

# Medicine's Paradigm Shift: The Case for Integrated Care

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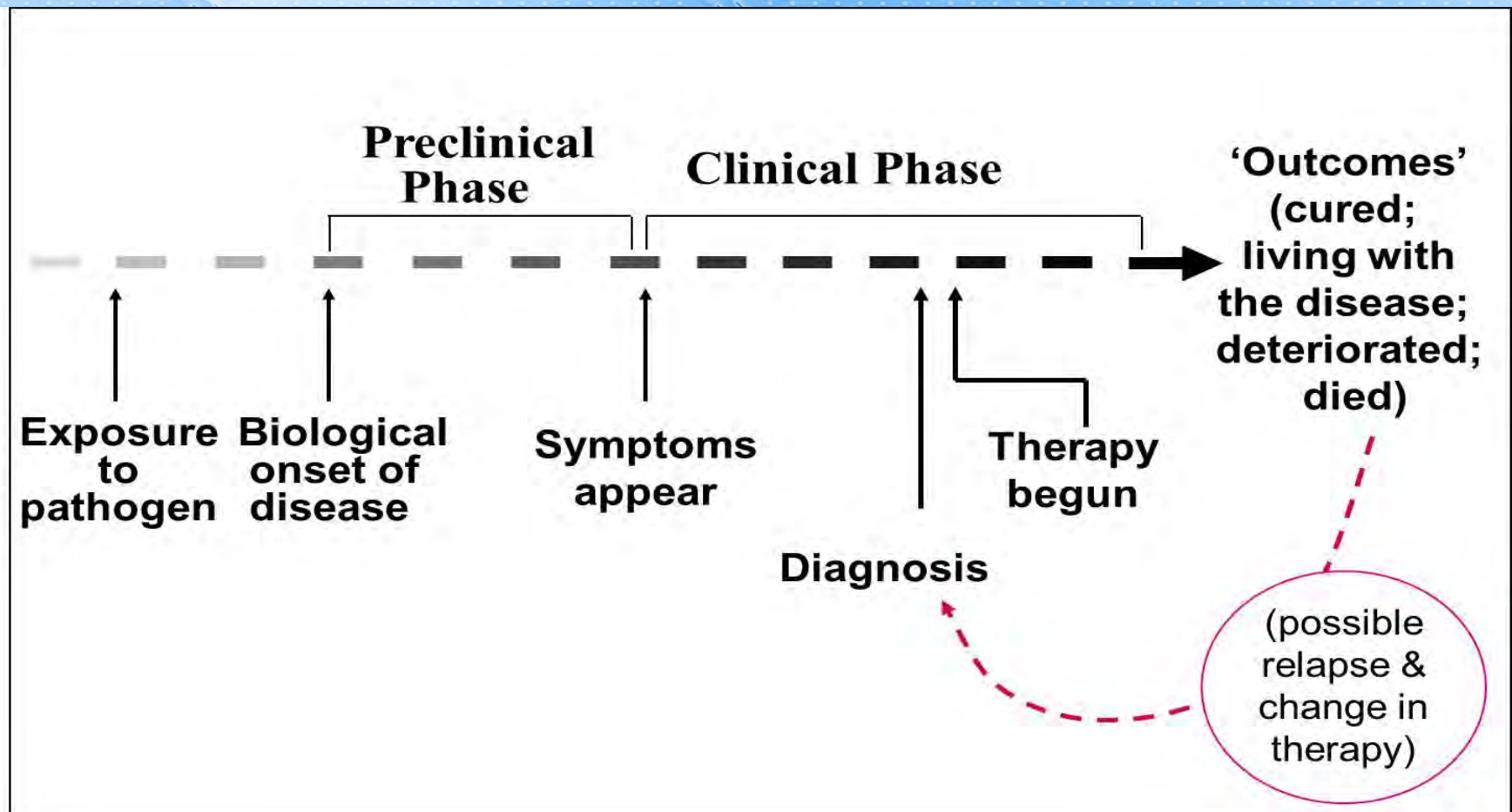
# Presentation Overview

- The biomedical model and its legacy
  - Increased life expectancy
  - Mind-body dualism
  - Rise of the pharmaceutical industry
  - Rise in biomedical research
- Limitations of the biomedical model
  - Changing nature of disease
  - Rising health care cost
  - Increasing recognition of role of behavior in health
  - Failure to adequately address mental health
- A paradigm shift: biomedical to the biopsychosocial model
  - Implications for health care, medical education, and research





# Biomedical Model: The Basis of Western Medicine





# Biomedical Model

- Focus: Disease
- Reductionistic: Disease is defined by a biologic defect
- Exclusionary: Problems not explained by a biologic defect are excluded
- Mind-body dualism
- Biologic assays and biologic interventions





# Success of the Biomedical Model

- Germ theory of disease lead to
  - Sanitation
  - Antibiotics and rise of the pharmaceutical industry
  - Decline in infectious disease
  - Increased life expectancy
- Reductionism lead to
  - Identification and treatment of underlying biologic defect (e.g. insulin replacement in type 1 diabetes)
  - Mapping the human genome







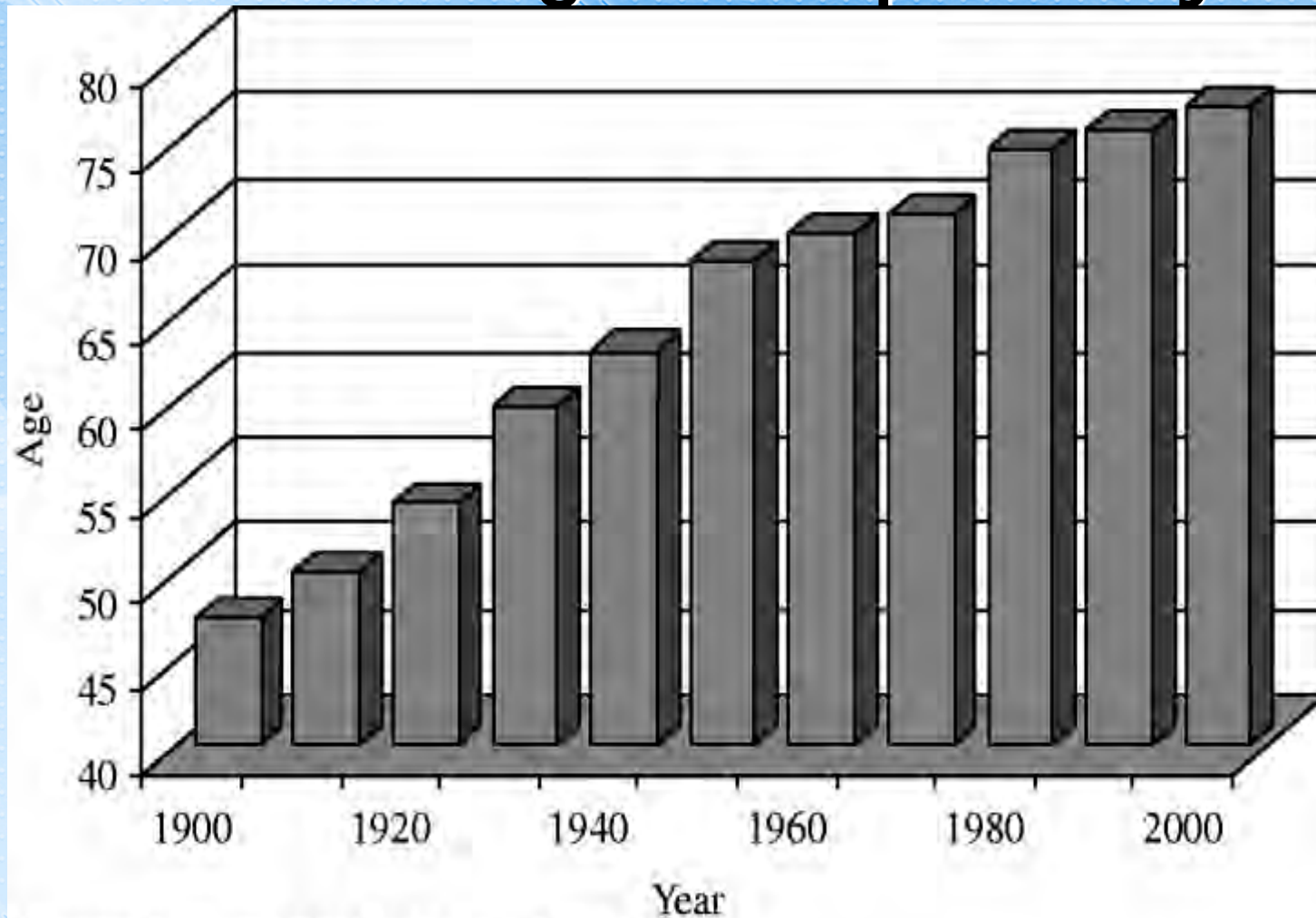
# Success of the Biomedical Model: Elimination of Infectious Disease as the Leading Cause of Death in the United States

cause of death	1900	2000
1	Tuberculosis	Heart Disease
2	Pneumonia/influenza	Cancer
3	Diarrheal diseases	Stroke
4	Heart disease	COPD
5	Liver disease	Injuries
6	Injuries	Diabetes
7	Stroke	Pneumonia/influenza
8	Cancer	Alzheimer's
9	Bronchitis	Nephritis
10	Diphtheria	Septicemia





# Success of the Biomedical Model: Increasing Life Expectancy



**Source:** Kurian (2004, Tables 4-5, p. 71)

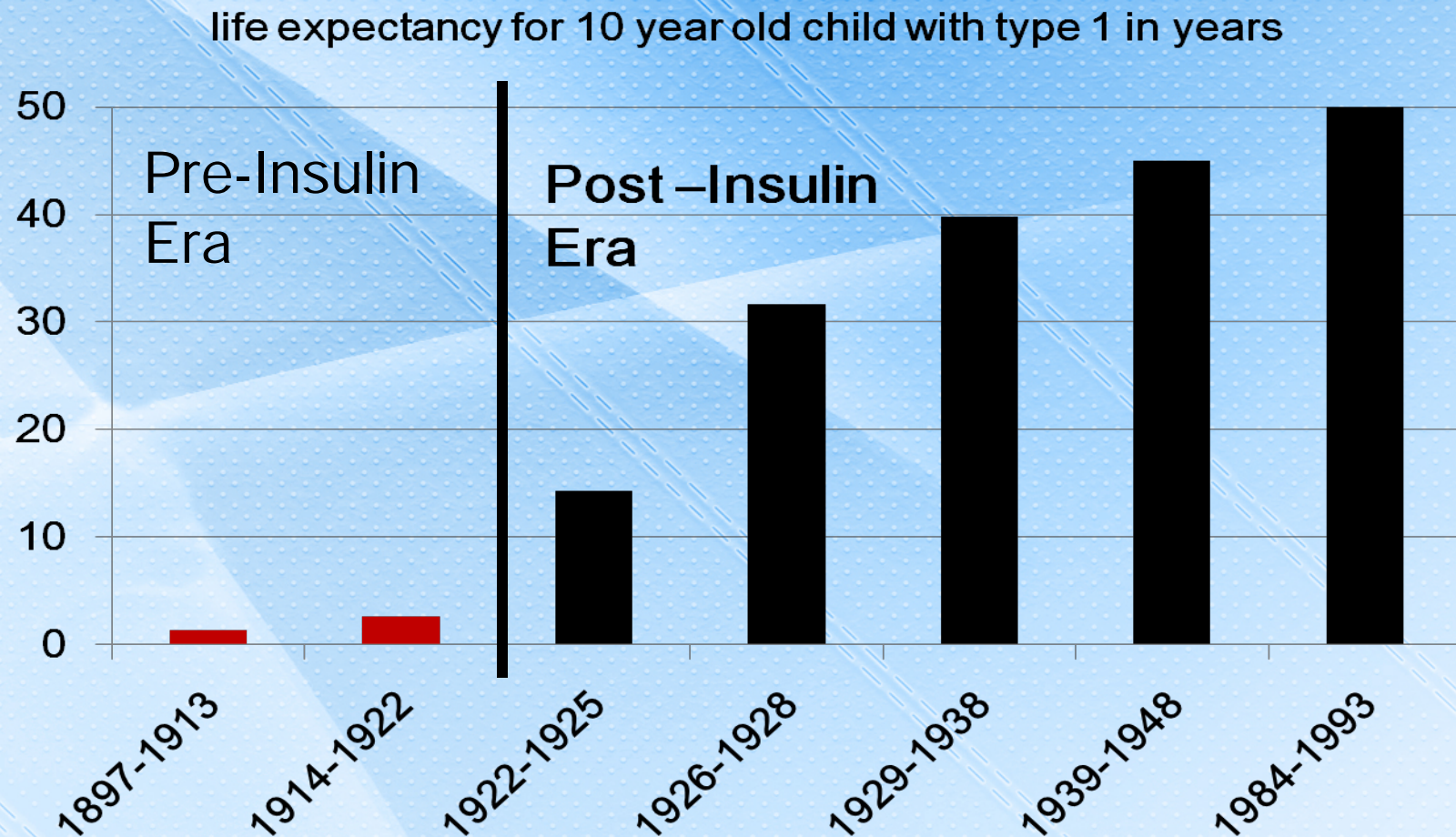


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# Success of the Biomedical Model: Type 1 Diabetes

## Life Expectancy in the Pre- and Post-Insulin Era





# Biomedical Model's Legacy: Reductionistic, Exclusionary, Dualistic Health Care

- Disease is defined as a derangement in an underlying physical mechanism
- Anything not caused by a physical derangement, is excluded
- Mental and physical health are treated separately; unless a behavioral disorder is the consequence of an underlying physical derangement, it is not a disease





# Biomedical Model's Legacy: Reductionistic, Exclusionary, Dualistic Health Care

- Priority given to diagnosis and treatment of disease
  - Physical complaints are given greater value
  - Resources are devoted to biologic assays and biologic interventions
  - Greater access provided to those with diseases
  - Multiple tests and visits to specialists may occur in search of a disease
  - Prevention a lower priority than treatment





# Biomedical Model's Legacy: Reductionistic, Exclusionary, Dualistic Health Care

- Mental or behavioral problems are excluded or devalued
  - Mental or behavioral problems are not considered "real"
    - Patients feel devalued or "not believed"
  - Mental health services are "carved out"
    - Patients may feel stigmatized
  - Fewer resources devoted to these services
    - Poorer access with higher co-pays
    - Many with mental or behavioral problems go untreated





# Biomedical Model's Legacy: US Health Expenditures Devoted Primarily to Physical Health

**Mental Health Expenditures as a Percent of All Health Care Expenditures (2003)**

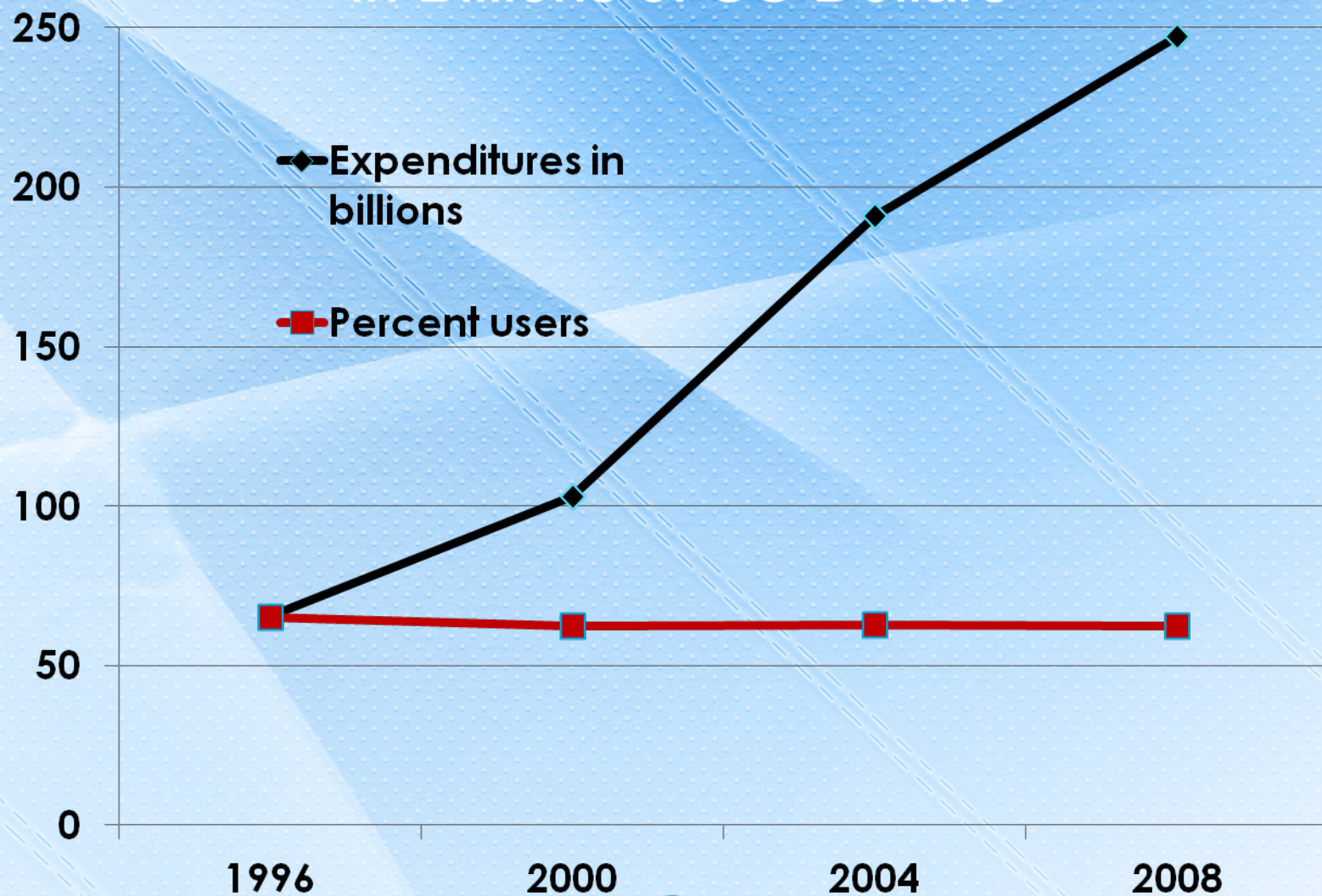


All Health = \$1,614 billion in 2003  
MH = \$100 billion in 2003

*Data courtesy of SAMHSA*



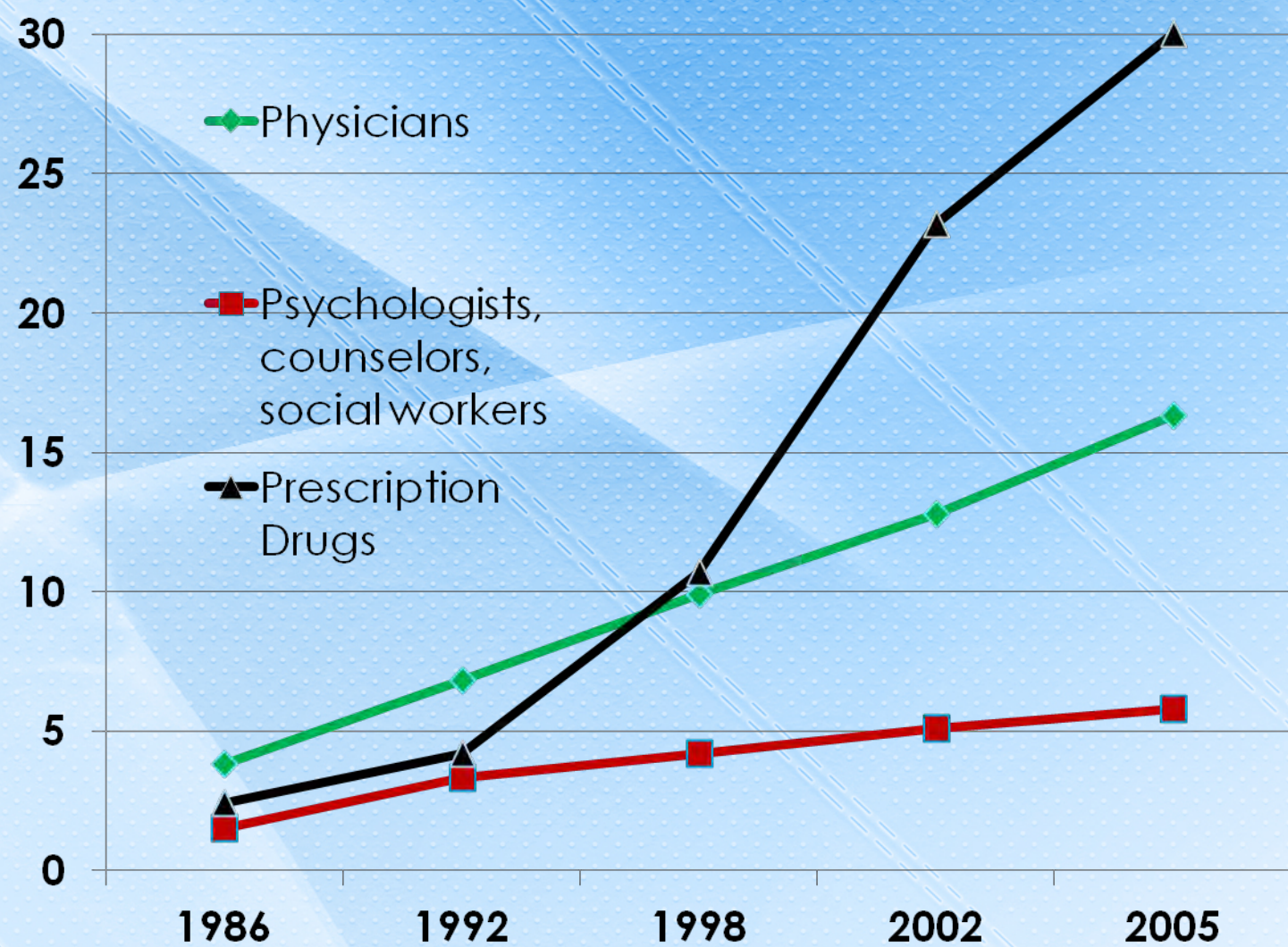
# Biomedical Model's Legacy: Percent of US Population Using Prescription Drugs and Expenditures in Billions of US Dollars







# Biomedical Model's Legacy: Mental Health Expenditures in Billions of US Dollars







# Biomedical Model's Legacy: Dualistic Training Programs

- Mental health and physical health providers are trained separately
- Within this system, psychologists - experts on behavior, cognition and emotion – are “mental health” and physicians are the “physical health” providers
- Neither is trained in inter-professional practice



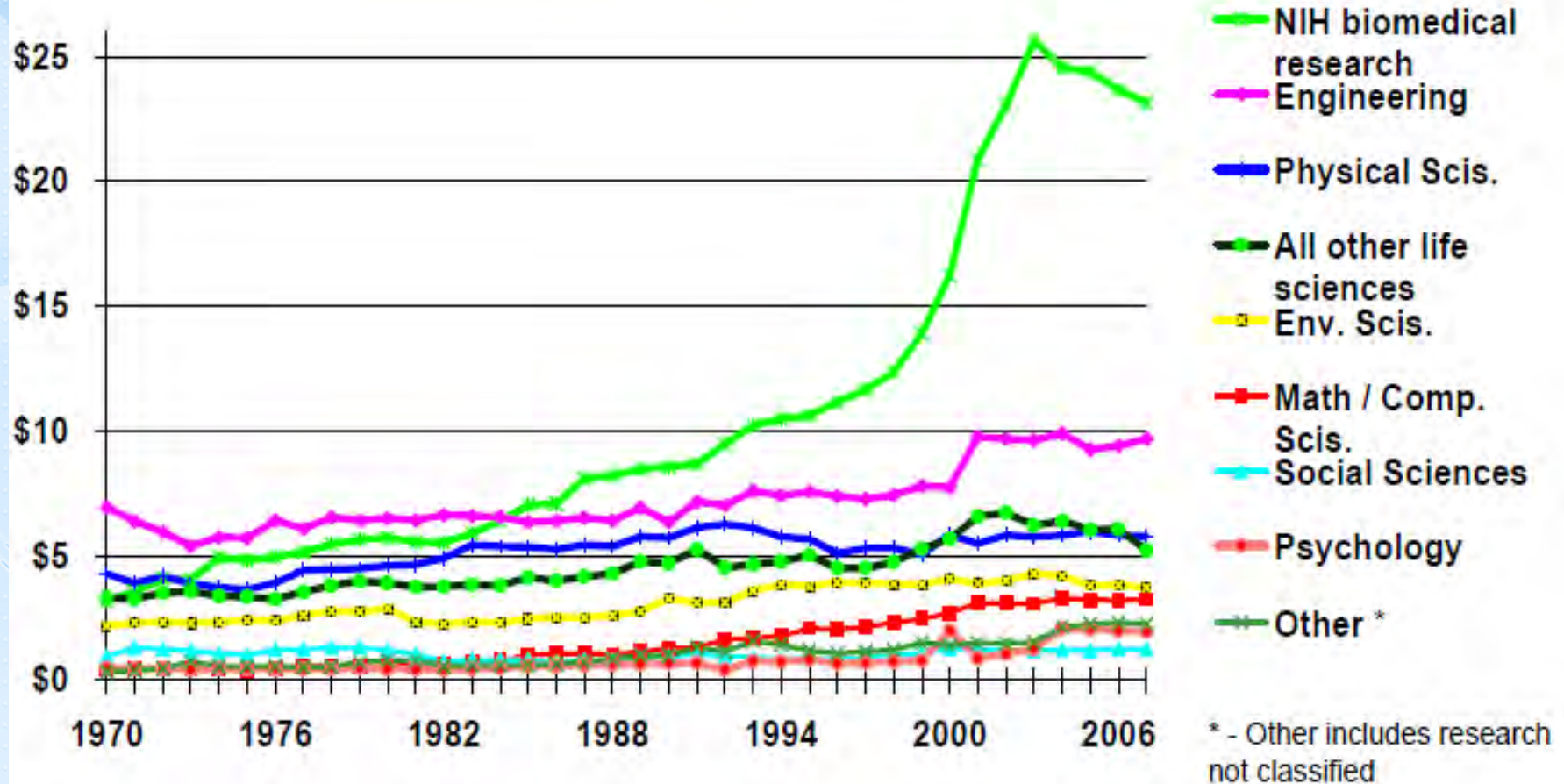


# Biomedical Model's Legacy: Rise in Federal Funding for Biomedical Research

## Trends in Federal Research by Discipline, FY 1970-2007

obligations in billions of constant FY 2008 dollars

<http://www.aaas.org/spp/rd/discip07.pdf>





Despite the success of the biomedical model, by the end of the 20<sup>th</sup> century, medicine was on the verge of a paradigm shift as a result of:

- Changing nature of disease
- Rising health care costs
- Increasing recognition of role of patient and provider behavior
- Failure to adequately address mental health

This in turn lead to the emergence of the biopsychosocial model



# Leading Causes of Death in the United States

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8	Cancer	Alzheimer's
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10	Diphtheria	Septicemia







# Changing Nature of Disease in the US

- 7 of 10 US deaths are the result of chronic disease
- In 2005, 133 million Americans – almost 1 in 2 adults – had at least one chronic illness
- One quarter of those with a chronic illness have a major activity limitation
- Chronic diseases account for 75% - \$1.9 trillion- of the nation's healthcare costs

<http://www.cdc.gov/chronicdisease/pdf/2009-Power-of-Prevention.pdf>

<http://www.cms.hhs.gov/NationalHealthExpendData/downloads/tables.pdf>

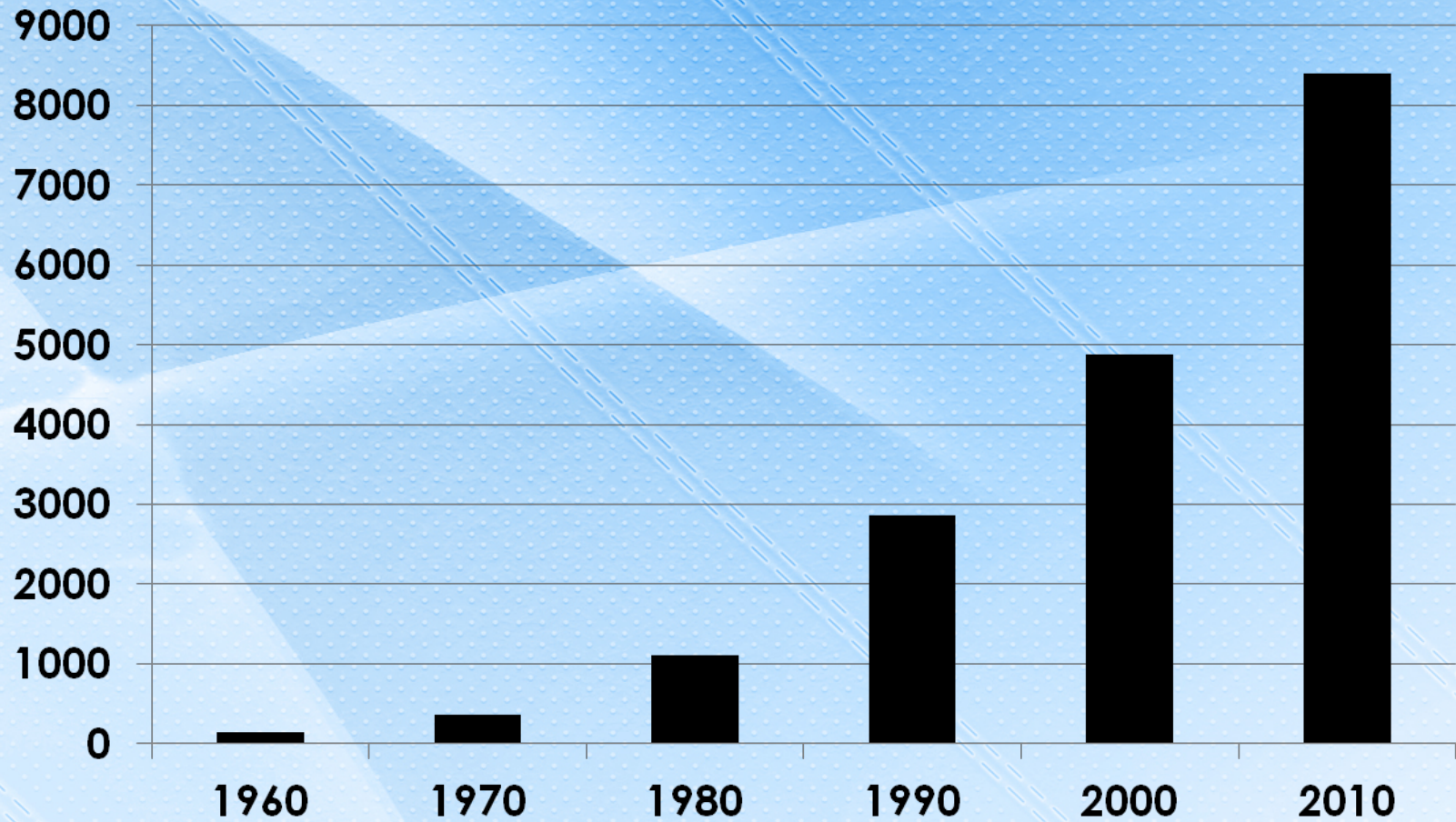


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# Rising Health Costs

US Dollars Spent Per Person on Health Care by Year

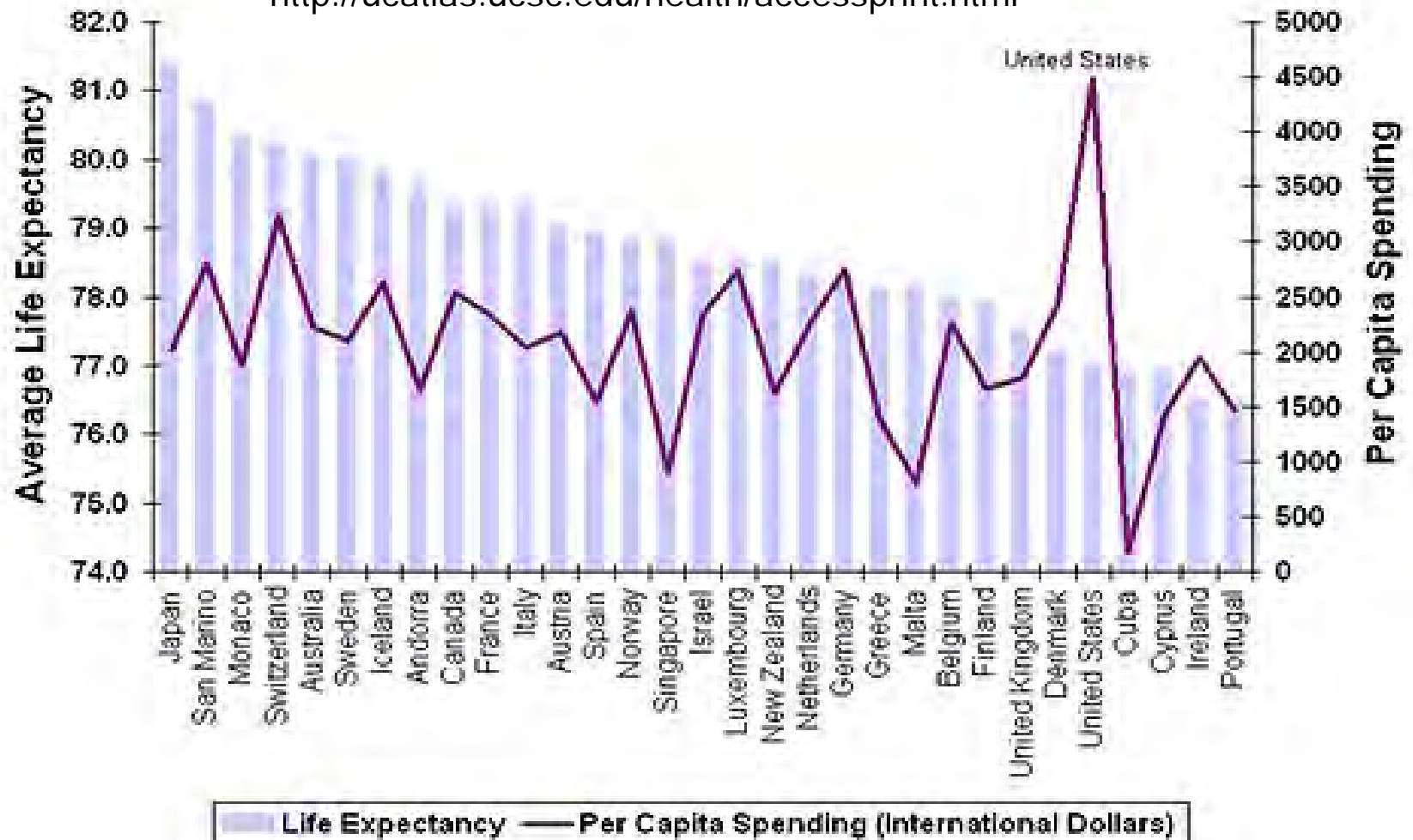




# US Leads the World in Health Care Costs with Lower Life Expectancy

The Cost of a Long Life

<http://ucatlas.ucsc.edu/health/accessprint.html>





# Increasing Recognition of the Role of Behavior

Rank	Cause of Death by Disease (2000)	Actual Cause of Death (2000)
<b>1</b>	Heart Disease	Tobacco
<b>2</b>	Cancer	Diet/Activity
<b>3</b>	Stroke	Alcohol
<b>4</b>	Pulmonary Disease	Microbial Agents
<b>5</b>	Accidents	Toxic Agents
<b>6</b>	Diabetes	Motor Vehicles
<b>7</b>	Pneumonia/Influenza	Firearms
<b>8</b>	Alzheimer's	Sexual Behavior
<b>9</b>	Kidney disease	Illicit Drug Use






# Increasing Recognition of the Role of Behavior: Determinants of Health

Access to Care (10%)
Genetics (20%)
Environment (20%)
Health Behaviors (50%)





# Increasing Recognition of Role of Behavior: Reports of the US Surgeon General

[www.surgeongeneral.gov/sgooffice.htm](http://www.surgeongeneral.gov/sgooffice.htm)

- 1964 -2012 there have been 37 reports on Smoking and Health
- 1972 Impact of Television Violence
- 1979 Healthy People
- 1988 Report on Nutrition and Health
- 1992 HIV Infection and AIDS
- 1996 Physical Activity and Health
- 1999 and 2001 Mental Health
- 2001 Youth Violence
- 2001 Call to Action to Prevent and Decrease Overweight and Obesity






# Increasing Recognition of the Role of Behavior: Healthy People Reports

- 1979 Surgeon General's Report, Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention
- Healthy People 1990: Promoting Health/Preventing Disease: Objectives for the Nation
- Healthy People 2000: National Health Promotion and Disease Prevention Objectives
- Healthy People 2010: Objectives for Improving Health
- Healthy People 2020 focus: Four overarching objectives - health status; quality of life, social determinants of health, and disparities







# Increasing Recognition of Role of Behavior: Institute of Medicine (IOM) Reports

- **Health and Behavior: Frontiers of Biobehavioral Research (1982)**
- **Promoting Health: Intervention Strategies from Social and Behavioral Research (2000)**
- **From Neurons to Neighborhoods: The Science of Early Childhood Development (2000)**
- **Health and Behavior: The Interplay of Biological, Behavioral, and Societal Influences (2001)**







# Increasing Recognition of Role of Behavior


- Disease etiology
- Disease prevention
- Disease management
  - ~ 30% of patients fail to adhere to short-term regimens
  - ~ 50% of patients fail to adhere to long-term regimens
  - ~ 70% of patients fail to comply when asymptomatic
  - ~ 75% of patients have difficulty making lifestyle changes
  - Chronic disease requires long-term often complex medical regimens; many require lifestyle changes
  - Poor medical regimen adherence associated with increased health care costs

Clinical Therapeutics, 2000, 22:858-871; Johnson, Psychosocial clinical guidelines for the care of patients with diabetes, 2012



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# Increasing Recognition of the Role of Behavior: Provider Behavior is Important Too!

- Providers often fail to communicate successfully with their patients
- Doctors make mistakes!
  - Institute of Medicine report: To Err is Human: Building a Safer Health Care System (1999): medical errors are the 8<sup>th</sup> leading cause of death in the US
  - >50% of medical recommendations are inappropriate

<http://www.iom.edu/Reports/1999/To-Err-is-Human-Building-A-Safer-Health-System.aspx>; [Myers & Midence \(1998\). Adherence to Treatment in Medical Conditions](#)



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# Increasing Recognition of the Role of Provider Behavior

- Evidence Based Medicine
  - Medical practice is based on science
- Practice Guidelines
  - Professional, national, governmental agencies
- Medical Informatics
  - a science addressing how best to use information to improve health care; National Library of Medicine is the government leader ([www.nlm.nih.gov](http://www.nlm.nih.gov))
- Patient Safety Initiatives
  - Electronic medical record
  - Decision support systems





# Failure to Adequately Address Mental Health

- Mental health concerns are common
  - 26% of US adults have a mental disorder
  - 6% have a serious mental disorder
- Mental disorders are the leading cause of disability in the U.S.

<http://www.nimh.nih.gov/health/publications/the-numbers-count-mental-disorders-in-america/index.shtml>





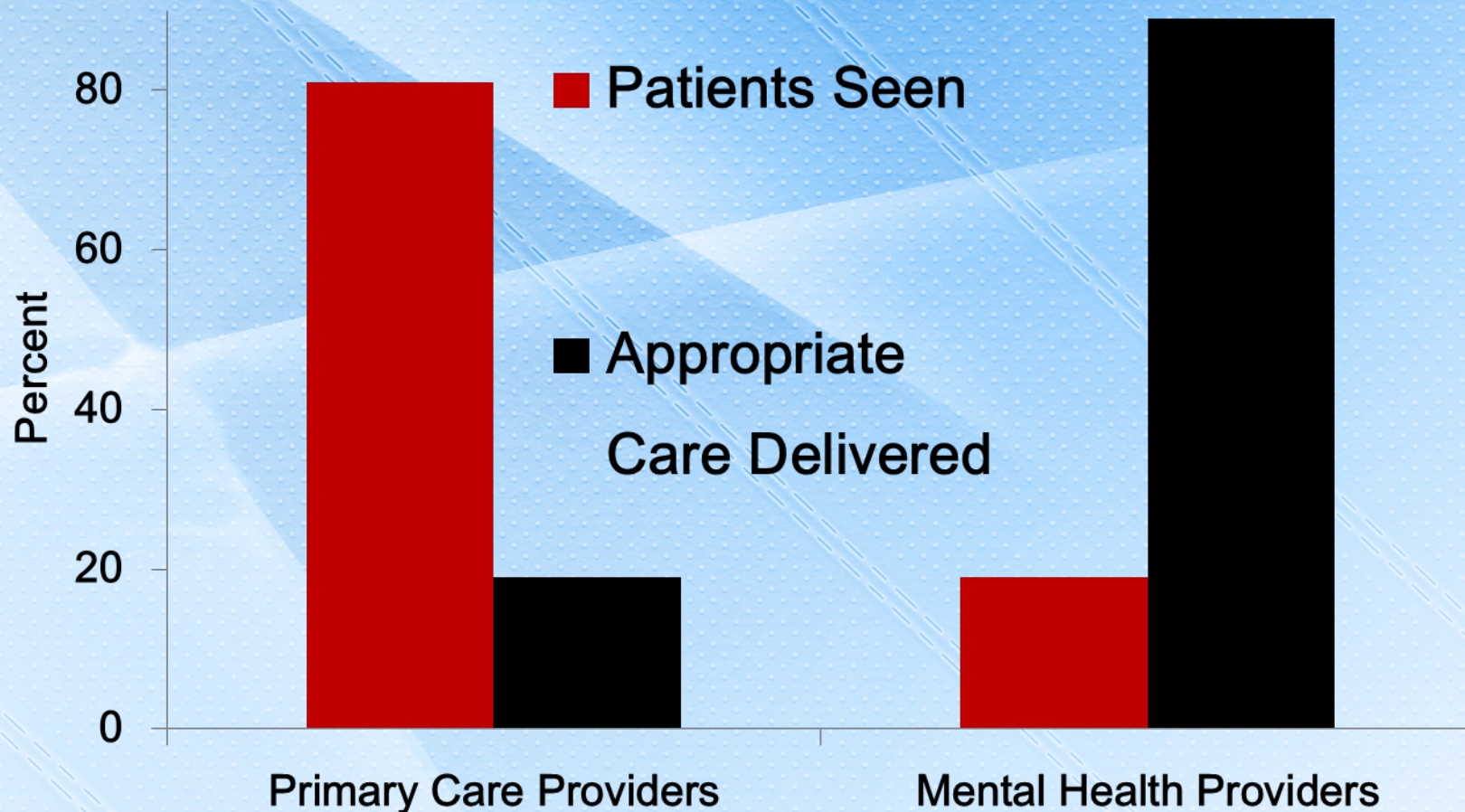
# Failure to Adequately Address Mental Health

- Mental health concerns are common in primary care settings
- However, mental health concerns seen in primary care are often:
  - Unrecognized
  - Untreated
  - Treated inappropriately






# Failure to Adequately Address Mental Health: Proportion of Persons with Depression or Anxiety Disorders Receiving Appropriate Treatment







# Failure to Adequately Address Mental Health

- Mental health disorders are frequently co-morbid with physical disorders, complicating their effective treatment and increasing costs
  - 25-40% of medical outpatients and  $\geq 40\%$  of medical inpatients are comorbid for mental health disorders Kessler et al J Occup Environ Med 2003
- Those with mental health disorders seen in mental health facilities often fail to get adequate treatment for co-morbid physical disorders
  - 75% of seriously mentally ill patients are comorbid for a physical disorder Kessler et al J Occup Environ Med 2003





# Per Capita Healthcare Costs in Medically Ill, Depressed, and Comorbid Patients

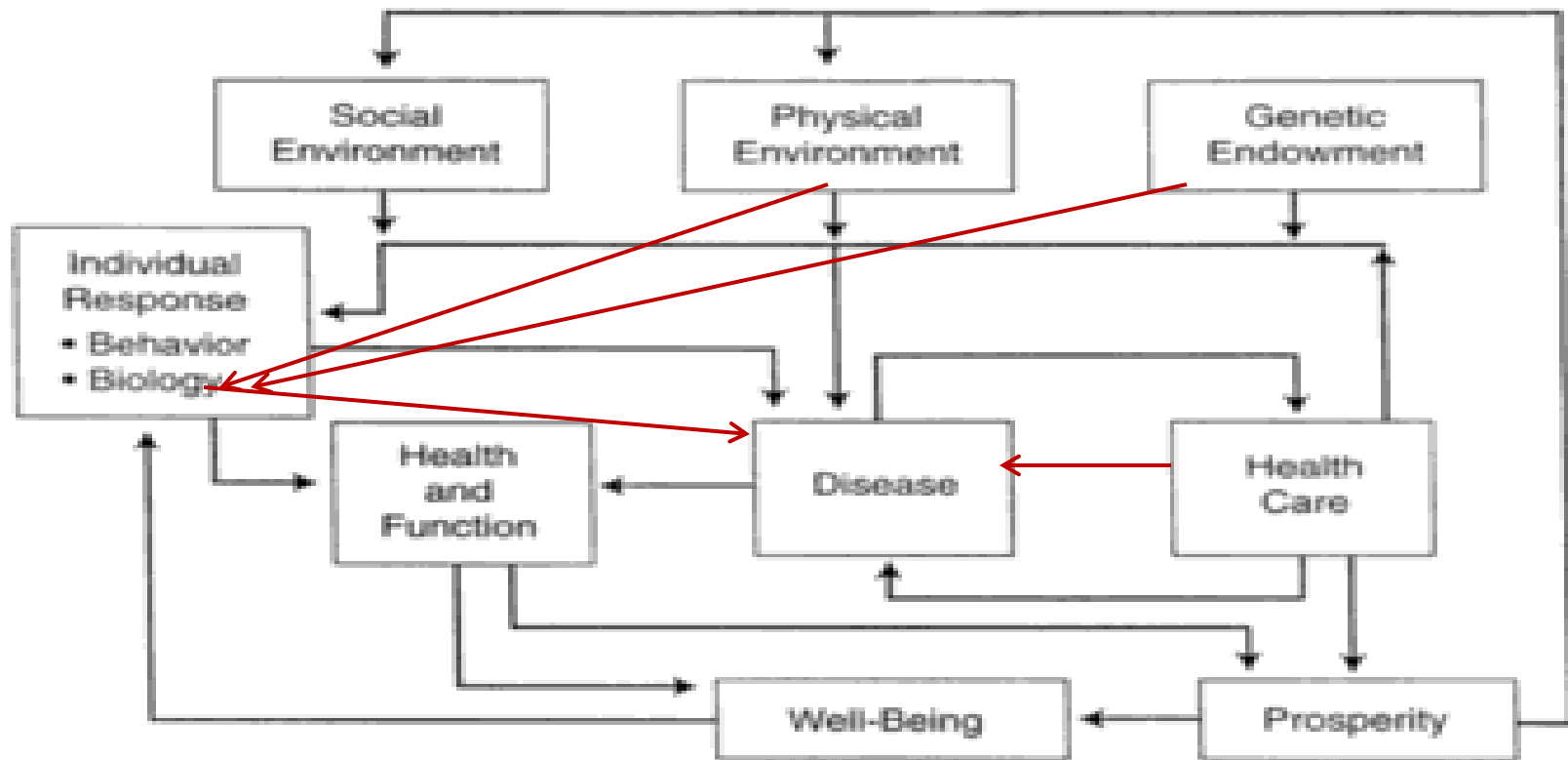
	Medical Ill only	Depression only	Comorbid for Medical Illness and Depression
Health Care Costs	\$3853	\$3417	\$7407
Sick days	6.64	8.79	13.48
Health and Disability Costs	\$4646	\$4675	\$7906

Druss et al, Am J Psychiatry 2000






# Medicine's Paradigm Shift to the Biopsychosocial Model



**FIGURE 1-1** A model of the determinants of health. Source: Reprinted from R.G. Evans and G.L. Stoddart, 1990, *Producing Health, Consuming Health Care*, *Social Science and Medicine* 31:1347-1363, with permission from Elsevier Science Ltd, Kidlington, UK.





# World Health Organization (WHO) Definition of Health: Consistent with the Biopsychosocial Model

*Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.* Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946

*Closing the gap in a generation: health equity through action on the social determinants of health.* Final Report of the Commission on Social Determinants of Health. Geneva, World Health Organization, 2008.





## Biomedical

- Focus: Disease
- Reductionism – disease is defined by a single biologic defect
- Dualism – mind and body are separate
- Biologic assays and treatments emphasized

## Biopsychosocial

- Focus: Well-being
- Multi-factorial – well-being is a product of multiple factors
- Integrative – mind and body are not separate
- Treatments may be behavioral, biologic, or environmental
- Prevention is a focus





# Patient-Centered Integrated Care: US Health Care of the Future?

- Based on the biopsychosocial model
- The patient is viewed as a whole person
- All of the patient's needs are addressed
- By inter-professional health care teams
- That include health and mental health expertise
- In a non-stigmatizing environment that considers the patient's preferences and culture





# Benefits of Integrated, Patient-Centered Care Models

- Higher quality of care
- Greater access
- Reduced stigma
- Greater patient satisfaction
- Lower cost







# Biopsychosocial Model: Implications for US Health Care

- Increased emphasis on disease prevention
- Increased emphasis on functioning and quality of life as health outcomes
- Use of multiple intervention options, including behavioral interventions
  - US Preventives Services Task Force recommendations:
    - Screening and Behavioral Counseling Interventions in Primary Care to Reduce Alcohol Misuse (2004)
    - Counseling and Interventions to Prevent Tobacco Use and Tobacco-Caused Disease in Adults and Pregnant Women (2009)
    - Screening for and Management of Obesity in Children (2010)
    - Behavioral Counseling to Prevent Skin Cancer (2012)
    - Screening for and Management of Obesity in Adults (2012)





# Affordable Care Act is Consistent with the Biopsychosocial Model

- Essential health benefits include mental health, preventive and wellness services, and chronic disease management
  - US Preventive Services Task Force (A and B) recommendations must be covered with no cost sharing
- Emphasizes patient-centered coordinated care, patient safety, reduction of medical errors, reduction in health disparities
- Emphasizes patient functioning and quality of life as health outcomes
  - Established the Patient-Centered Outcomes Research Institute (PCORI) which focuses on “outcomes that people notice and care about such as survival, function, symptoms, and health related quality of life”





# Biopsychosocial Model: Implications for Medical Education

- Increased behavioral science in medical education
  - MCAT will have an increased focus on behavioral and social sciences (<https://www.aamc.org/newsroom/newsreleases/273712/120216.html>)
  - Focus on patient-centered care (<http://www.lcme.org/pubs.htm>)
    - Patient-provider communication skills
    - Medical impact of common societal problems
    - Impact of patient culture and beliefs
    - Impact of provider bias and beliefs
- Increased training in inter-professional practice: Core Competencies for Interprofessional Collaborative Practice adopted by six professional organizations (medicine, nursing, osteopathy, dentistry, pharmacy, public health) and endorsed by APA (<http://www.aacn.nche.edu/education-resources/ipecreport.pdf>)





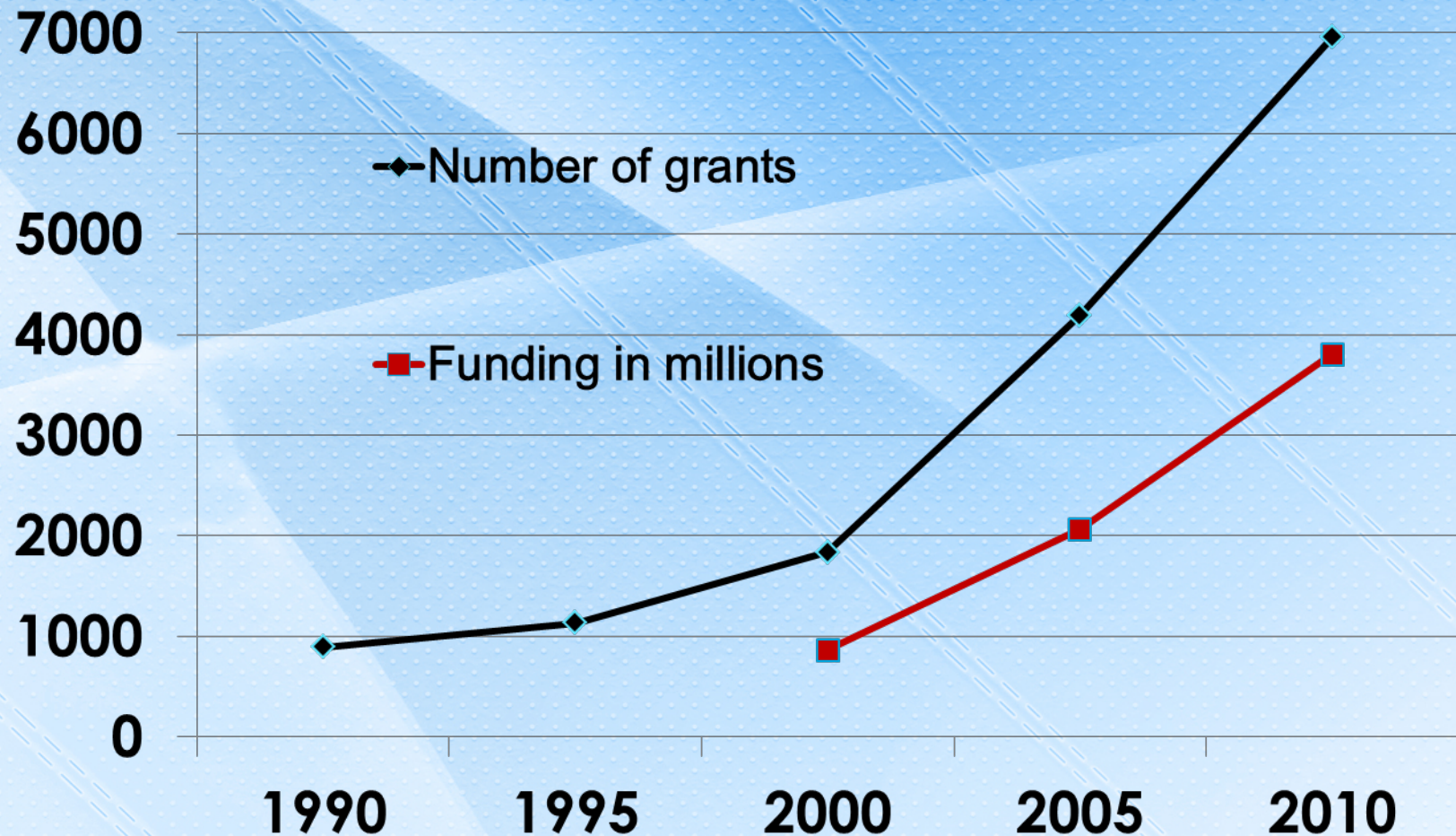
# Biopsychosocial Model: Implications for Health Research

- Increased patient satisfaction, functioning and quality of life as health outcomes
- Increased focus on a wider variety of treatment options, including behavioral options
- Increased focus on cost-effectiveness
- Increased focus on interdisciplinary sciences such as:
  - Epigenetics
  - Pharmacogenomics
  - Personalized medicine
- Increased focus on translation research and implementation science





# Biopsychosocial Model's Implications for Health Research: NIH Funding for Multi- or Interdisciplinary Science





# Biopsychosocial Model: Challenges for Healthcare

- Reduction in healthcare delivery by independent practitioners providing services in isolation
- Increased practice on health care teams in larger group practices and institutional settings
- Increased demand for mental health expertise in a wide array of behavior issues in addition to “mental health” (e.g., compliance, pain management, coping with disability, life style behavior change)
- Need for increased collaboration with a wide range of health providers and organizations
  - To develop new payment models for patient-centered integrated care
  - Treatment guidelines







# Biopsychosocial Model: Challenges for Health Research

- The really hard scientific questions can no longer be answered by a single discipline
- Health research is now conducted primarily by interdisciplinary teams
- Graduate training, hiring and tenure and promotion practices are based on solo science that
  - Values first and single author publications/funding
  - Discourages cross-discipline hiring





# Biopsychosocial Model: Challenges for Medical Education

- Physicians and other healthcare providers must be educated to:
  - delivering patient-centered care,
  - on interprofessional teams
- MD and PhD research scientists must be educated to:
  - function on interdisciplinary science teams
  - address new and emerging fields of interdisciplinary science: epigenetics, psychoneuroimmunology, personalized medicine, clinical trials, & dissemination science





# Medicine's Paradigm Shift: The Case for Integrated Care

- ◎ The biopsychosocial model offers unprecedented opportunities in professional education, health care and health research
- ◎ To take advantage of these opportunities, medicine must abandon the mind-body dualism of the biomedical model and fully embrace the biopsychosocial model in
  - Interprofessional education
  - Patient-centered team-based integrated care
  - Interdisciplinary health research
- ◎ FSU COM can lead the way





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