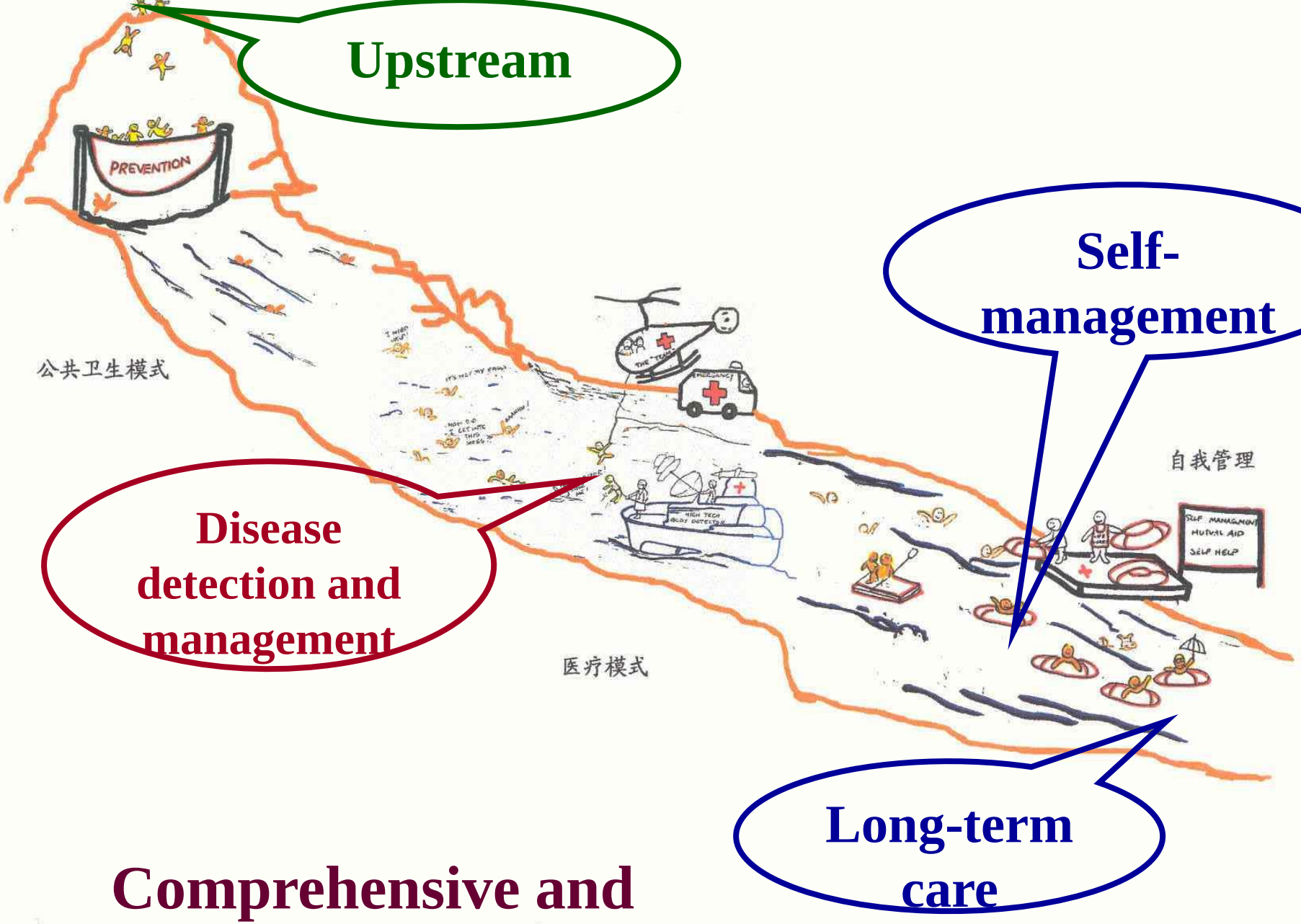
# Health benefits

- Increased physical activity
- Cognitive symptom management
- Improved communication with physicians
- Better self-reported general health
- Improved attitude
- Less health distress

# Health benefits

- Less fatigue
- Reduced disability
- Fewer social/role limitations

Sources: Stanford University Patent Education Center; published articles 1997-2003 (Lorig, K)




**Comprehensive and continuous care**



# Thanks