2007 ASEAN-U.S. Enhanced Partnership Medical Device Workshop

Addressing Medical Needs in ASEAN Countries
Aging Populations and the Growing Prevalence of Chronic Diseases

Value of Innovation in Managing the Burden of Disease and Trends in the Use of Medical Technologies

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Key Healthcare Issues in Emerging Markets

- Aging Populations and Increased Demand for Healthcare Products
- Access and Affordability for Healthcare Products/Services
- Developing/Fragmented Healthcare Infrastructure
- Developing Regulatory and Reimbursement Landscape
- Evolving Intellectual Property Laws/Enforcement

Fastest Growing 60+ Populations

- Forecasted Percentage of Country Residents 60 Years+ (Japan has the highest percentage above 65, now and in the future)

Rank	Country	2000 (%)	2025 (%)	CAGR (%)
1	South Korea	11.0	25.0	3.3
2	Malaysia	6.5	13.2	2.9
3	Thailand	8.4	17.2	2.9
4	Venezuela	6.6	13.3	2.8
5	Brazil	7.8	15.6	2.8
6	Colombia	6.9	13.8	2.8
7	Mexico	6.9	13.6	2.7
8	China	10.1	19.8	2.7
9	Sri Lanka	9.8	18.9	2.6
10	Saudi Arabia	4.1	7.9	2.6

Chronic Diseases

- Cardiovascular disease
- Diabetes
- Arthritis
- End-stage renal disease (ESRD)
- Chronic obstructive pulmonary disease (COPD)
- Osteoporosis
- Hypertension
- Some types of cancers
- Asthma
- Neurodegenerative disorders (Alzheimer's, Parkinson's, etc.)
- Chronic pain
- Stroke and other brain injuries

Burden of Chronic Disease

- Percentage of Total Deaths in 2002 Caused by All Listed Chronic Conditions

Region	2002 (%)
Western Europe	77.1
Central and Eastern Europe	76.3
North America	74.9
Japan/Pacific Rim	68.5
Asia	62.7
Central and South America	51.6
Indian Subcontinent	41.3
North Africa and Middle East	36.9
Africa	15.6
World	49.6

Fastest Growing Cardio Populations (2001-2004)

- Major Countries with Highest Cardiovascular Disease Population CAGR

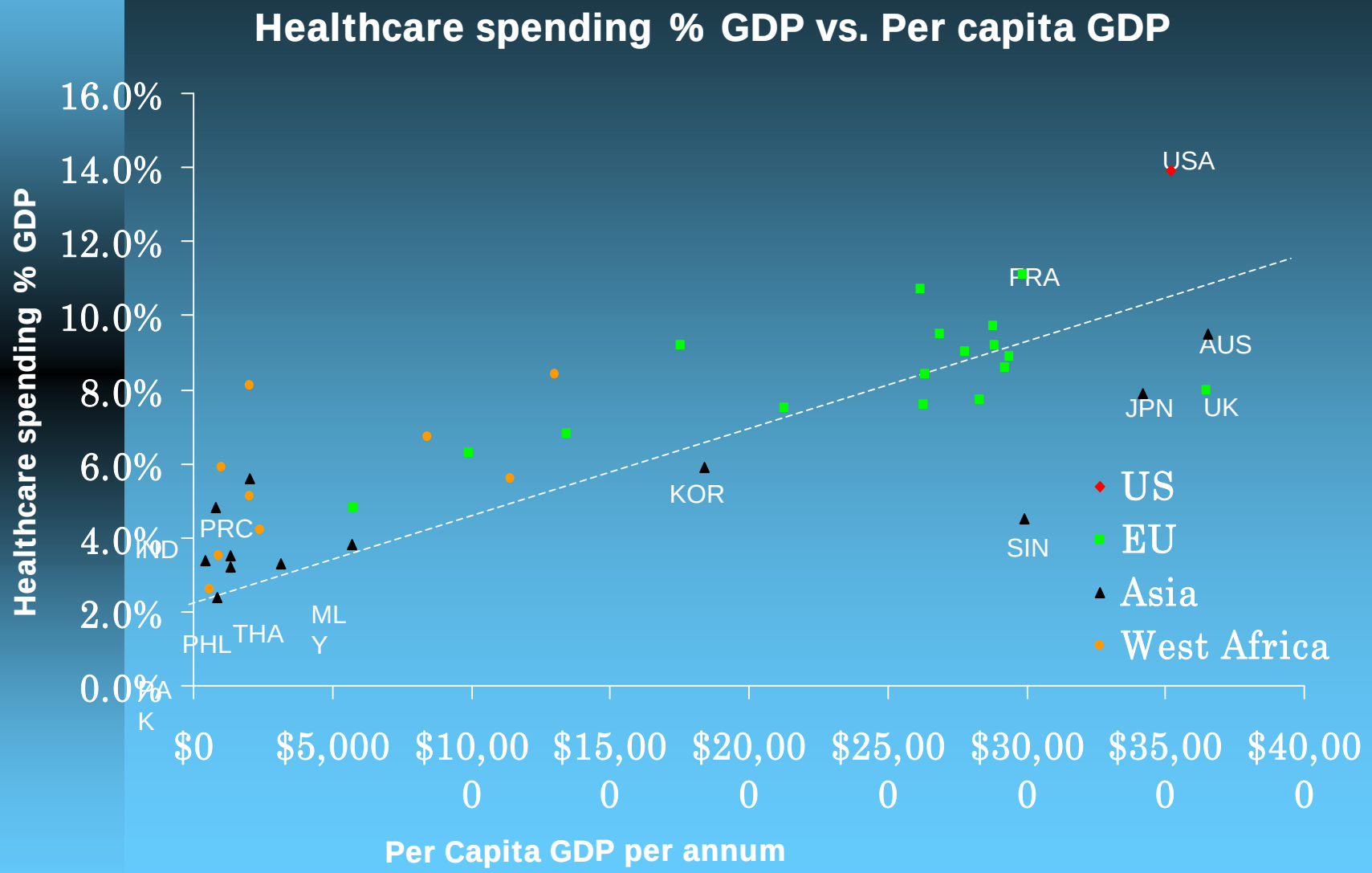
Rank	Country	2001 (Millions)	2004 (Millions)	CAGR (%)
1	Saudi Arabia	1.3	1.5	3.9
2	Singapore	0.4	0.4	3.7
3	Luxembourg	0.1	0.1	3.6
4	Philippines	6.4	7.1	3.4
5	Malaysia	1.8	2.0	3.1
6	Israel	1.0	1.1	2.9
7	Egypt	8.6	9.2	2.5
8	Canada	6.7	7.2	2.4
9	China	91.5	98.1	2.4
10	India	74.9	80.1	2.3

Fastest Growing Diabetic Populations (2001-2004)

- Major Countries with Highest Diabetic Population CAGR

Rank	Country	2001 (Millions)	2004 (Millions)	CAGR (%)
1	Turkey	3.0	3.7	7.3
2	United States	16.3	19.4	6.0
3	Philippines	2.4	2.8	5.8
4	Malaysia	0.9	1.1	5.8
5	Iceland	0.0	0.0	5.7
6	China	22.9	25-30	5.5
7	India	25.8	29-40	4.9
8	Peru	0.6	0.7	4.8
9	United Kingdom	2.2	2.5	4.8
10	Saudi Arabia	1.2	1.4	4.8

The global healthcare market: Demographics and spending



Adapted from: Professor Uwe Reinhardt (using 2002 World Bank Development Indicators)

Advances in Medical Technology, Healthcare Finance and Infrastructure

Their Impact on Patient Lives, Societal Welfare and Likely Future Needs

Medical Technologies: Myths and Realities

Myth

- To manage health care costs, technology must be controlled. Practices that that restrict technology can control health care costs without impacting quality of care.

The Facts

- Maximizing the value of medical technology is central to helping patients live longer and better lives, as well as curing the ills of health care systems.
- Medical technologies can improve quality, increase economic productivity, and save lives.
- Employers are examining how investment in health care helps companies manage health costs, reduce employee absenteeism, and improve productivity.
- Hospitals and physicians are seeing how medical technology can reduce treatment and recovery time, cut the length of hospital stays.

"Medical Technology Is a Major Driver of Healthcare Costs and Should Be Contained"

- Is this true?
- What percentage of healthcare spending is attributable to medical devices?
  5%, 10%, 15%, 20%, 25%

Role of Medical Technologies

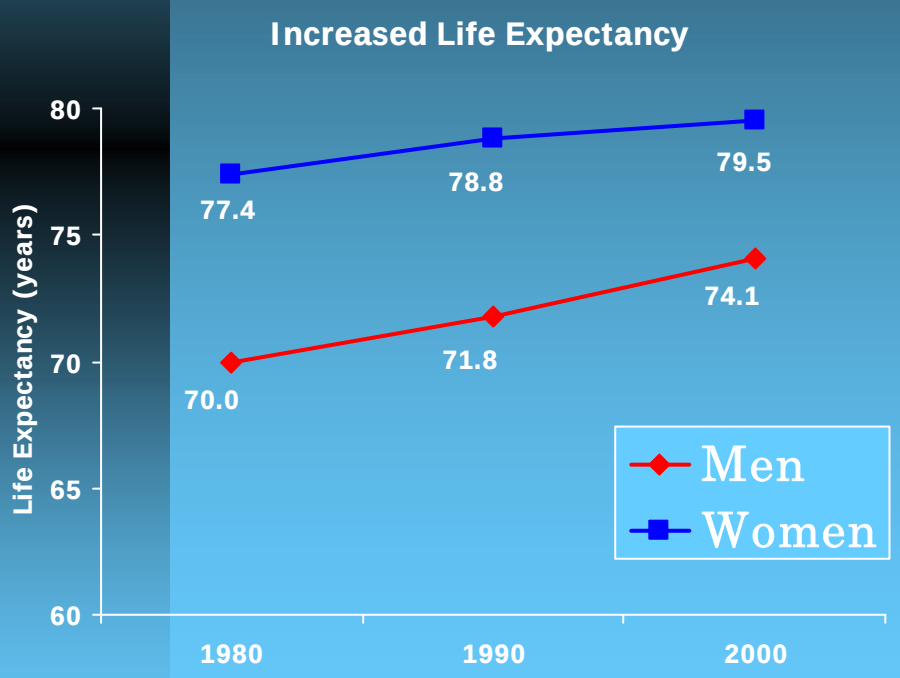
- Investments in healthcare have had a significant impact on patients' lives
- Innovation is essential to the discovery of treatments for unmet needs
- Innovative medical technologies offer improved efficacy and potential economic benefits
- New medical technologies and productivity
- Medical technologies have enhanced overall economic welfare
- New technologies, healthcare delivery and disease management

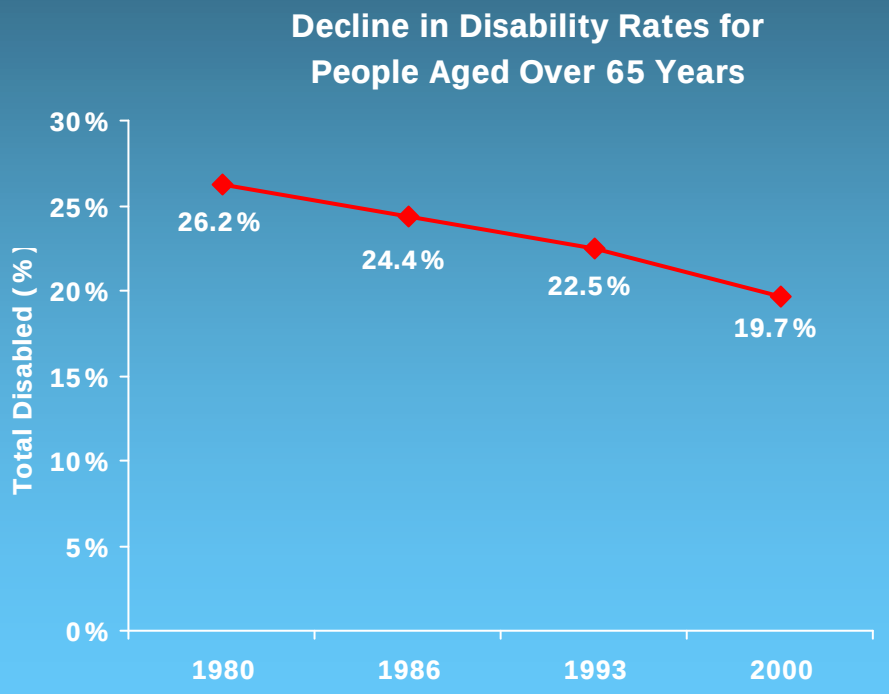
Investments in healthcare have had a significant impact on patients' lives

Innovation is essential to the discovery of treatments for unmet needs

Investments in Healthcare have Extended and Improved Lives

Over the last twenty years, life expectancy in the US from birth increased by 3.2 years or 4%, while disability rates for people over 65 years declined 25%. Preliminary data suggest similar trends for developing countries

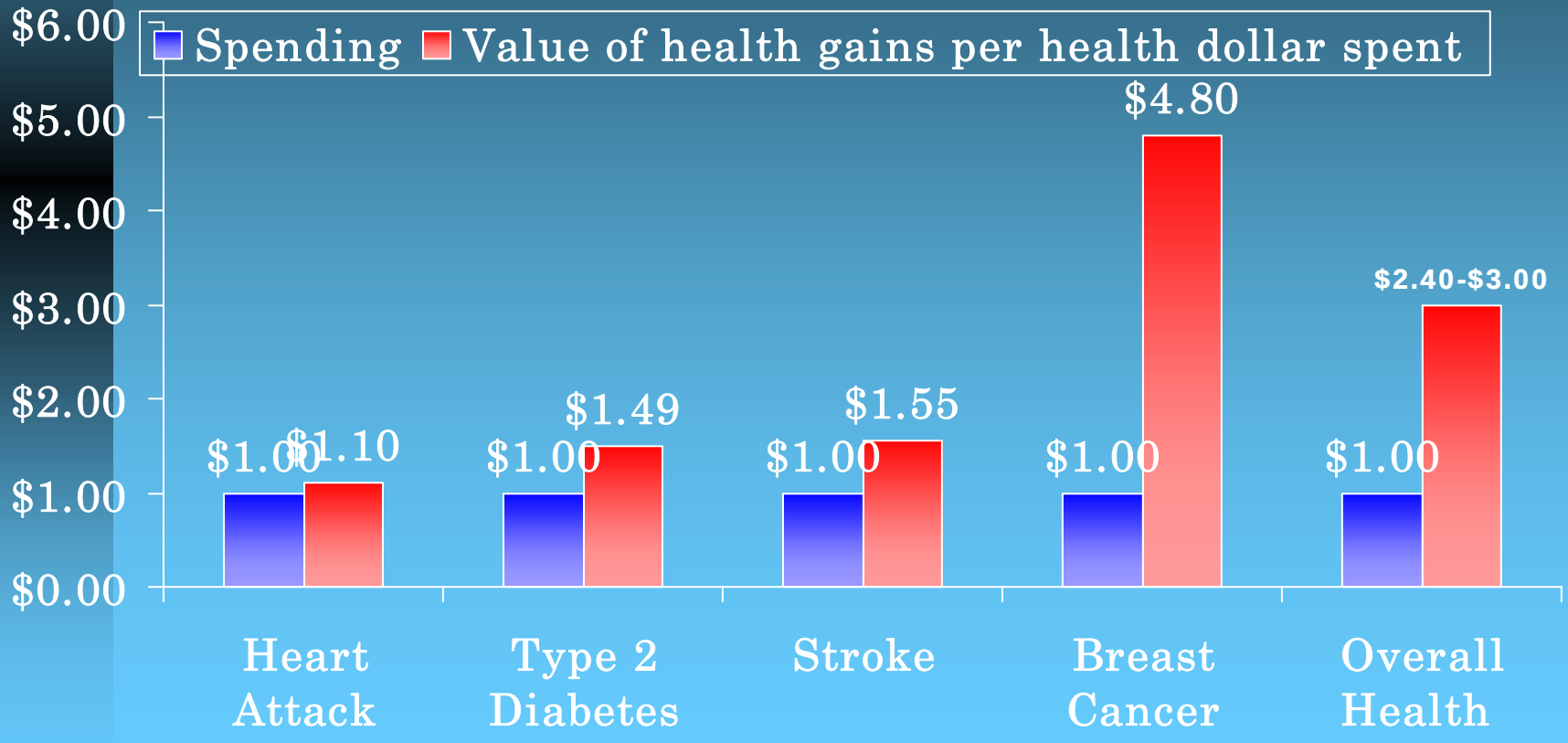




Source: Medtap publication, "The Value of Investment in Health Care," 2003.

Investments in Health Deliver Health Gains

Each additional dollar invested in health care over the last 20 years has produced health gains valued at between $2.40 and $3.00.



Source: Medtap publication, "The Value of Investment in Health Care," 2003.

Investments in Health Deliver Health Gains

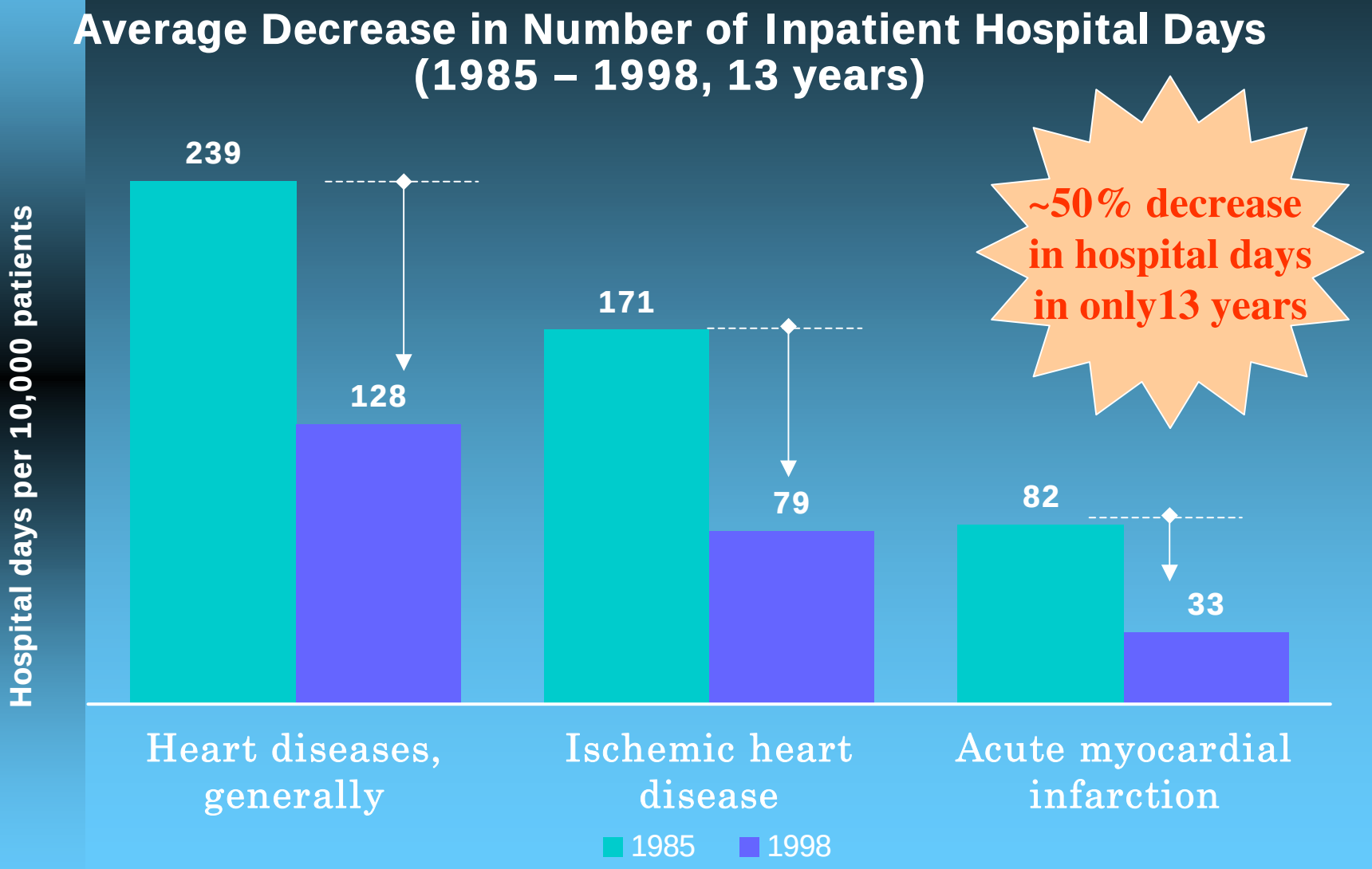
- Health care costs per person between 1980 and 2000 increased by $2,254, but:
  - **Annual death rates declined 16%**
  - **Life expectancy increased 4%**
  - **Disability rates** for people over 65 **declined 25%**
  - Hospital **days declined 56%**
- Without this investment in health, the US would have spent over $600 billion less on health care in 2000, but:
  - 470,000 more deaths
  - 2.3 million more people with disabilities
  - 206 million more days spent in the hospital

Source: Medtap publication, "The Value of Investment in Health Care," 2003.

Economic Benefits of Medical Technology

- Australian Productivity Commission reported:
  - Average life expectancy has increased about 3 months per year over the past decade
  - For context, an additional 6 days of life for average Australians would justify Australia's expenditure on medical technologies
- U.S. studies suggest that the economic benefits of treating cardiovascular disease and low birth weight infants together equal total U.S. medical spending for the past 50 years (MEDTAP reports, Cutler et al)

New technologies enable shorter lengths of stay



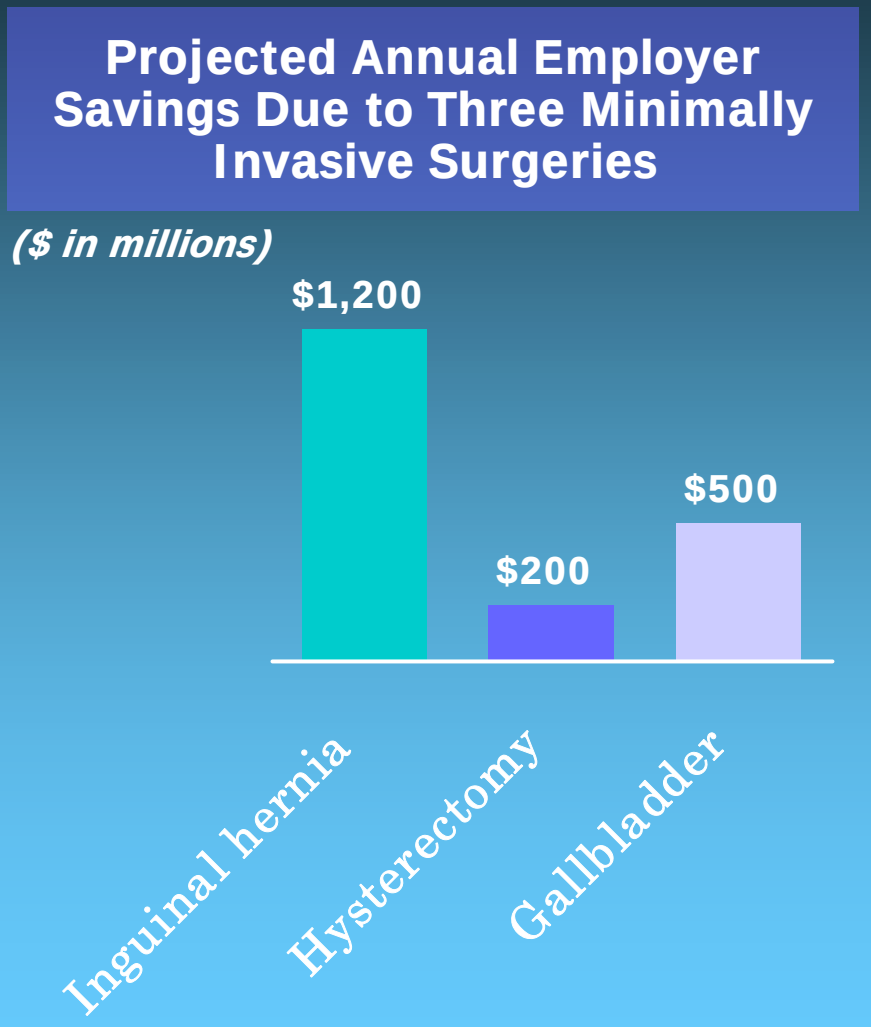
Source: Health United States, 2000. National Center for Health Statistics, Table 92

Some Beneficial Aspects of Shorter Hospital Stay due to Technology

- Avoid days off work and lost wages of family members
- Reduce costs of transportation from peri-urban or rural areas to hospital and vice-versa for family
- Reduce cost of lodging near hospital for family members
- Decrease risk of hospital-acquired infection

Increased Employer Productivity From Reduced Disability

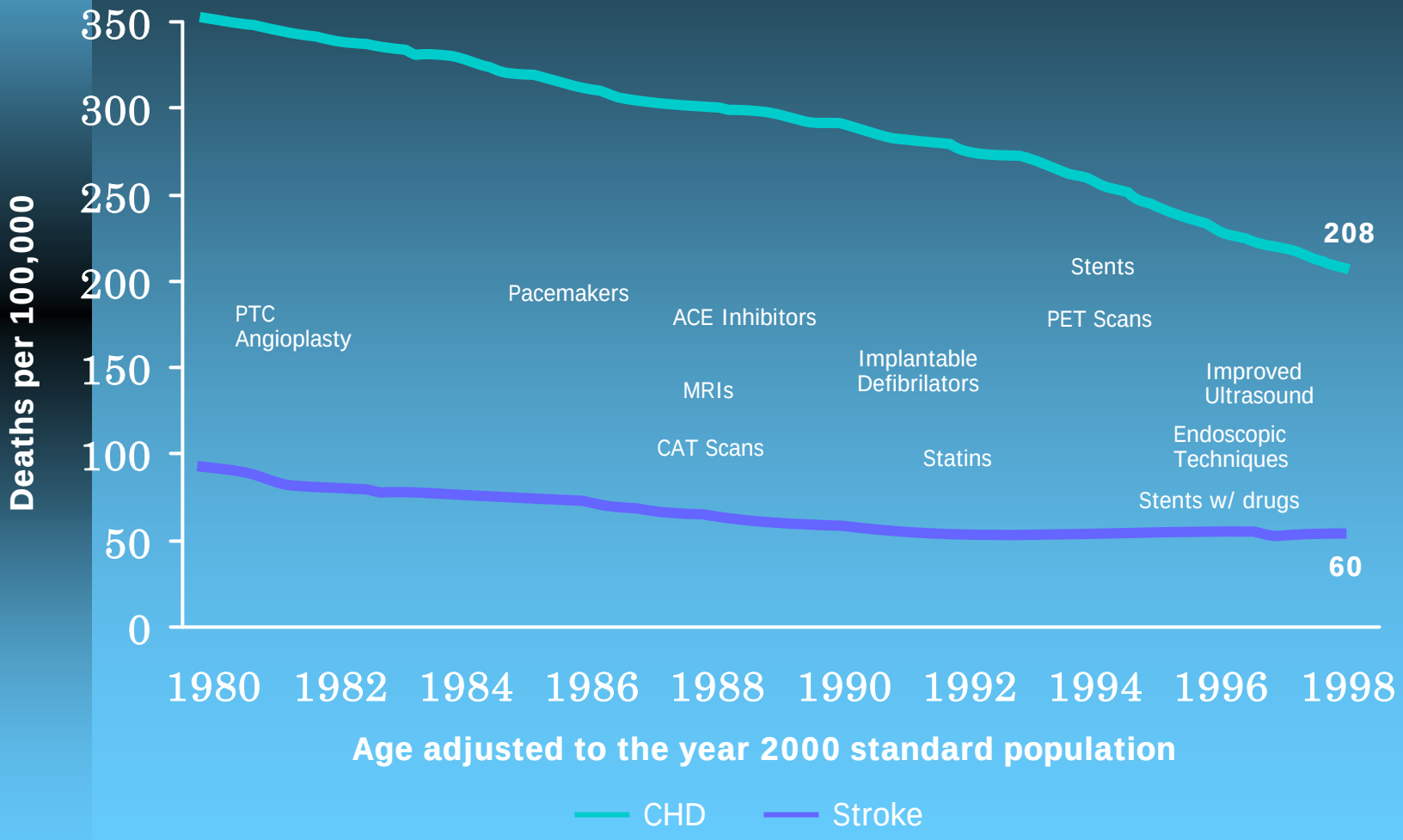
A study by DRI-McGraw Hill found that adoption of laparoscopic surgical techniques for three conditions alone generated indirect savings of $1.9 billion annually. These savings were the result of patients leaving the hospital and returning to work earlier.



Source: *The Importance of Indirect Benefits When Evaluating New Medical Technologies: A Case Study*, by DRI-McGraw Hill for the Health Care Technology Institute, February 1995.

In Cardiac Care, Mortality From Heart Disease Has Plummeted by 40% Since 1980

Decline in Coronary Heart and Stroke Disease Deaths and Advances in Medical Technology



Source: CDC, NCHS, National Vital Statistics System (NVSS), 1979–98

Access to Technology and Healthcare Delivery

- The problem for the medical technology industry is not the usefulness and relevance of innovation itself, but the difficulty in bringing the fruits of that innovation to the patient and the economy.

- This may be due to
  - regulatory or other decision-making barriers that delay or prevent the launch of innovative medical technology,
  - the lack of satisfactory or inappropriate reimbursement systems for new medical technology products,
  - or insufficient training and knowledge of medical professionals in the use of new medical technologies.

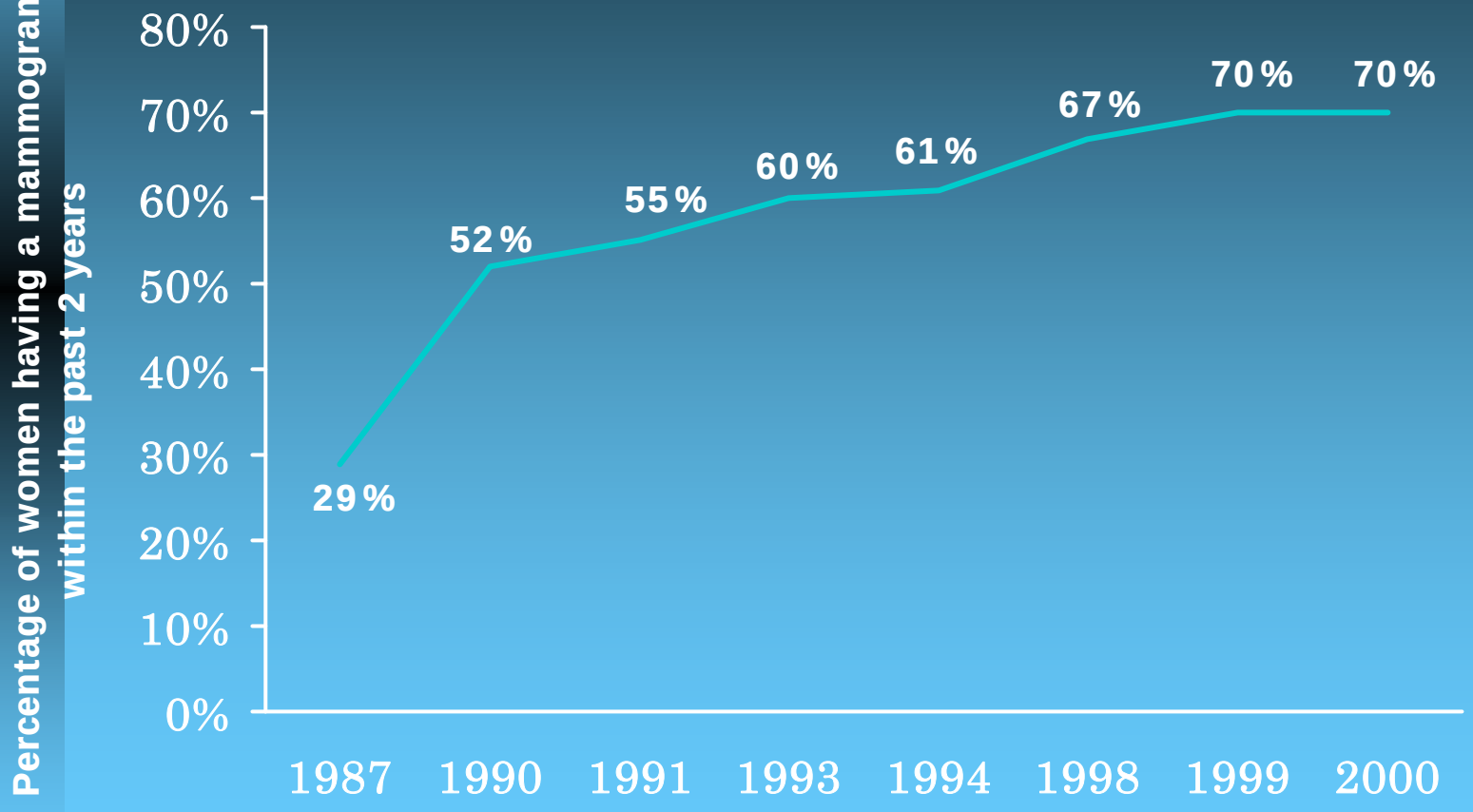
Medical Technologies and Economic Welfare

- Noted Yale economist Nordhaus observes that, "the medical revolution over the last century appears to qualify, at least from an economic point of view…as 'the greatest benefit to mankind.'"
- Says Nordhaus: "It will come as a surprise to most non-economists that improvements that come from new [medical] products…are completely omitted incurrent measures of real output."
- "Every nation chooses its own death rate by its evaluation of health compared to other goals"

Victor R Fuchs, " Who Shall Live : Health, Economics and Social Choice"

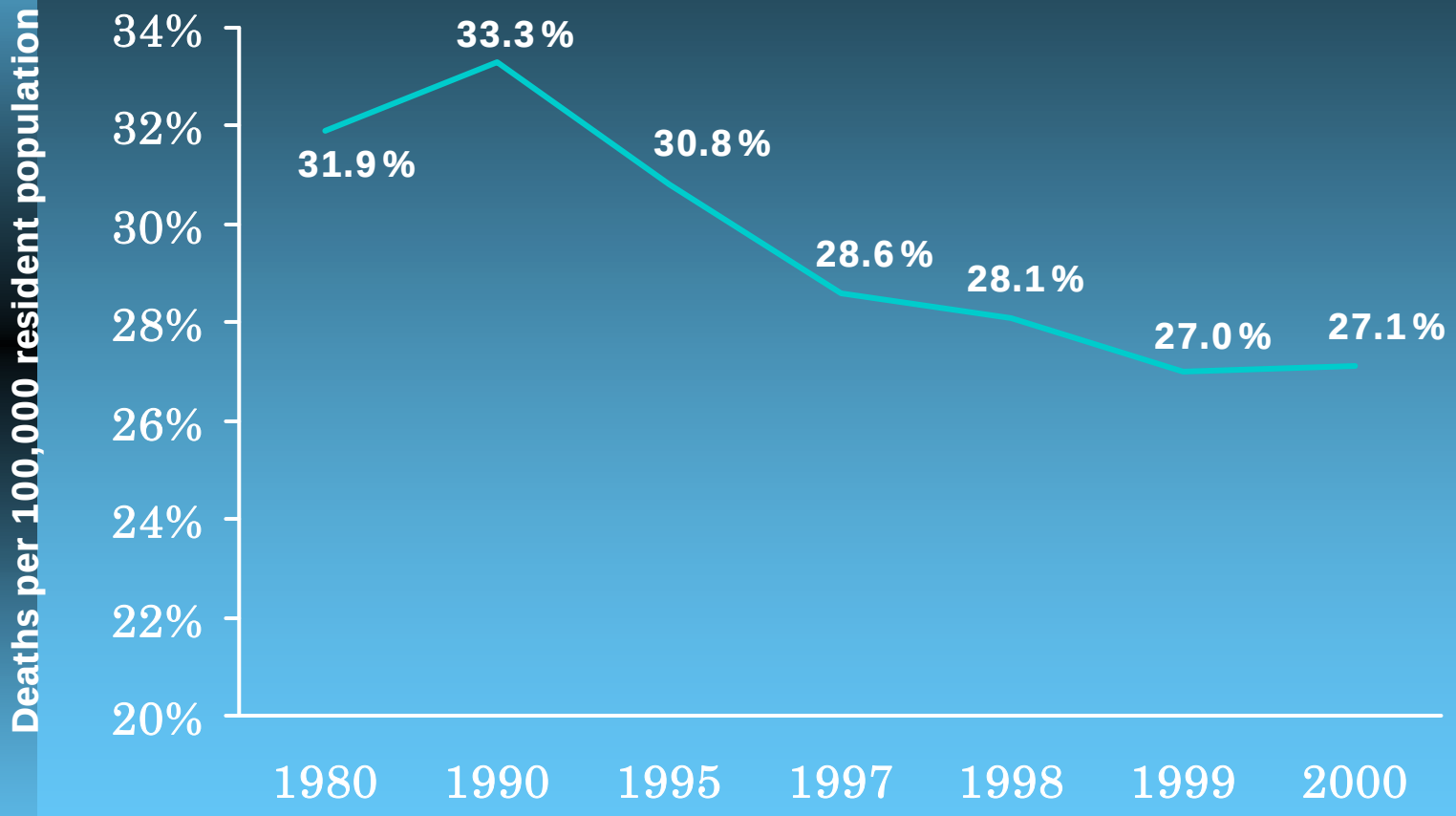
Trends in Medical Needs, Innovations and Value

Use of Mammography by Women Age 40+ Years (US), 1987–2000



Trends in Medical Needs, Innovations and Value

Death Rates for Malignant Neoplasm of Breast for Females (US), 1980–2000

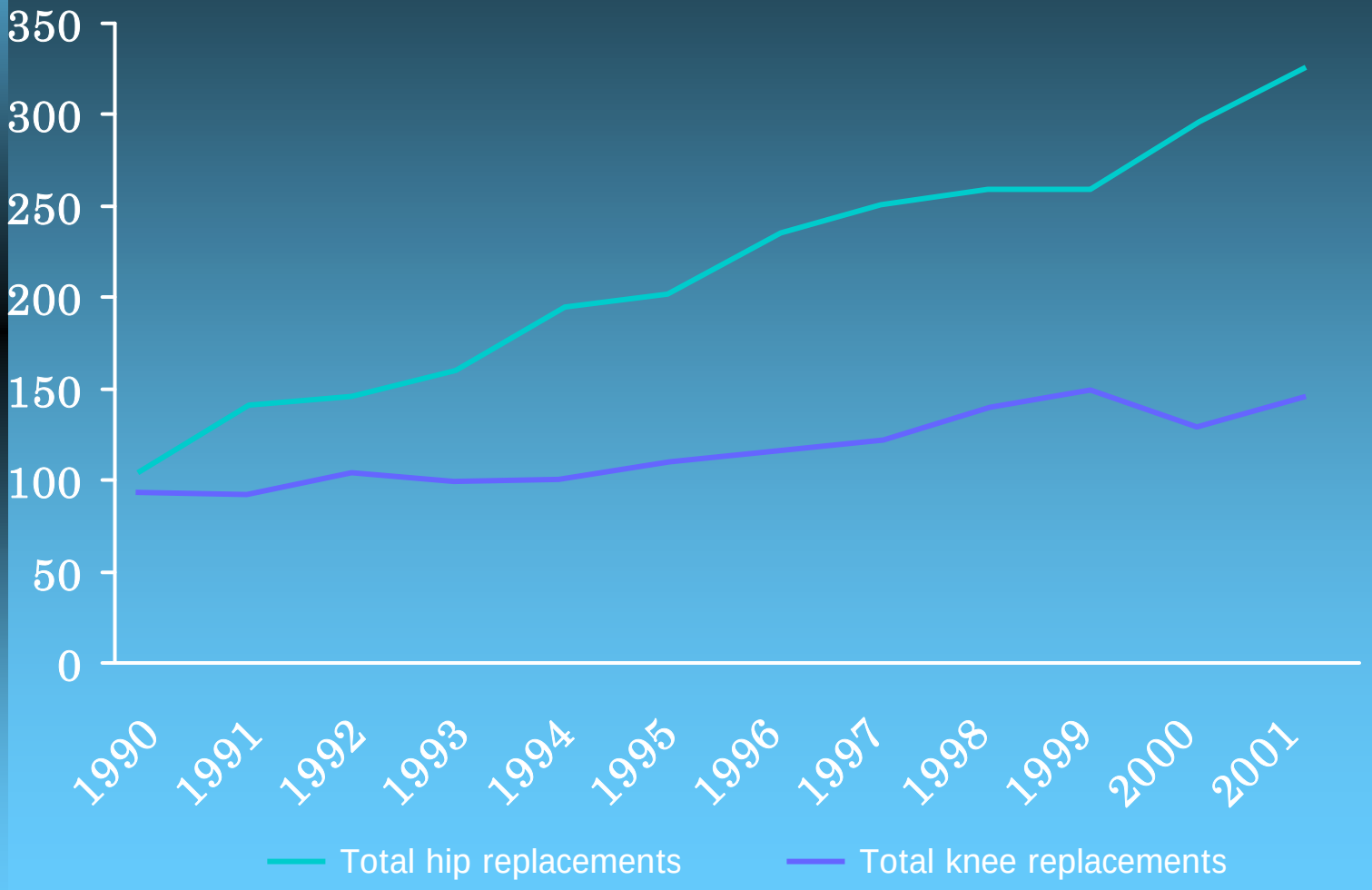


Source: CDC, National Center for Health Statistics, Health, United States, 2003

The US Preventive Services Task Force (USPSTF) recommends screening mammography, with or without clinical breast examination, every one-to-two years for women aged 40 and older. Although many factors have influenced mortality rates over the last 20 years, such as improvements in cancer treatments, the USPSTF concluded that mammography screening significantly reduces mortality from breast cancer.

Trends in Medical Needs, Innovations and Value

Number of Total Hip and Total Knee Replacement Procedures (US), 1990–2001



Source: CDC, NCHS, National Hospital Discharge Survey, 1990–2001

Conclusions and Recommendations

- Given the demographics and chronic disease profiles of ASEAN countries, we can expect health care burden and cost trends to be similar to those observed for developed countries
- These trends will exert great pressure on the healthcare budget and fragmented ASEAN countries
- Medical technologies can play a vital role in managing these pressures if used in a timely and efficient manner, recognizing their total benefits and value.
- Assessing the value of new technologies is not only a question of price or cost

Conclusions and Recommendations

- **Develop Healthcare Infrastructure, Increased Private Investment and Provision.**
  - The more open and competitive the healthcare infrastructure, the more opportunity there is for providers and suppliers to bring their products to the people and therefore the more incentive there is for development of new and appropriate products.

- **Health Insurance.** A robust private medical insurance system that co-exists with public funding for the poor and other vulnerable segments can help cover the costs of medical technologies and services for patients and enable wider penetration of innovative products

- **Promote Access:** Broad-based private and community insurance are essential to promoting access and affordability for large segments of population.