

Why are we aging?

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Learning objectives

1. Develop an understanding of changing demographics of American population
2. Explore the impact of increasing life expectancy on medicine and society
3. Understand the impact of public health initiatives on increased life expectancy



Let's get to know each other a bit!

- Introduce yourself & tell us
 - Where are you from?
 - What area of medicine currently interests you?
 - What does Geriatrics mean to you?
 - What is your experience with elderly people?



What is Geriatrics?

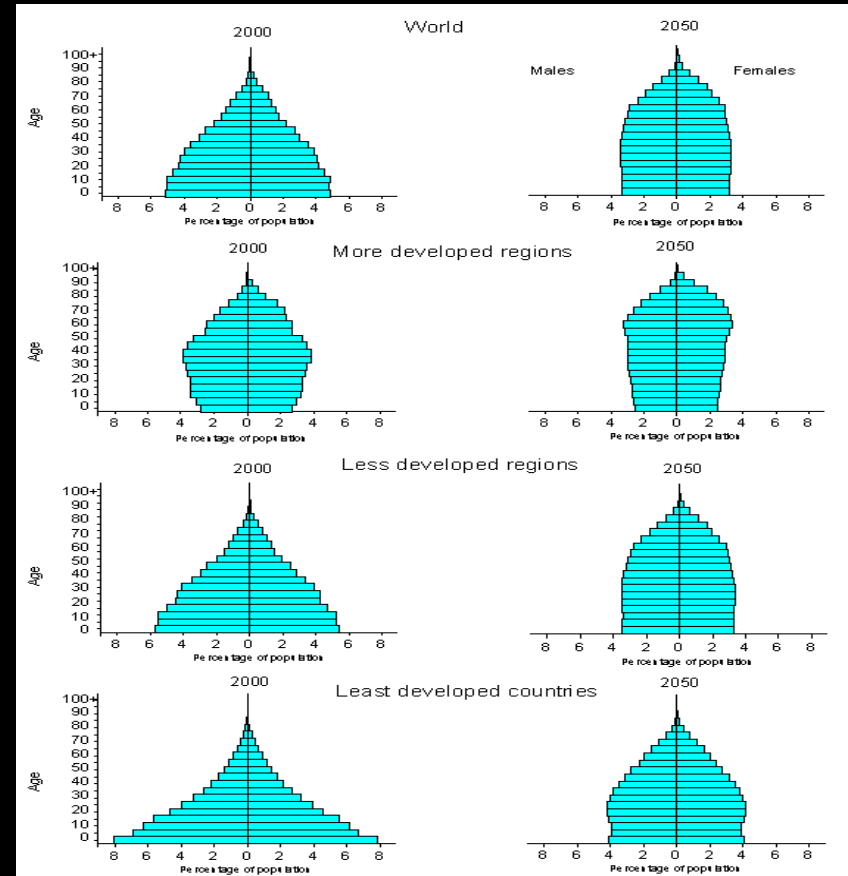
- Managing, not curing
- Balancing the risks and benefits of multiple medications,
 - Often cause more problems than they solve.
 - Trying non-medical solutions
- Common-sense remedies

Why Geriatrics, Why Now?

- The Changing Demographic
 - Old people are everywhere!
 - % of earth's population older than 65
 - 1900: 1% (15 million)
 - 1992: 6% (342 million)
 - 2050: 20% (2.5 billion)
 - Life expectancy in the US is 77.9 years

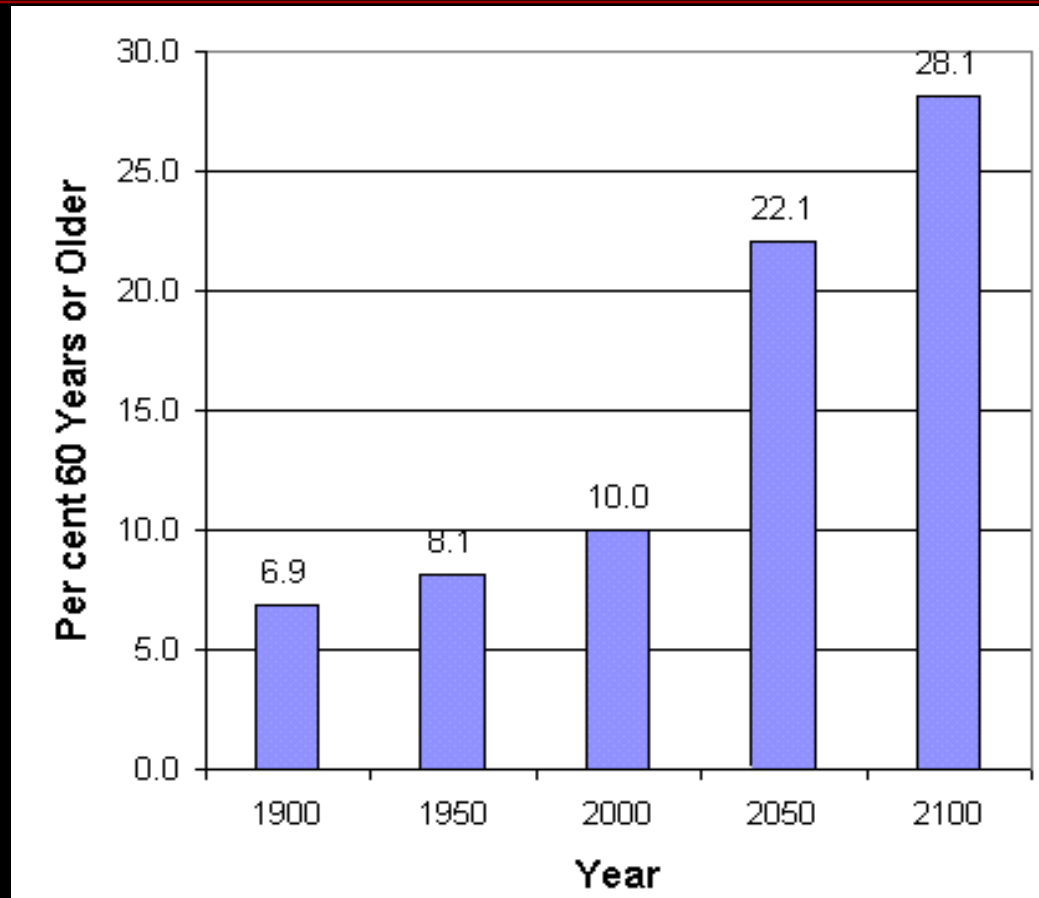
Why Geriatrics, Why Now?

- **US population age > 65**
 - 35 million in the year 2000
 - 78 million in the year 2050
- **US population age > 85**
 - 4 million in the year 2000
 - 31.2 million in the year 2050



As the World Turns...

Three Centuries of World Population Aging



A Crisis in the Making?

- In 2005, 1 geriatrician per 5000 Americans > 65yo
- Estimated need for geriatricians
 - Current: 14,000
 - 2030: 36,000
- Number of geriatricians in the US is decreasing
 - 1998: 9,256
 - 2006: 7,000
- 145 US med schools, 9 geriatrics departments

The Brits Do It Better!

- Every medical school in Britain has a geriatrics department
- Geriatrics is the 3rd most popular medicine subspecialty
- Reimbursement increases with the patient's age!!!!



Subspecialty-Primary Care Salary Discrepancy

Table 1. Characteristics of the Selected Specialties

Specialty	Lifestyle	Average Income, \$ in Thousands	Average Work Hours per Week	Years of Graduate Medical Education Required
Anesthesiology	Controllable	225	61.0	4
Dermatology	Controllable	221	45.5	4
Emergency medicine	Controllable	183	46.0	4
Family practice	Uncontrollable	132	52.5	3
Internal medicine	Uncontrollable	158	57.0	3
Neurology	Controllable	172	55.5	4
Obstetrics and gynecology	Uncontrollable	224	61.0	4
Ophthalmology	Controllable	225	47.0	4
Orthopedic surgery	Uncontrollable	323	58.0	5
Otolaryngology	Controllable	242	52.5	5
Pathology	Controllable	202	45.5	4
Pediatrics	Uncontrollable	138	54.0	3
Psychiatry	Controllable	134	48.0	4
Radiology (diagnostic)	Controllable	263	58.0	4
Surgery (general)	Uncontrollable	238	60.0	5
Urology	Uncontrollable	245	60.5	5
Average for the above specialties	Not applicable	208	53.9	4

Specialty	2008 Annual Incomes Offered (Pre-Bonus)		
	Low \$	Average \$	High \$
Family Medicine	120K	172 K	275 K
Family Med. With Obs.	140 K	184 K	275 K
Internal Medicine	125 K	176 K	330 K
Hospitalist	150 K	181 K	300 K
Ob-Gynecology	160 K	255 K	405 K
Orthopedics	250 K	439 K	750 K
Radiology	230 K	401 K	750 K
Psychiatry	120 K	189 K	230 K
Emergency Med.	190 K	240 K	258 K
Neurology	150 K	230 K	325 K
General Surg.	240 K	321 K	450 K
http://MDsalaries.blogspot.com			
Urology	300 K	387 K	550 K
Pediatrics	120 K	159 K	265 K
Cardiology	250 K	392 K	1 MILLION
Gastroenterology	250 K	279 K	475 K
Anesthesiology	250 K	336 K	480 K
Pulmonology	200 K	283 K	525 K
E.N.T.	275 K	362 K	600 K
Hematology-Oncology	225 K	365 K	500 K
Dermatology	250 K	315 K	400 K
Nurse Anesthetist (CRNA)	155 K	185 K	230 K

Source: Merritt Hawkins & Associates Inc.

Geriatrics: Solutions for shortage?

- Limit practice to the frailest of the elderly
 - ≥ 85 yo & 65-85 with complicated needs
 - 2002 JHU : 20 % ≥ 65 have ≥ 5 chronic conditions
- Focus on teaching the core principles to everyone,
 - From surgeons or discharge planners
 - "If we got to the point where everybody in the health care system was an expert in caring for older people, we wouldn't need geriatricians," said Dr. Cooney of Yale. "Or we wouldn't need them as frontline providers. We'd be like consultants, making sure everyone else was as skilled as possible."

What is changing in US population? ★

Why do we care about Geriatrics?

- Break into small groups
 - Develop a list of how the US population is changing
 - Begin to address why the US population is changing



Who is aging?

- Composition and characteristics of the older population will also change
 - Aging of baby boomers (born 1940-1960)
 - Ethnic differentials in aging
 - Increases in “old-old”
- Becoming better educated
- Better off financially
 - Although ethnic minorities lag
- Altering living arrangements
 - Especially with growth in assisted living

Who is aging?

- Not unique to US
 - Many developed countries actually already have $\geq 20\%$ of population > 60 yo
 - Italy, Japan, Germany, Sweden, UK
- Not evenly distributed geographically
 - Half elderly live in 9 states, but mostly in CA, FL, NY, TX
 - Midwestern states have highest percentage of elderly living alone ($\geq 30\%$)
- Elderly are predominantly white
 - Proportion of from other races is doubling ($10\% \rightarrow 20\%$) over next 50 years

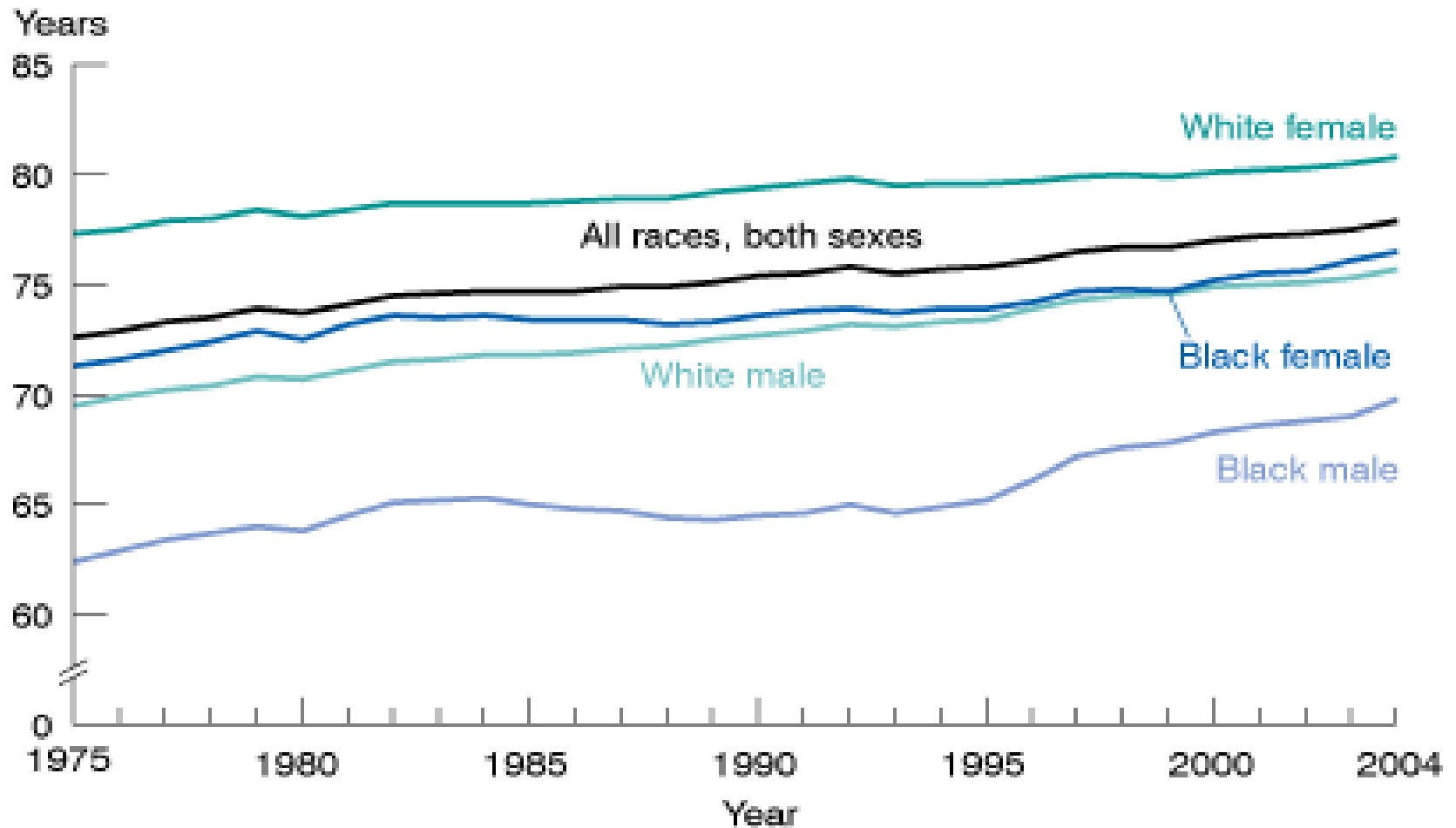
20th Century US population

- < 65yo tripled
- > 65 yo increased by factor of more than 11
 - 1900: 3.1 million
 - 2002: 35.6 million
 - In 21st Century: more then double
 - 2050: estimated 82 million
 - With most growth in 2010-2030

Life Expectancy

- In US 1900
 - 47.3 years at birth
- In US 2004 (last year available)
 - 77.9 years at birth
 - 80.4 years for women
 - 75.2 years for men
- Source: CDC, NCHS

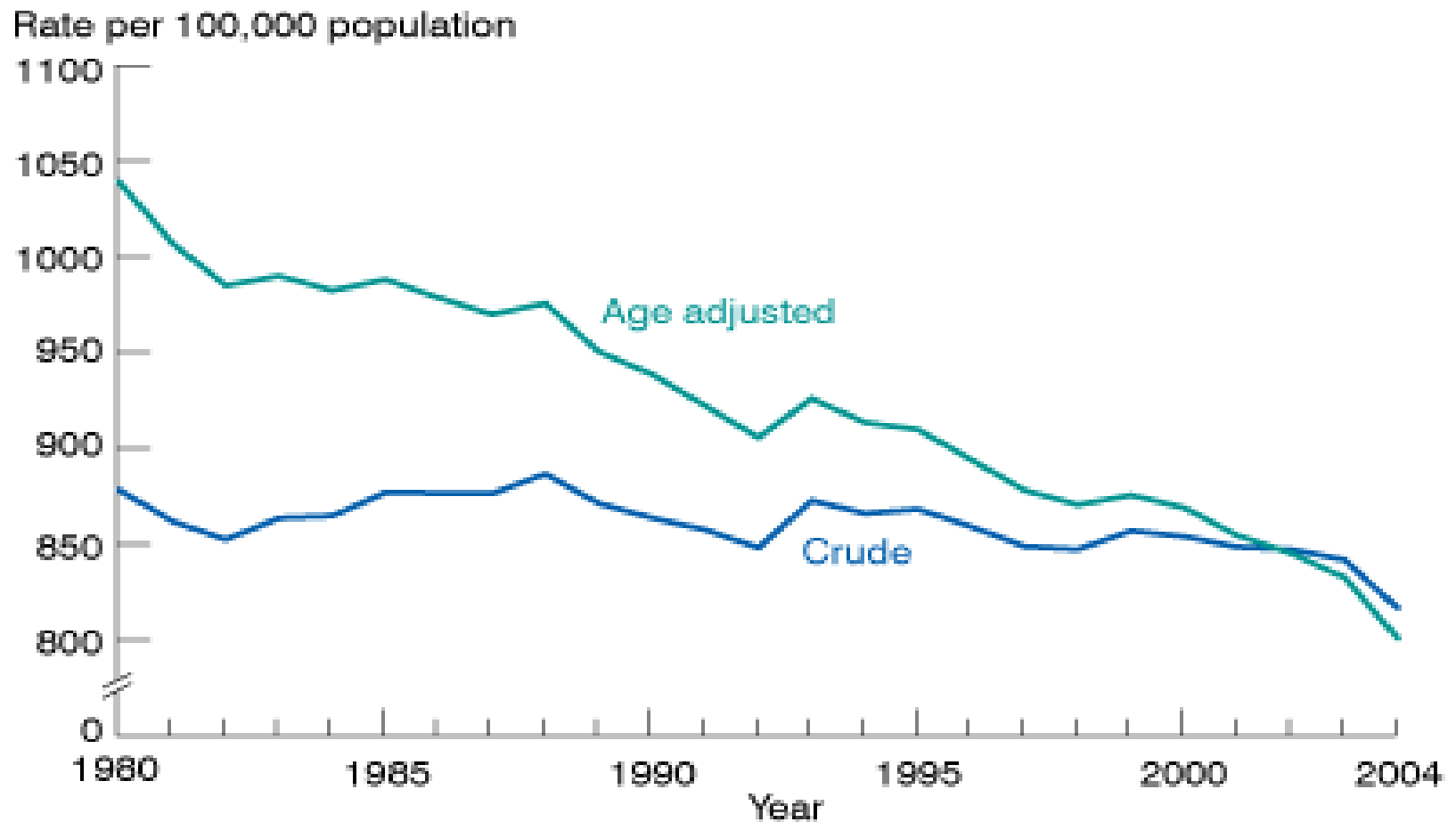
**Figure 2. Life expectancy at birth, by race and sex:
United States, 1975-2003 final, 2004 preliminary**



Highest & Rising

- Record-high life expectancies
- Gender gap is narrowing, but the racial gap is not
- Increase of 0.4 year relative to 2003
- Age-adjusted death rates at record low
 - Total deaths declined 50,000 (2003→2004)
 - Biggest one year drop in several decades

**Figure 1. Crude and age-adjusted death rates:
United States, 1980-2003 final, 2004 preliminary**





In small groups

- List the top 10-20 leading causes of death in the US
- Develop a “Top 10” rank for cause of death in US



Top 10 causes of death, 2006

10	Septicemia
9	Nephritis
8	Influenza and pneumonia
7	Alzheimer's disease
6	Diabetes
5	Unintentional injuries/ accidents
4	Chronic lower respiratory diseases
3	Stroke
2	Cancer
1	Heart disease



In small groups

- How is this list different from what it would have been in 100 years ago?
- Why is it so different?



Top 10 Causes of Death

	1906	2006
10	Senility	Septicemia
9	<i>Premature birth</i>	Nephritis
8	Cancer & malignant tumors	Influenza and pneumonia
7	Accidents (excluding MVA)	Alzheimer's disease
6	Nephritis (all forms)	Diabetes
5	Vascular intracranial lesions	Unintentional injuries/ accidents
4	<i>Diarrhea, enteritis, GI ulceration</i>	Chronic lower respiratory diseases
3	Diseases of the heart	Stroke
2	Pneumonia (all forms) & Flu	Cancer
1	<i>Tuberculosis (all forms)</i>	Heart disease

The *italicized* causes are the ones that are off the list, why?

20th Century

- Health and life expectancy in US improved dramatically.
- 25 of the 30 years gained can be attributable to PH advances
- 10 “*top*” PH achievements of 20th century



Discussion: What is public health?

- Not
 - "healthcare for low-income families."
- CDC defines
 - "the active protection of our nation's health and safety"
 - "credible information to enhance health decisions"
 - "partnerships with local organizations to promote good health"
- Public health is community health.
- Health care is vital to all of us some of the time, but public health is vital to all of us all of the time.



The CDC's "10 top" list

- Many notable PH achievements in 20thC
- Others could have been selected
- Selection based on
 - Opportunity for prevention
 - Impact on death, illness, and disability in US
- No rank order



Your 10 top public health advances

- Take 5-10 minutes
- Make a list of your 10 top public health advances of the 20th century?



10 top PH Achievements US 20th Century

- Control of infectious diseases
- Vaccination
- Motor-vehicle safety
- Safer workplaces
- Decline in deaths from coronary heart disease and stroke
- Safer and healthier foods
- Healthier mothers and babies
- Family planning
- Fluoridation of drinking water
- Recognition of tobacco use as a health hazard

Control of infectious diseases

- Clean water and improved sanitation.
 - Infections transmitted by contaminated water
 - Ex. typhoid and cholera
 - Major cause of illness and death early in the 20th century
 - Reduced dramatically by improved sanitation.
- Discovery of antimicrobial therapy
 - Critical to successful public health efforts to control infections such as TB and STDs

SALK'S VACCINE WORKS!



Medical Times
 Salk's Great Success Has Reached 100%
 ...

Scraper **Delaware**

... on Way That Salk Report Shows
 ... Enabled to Treat 50% More
 ...

New York Post

... Salk Test Report...

POLIO ROUTED!

... 10-90% Effective

APRIL 1955

New York World-Telegram

Dr. Francis' Official Report:

POLIO VACCINE IS 'SAFE' EFFECTIVE AND POTENT

... Major Success Against Killing Paralytic Type

Daily Mirror

... 55 Vaccine Will Be Even Better

... Dr. Salk Report 100% Effective

Motor-vehicle safety, 1938



The Oldsmobile automatic safety transmission, obtainable at extra cost on both Six and Eight, is operated by the short lever shown on the steering column. The clutch is used only to start or stop the car. The new type steering wheel, designed for use with the automatic transmission, affords a clear view of the instrument unit which is directly in front of the driver assuring clear vision.

Motor-vehicle safety

- Engineering efforts
 - Vehicles & Highways safer
- Successful change in personal behavior
 - Increased use of safety belts, child safety seats, & motorcycle helmets
 - Decreased drinking and driving
- Contributed to large reductions in motor-vehicle-related deaths.

10/6



Workplace Safety

- Work-related health problems
 - Coal workers' pneumoconiosis (black lung)
 - Silicosis
- Severe injuries & deaths
 - Mining, Manufacturing, Construction, & Transportation
- Since 1980
 - Safer work → decrease rate of fatal injuries by ~40%



Mine Rescuer c. 1910-15
Library of Congress

Coronary heart disease and stroke

- Decline deaths from risk-factor modification
 - Smoking cessation
 - Blood pressure control
- Improved access to early detection
- Better treatment.
- Since 1972, death rates decreased 51%

Safer and healthier foods

- Dec microbial contamination
- Inc in nutritional content
- Identifying essential micronutrients
- Food-fortification programs nearly eliminated nutritional deficiency diseases in US (Rickets, Goiter, Pellagra)



NYC A&P 1936, Library of Congress

Healthier mothers and babies

- Better hygiene
- Nutrition
- Antibiotics
- Greater access to health care
- Tech advances in maternal/ neonatal medicine
- Since 1900
 - Infant mortality decreased 90%
 - Maternal mortality has decreased 99%

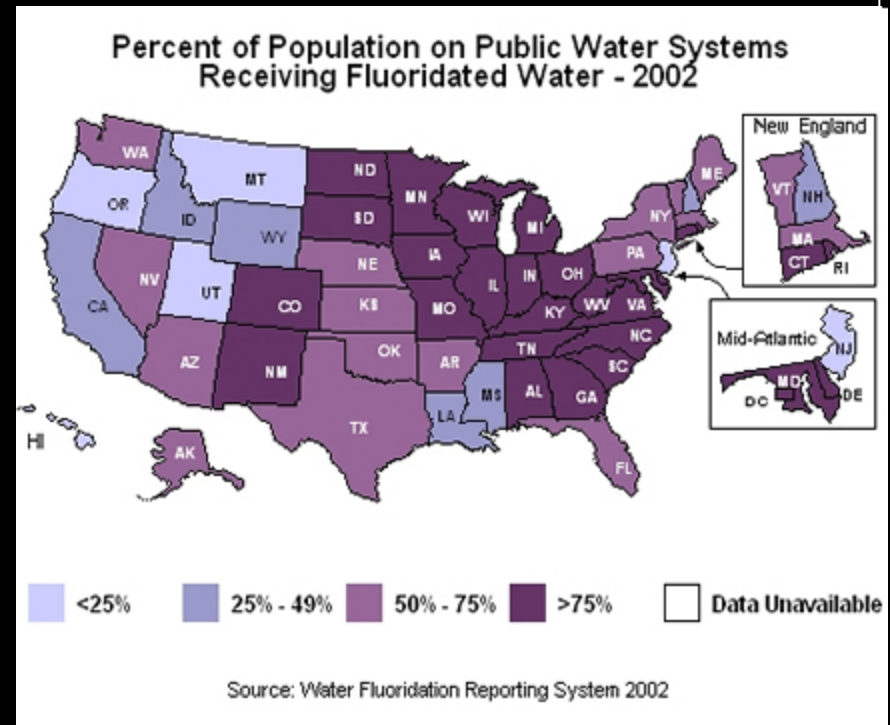


Access to family planning & contraceptive services

- Altered social and economic roles of women
- Provided health benefits
 - smaller family size
 - longer interval between the birth of children
 - increased opportunities for preconception counseling and screening
 - fewer infant, child, and maternal deaths
 - use of barrier contraceptives to prevent pregnancy and transmission of HIV/STDs

Fluoridation of drinking water

- Began in 1945
- 1999- reaches an ~144 million in US
- Safe, inexpensive
- Benefits children & adults
- Effectively prevents tooth decay despite SES or access to care.
- Tooth decay in kids 40%-70%
- Tooth loss in adults 40%-60%



Tobacco is bad

- Recognition of health hazard
- PH anti-smoking campaigns
 - Changes in social norms
 - Prevent initiation of tobacco use
 - Promote cessation
 - Reduce exposure to environmental tobacco smoke
- 1964 Surg Gen's report: Health Risks of Smoking
 - Prevalence among adults has decreased
 - Millions of smoking-related deaths have been prevented
- Newly increasing among teens!



1953 Tobacco Festival, Richmond
Library of Virginia

10 top PH achievements

- Highlight the contributions of public health
- Impact of these contributions on the health and well being in US
- Contributing to increased life-expectancy
- Increasing the world of Geriatrics
- Why we all need to understand how to care for our elderly patients.

References

- Arialdi M. Miniño, M.P.H.; Melonie Heron, Ph.D.; and Betty L. Smith, B.S. Ed., “Deaths: Preliminary Data for 2004” National Center for Health Statistics website, CDC, Ten Great Public Health Achievements -- United States, 1900-1999, MMWR April 02, 1999 / 48(12);241-243.
- Bunker JP, Frazier HS, Mosteller F. Improving health: measuring effects of medical care. *Milbank Quarterly* 1994;72:225-58.
- Bolen JR, Sleet DA, Chorba T, et al. Overview of efforts to prevent motor vehicle-related injury. In: *Prevention of motor vehicle-related injuries: a compendium of articles from the Morbidity and Mortality Weekly Report, 1985-1996*. Atlanta, Georgia: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 1997.
- CDC, “Fatal occupational injuries -- United States, 1980-1994.” *MMWR* 1998;47:297-302.
- CDC, “Ten Great Public Health Achievements -- United States, 1900-1999.” *MMWR* April 02, 1999 / 48(12);241-243
- Anonymous. The sixth report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure. *Arch Intern Med* 1997;157:2413-46.
- Burt BA, Eklund SA. *Dentistry, dental practice, and the community*. Philadelphia, Pennsylvania: WB Saunders Company, 1999:204-20.
- Public Health Service. *For a healthy nation: returns on investment in public health*. Atlanta, Georgia: US Department of Health and Human Services, Public Health Service, Office of Disease Prevention and Health Promotion and CDC, 1994.