

Medicine's Paradigm Shift: The Case for Integrated Care



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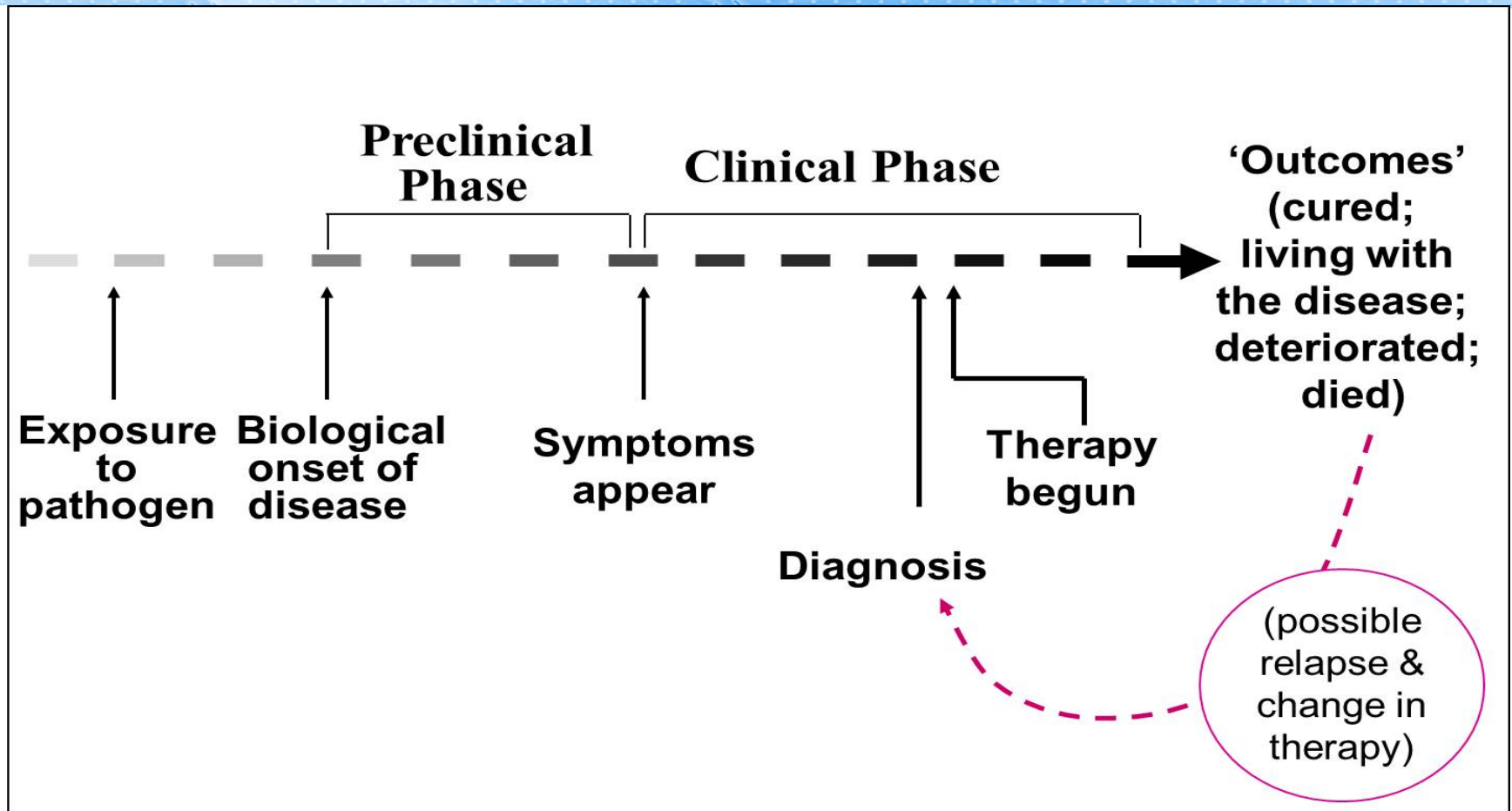
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Presentation Overview

- 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, graduate education, and health 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 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



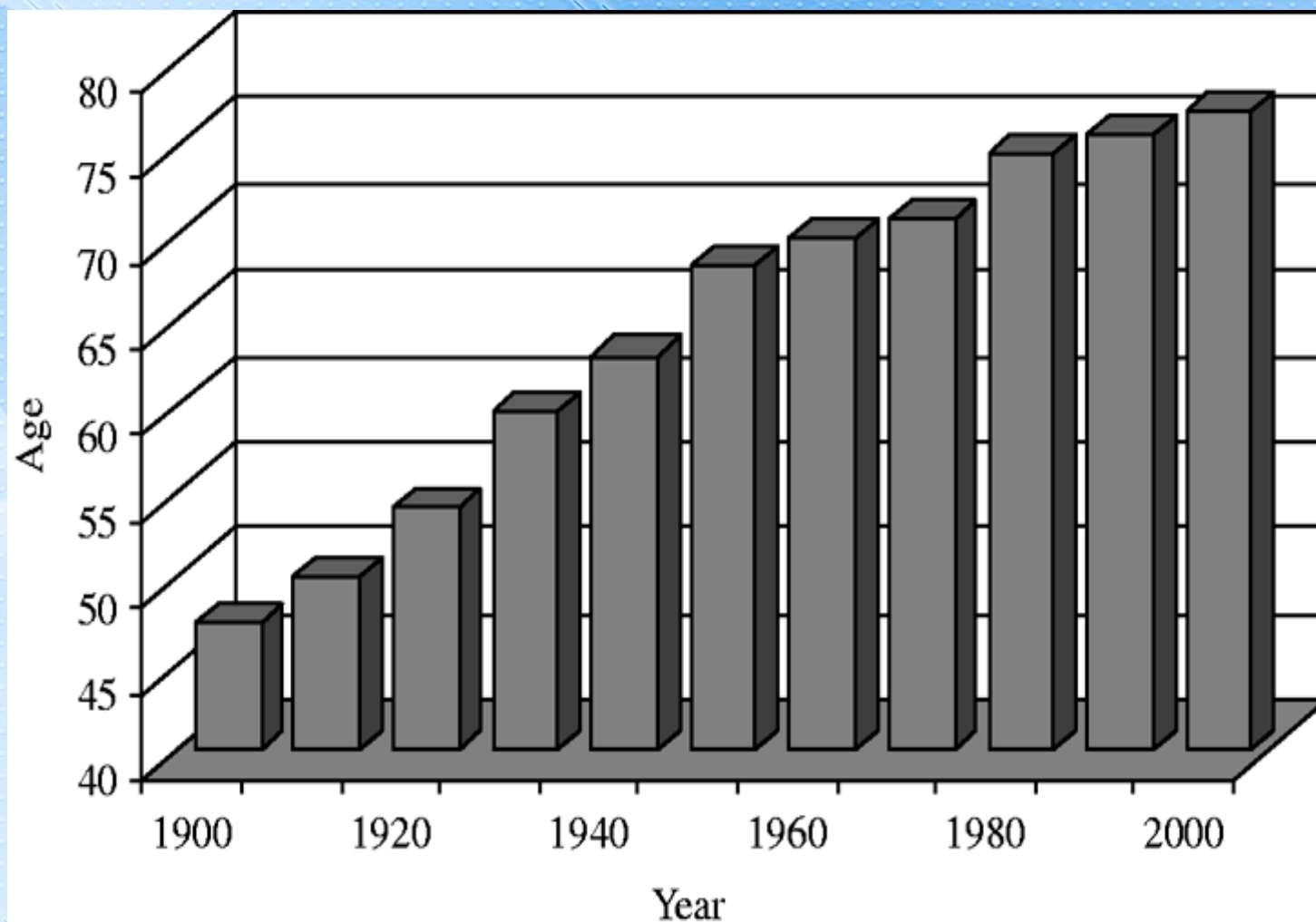


Success of the Biomedical Model: Elimination of Infectious Disease as the Leading Cause of Death in the United States

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



Increasing Life Expectancy



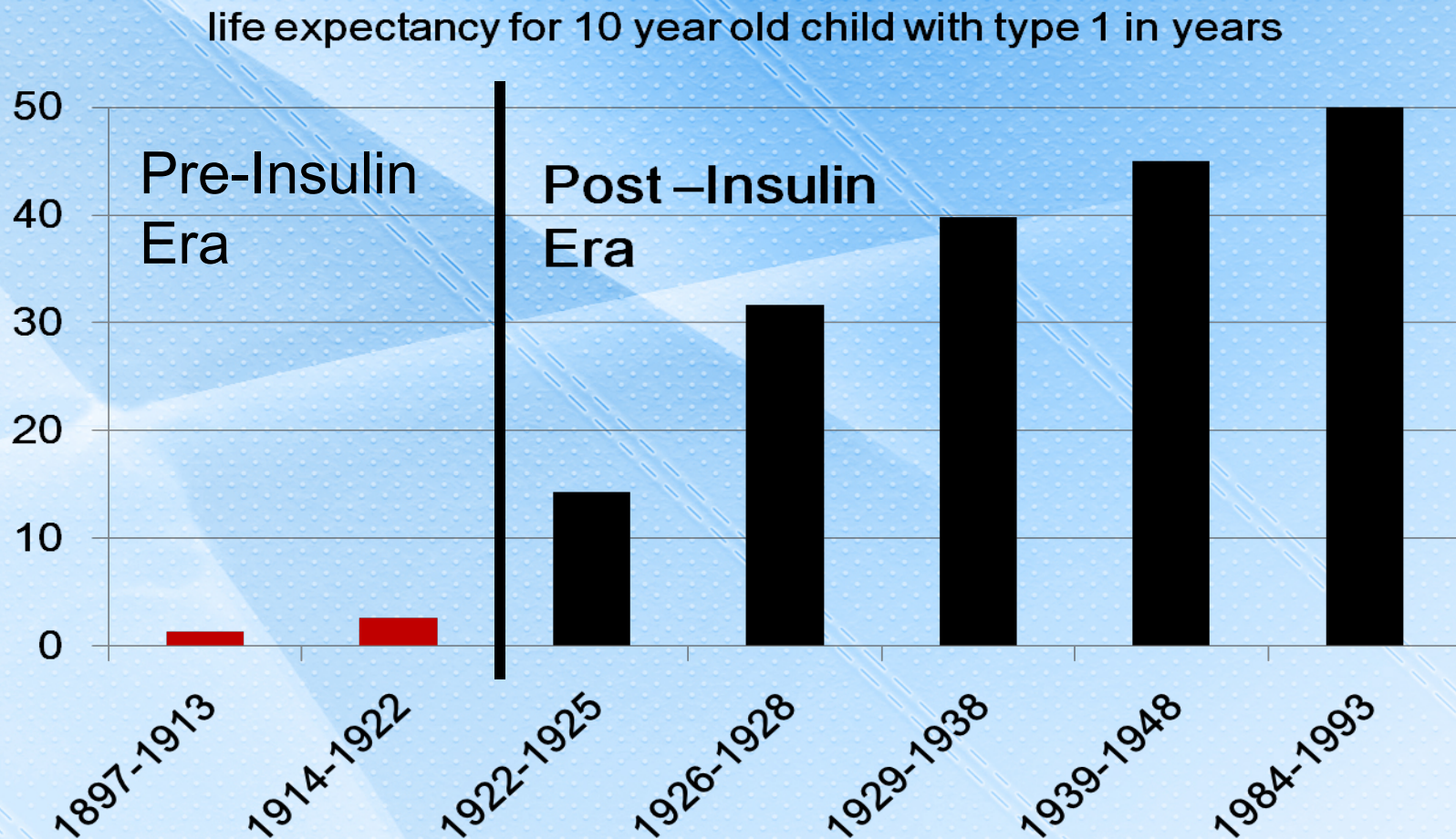
Source: Kurian (2004, Tables 4-5, p. 71)



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Success of the Biomedical Model: Type 1 Diabetes

Life Expectancy in the Pre- and Post-Insulin Era



Traditional US Health Care

- ⊙ **Based on Biomedical Model**
- ⊙ **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**



Dualistic Nature of US 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



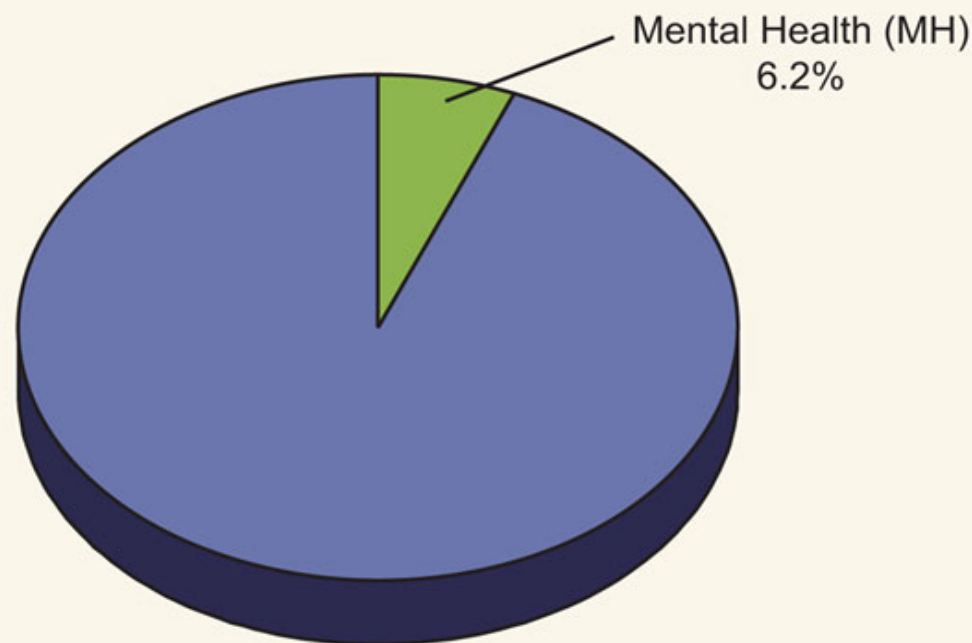
Dualistic Nature of US Health Care

- ⊙ 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)

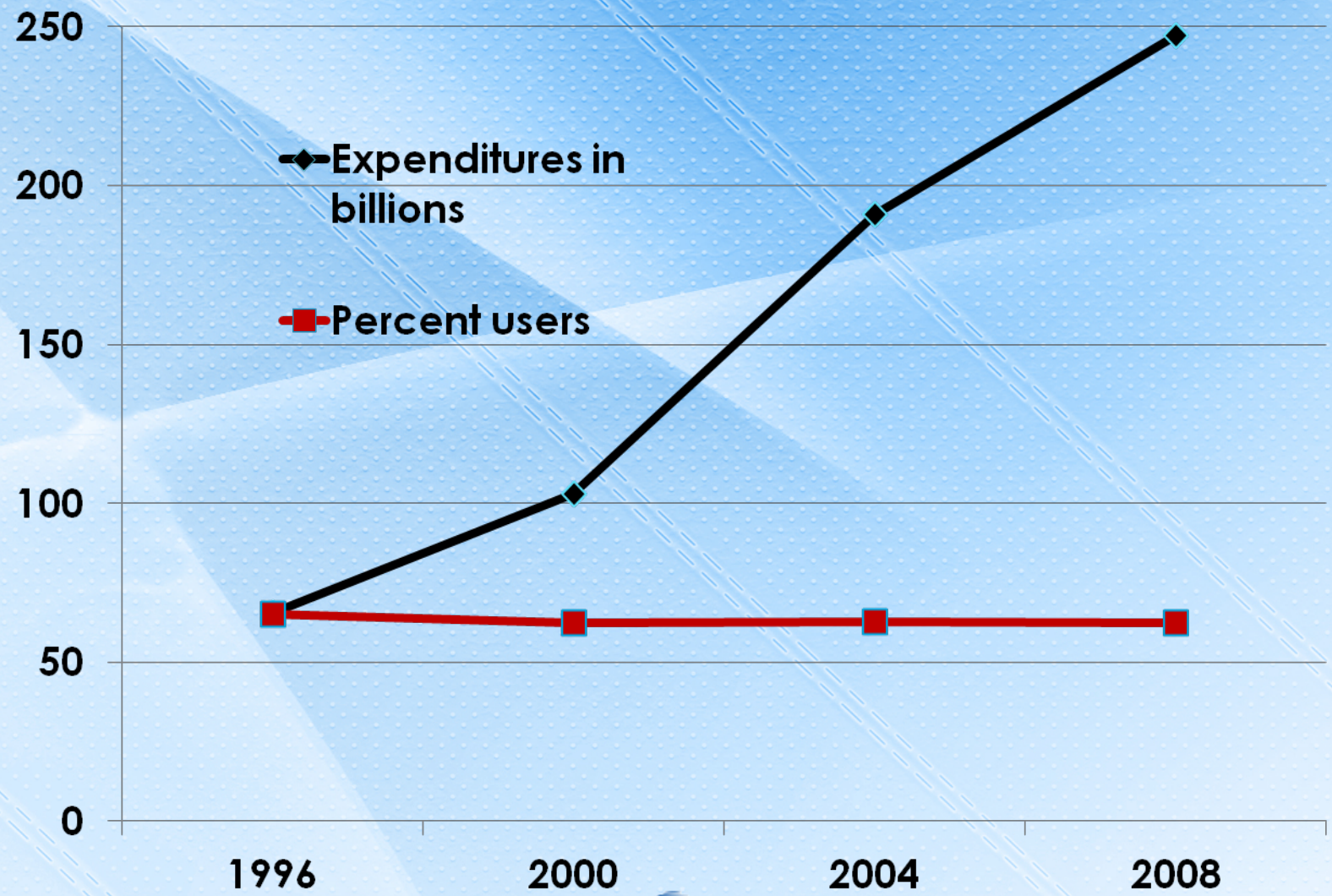


All Health = \$1,614 billion in 2003
MH = \$100 billion in 2003

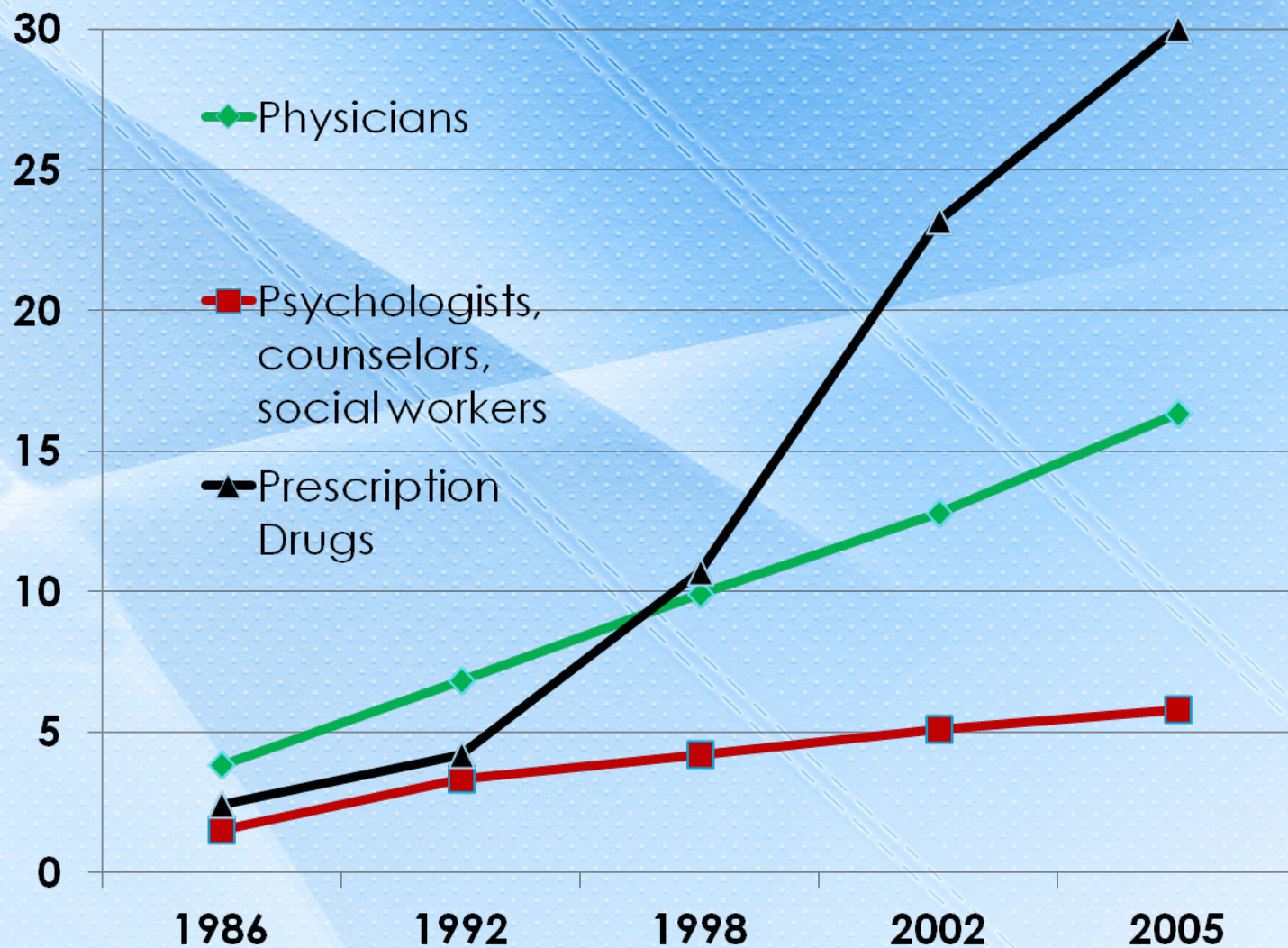
Data courtesy of SAMHSA



Percent of US Population Using Prescription Drugs and Expenditures in Billions of US Dollars



Mental Health Expenditures in Billions of US Dollars





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



Despite the success of the biomedical model, by the end of the 20th 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



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8	Cancer	Alzheimer's
9	Bronchitis	Nephritis
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>

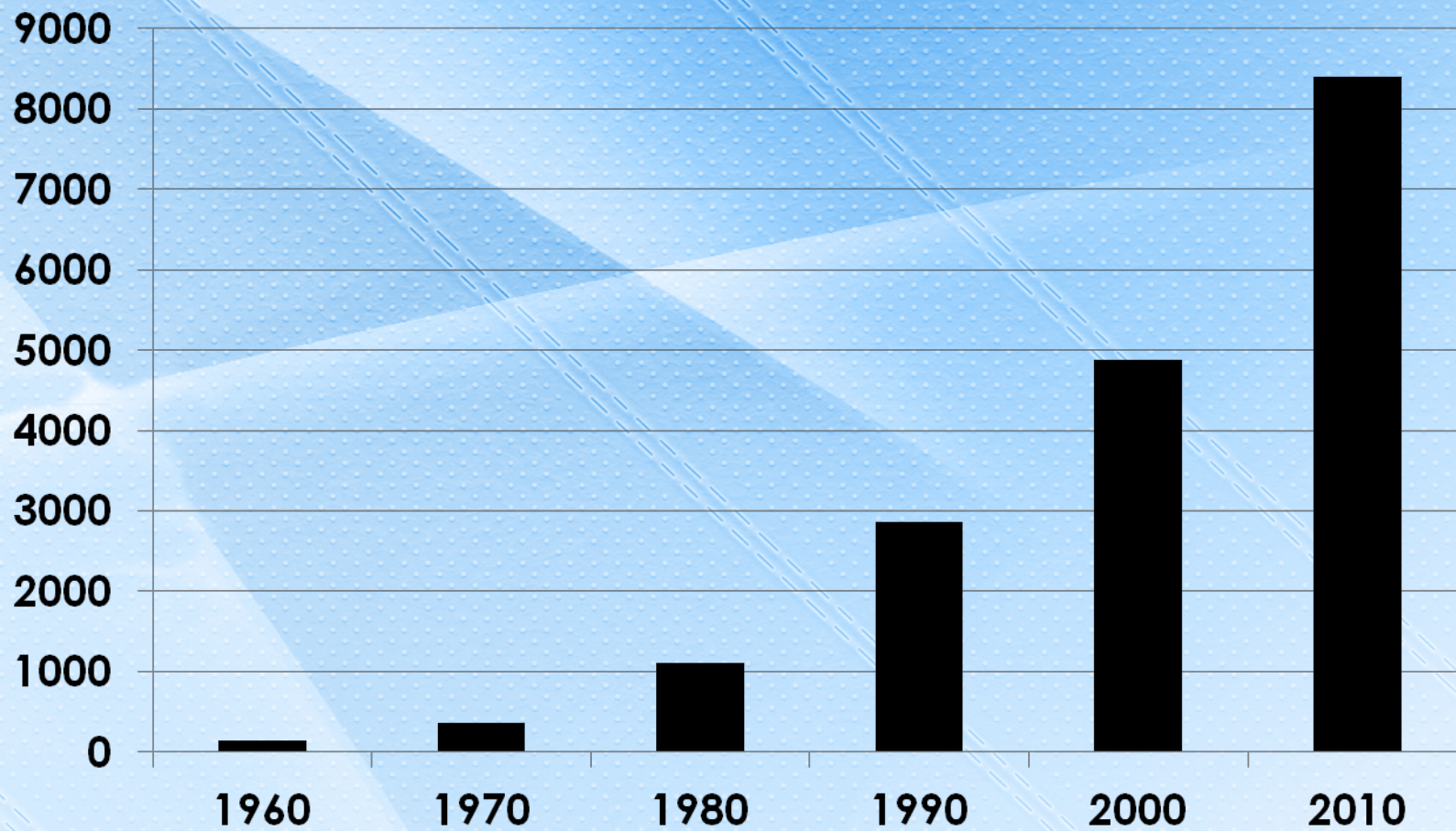
<http://www.cms.hhs.gov/NationalHealthExpendData/downloads/tables.pdf>



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Rising Health Costs

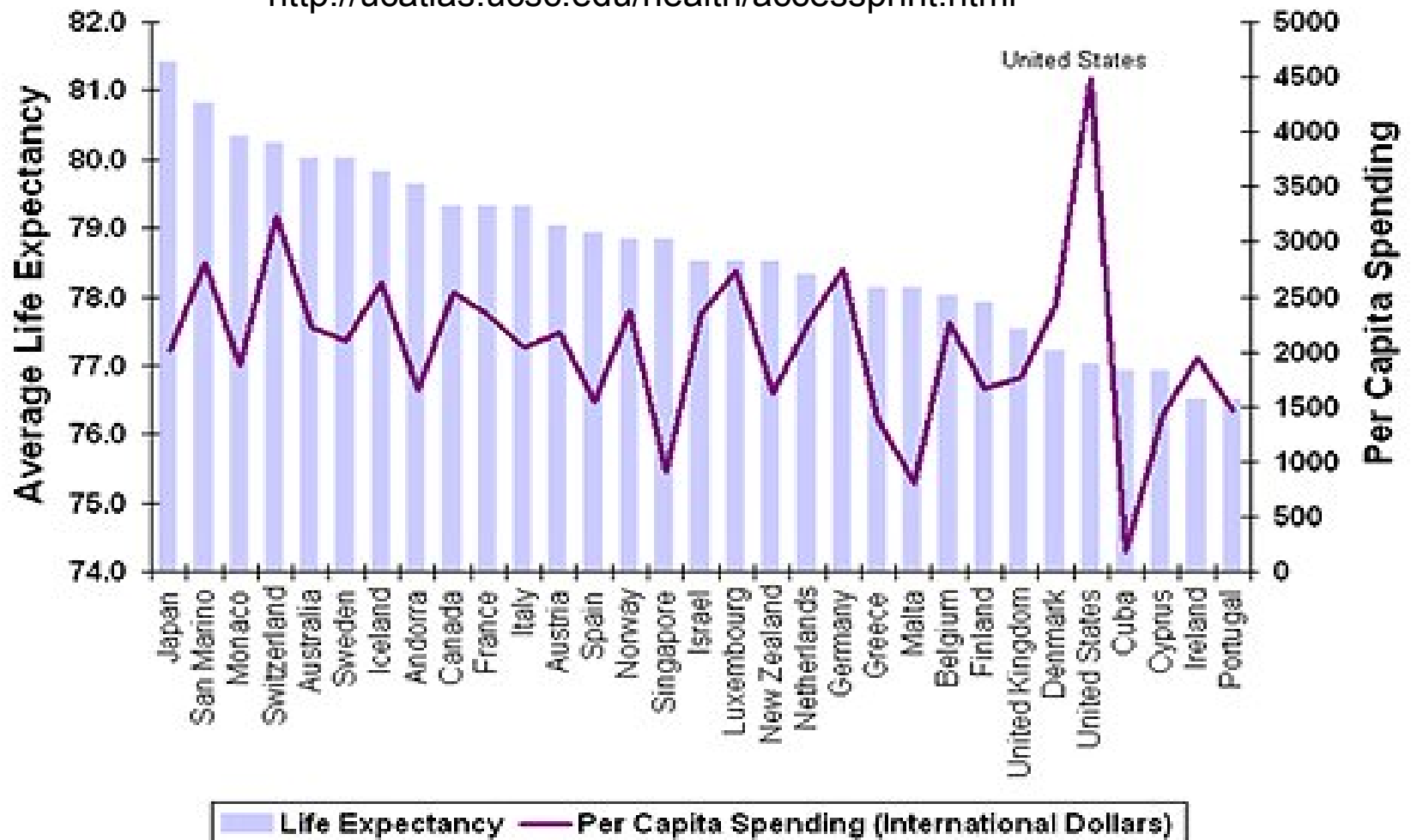
US Dollars Spent Per Person on Health Care by Year



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)
1	Heart Disease	Tobacco
2	Cancer	Diet/Activity
3	Stroke	Alcohol
4	Pulmonary Disease	Microbial Agents
5	Accidents	Toxic Agents
6	Diabetes	Motor Vehicles
7	Pneumonia/Influenza	Firearms
8	Alzheimer's	Sexual Behavior
9	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


- ◎ **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 Bio-Behavioral Relationships at NIH

- **Establishment of Office of Behavioral and Social Science Research at NIH (1995)**
- **Human Genome Project:**
 - **Establishment of the Office of Ethical, Legal, and Social Implications of Human Genetics Research (1990)**
 - **Failure of genetic determinism and increased recognition that the environment, including human behavior, plays a large role in genetic expression**






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 8th 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)
- ⊙ 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>



Depression is Expected to Become the Leading Cause of Disability Worldwide by 2030

Figure 27: Ten leading causes of burden of disease, world, 2004 and 2030

2004 Disease or injury	As % of total DALYs	Rank		Rank	As % of total DALYs	2030 Disease or injury
Lower respiratory infections	6.2	1		1	6.2	Unipolar depressive disorders
Diarrhoeal diseases	4.8	2		2	5.5	Ischaemic heart disease
Unipolar depressive disorders	4.3	3		3	4.9	Road traffic accidents
Ischaemic heart disease	4.1	4		4	4.3	Cerebrovascular disease
HIV/AIDS	3.8	5		5	3.8	COPD
Cerebrovascular disease	3.1	6		6	3.2	Lower respiratory infections
Prematurity and low birth weight	2.9	7		7	2.9	Hearing loss, adult onset
Birth asphyxia and birth trauma	2.7	8		8	2.7	Refractive errors
Road traffic accidents	2.7	9		9	2.5	HIV/AIDS
Neonatal infections and other ^a	2.7	10		10	2.3	Diabetes mellitus
COPD	2.0	13		11	1.9	Neonatal infections and other ^a
Refractive errors	1.8	14		12	1.9	Prematurity and low birth weight
Hearing loss, adult onset	1.8	15		15	1.9	Birth asphyxia and birth trauma
Diabetes mellitus	1.3	19		18	1.6	Diarrhoeal diseases

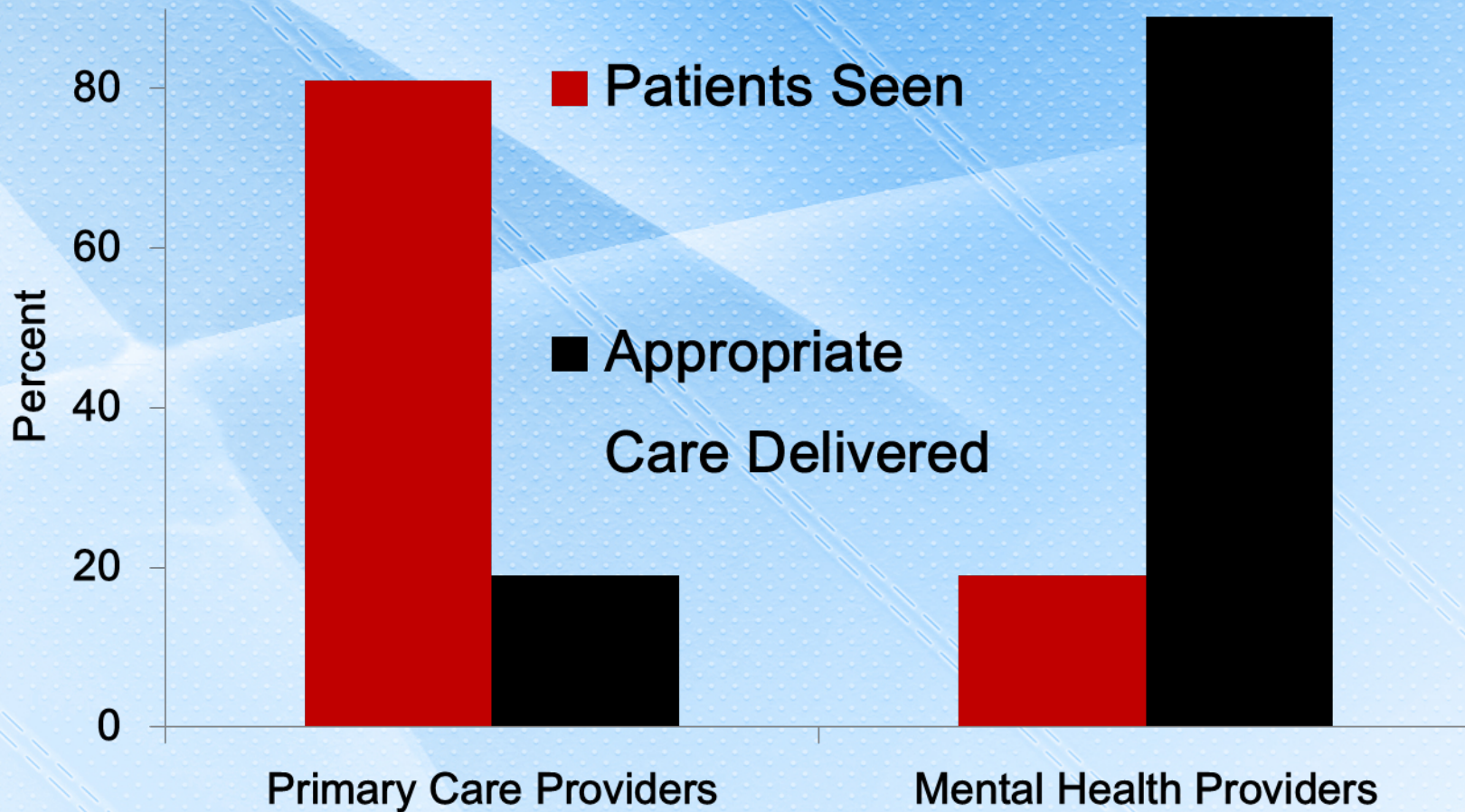
Failure to Adequately Address Mental Health

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





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 from the Biomedical to the Biopsychosocial Model: Underlying Factors

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



Medicine's Paradigm Shift to the Biopsychosocial Model

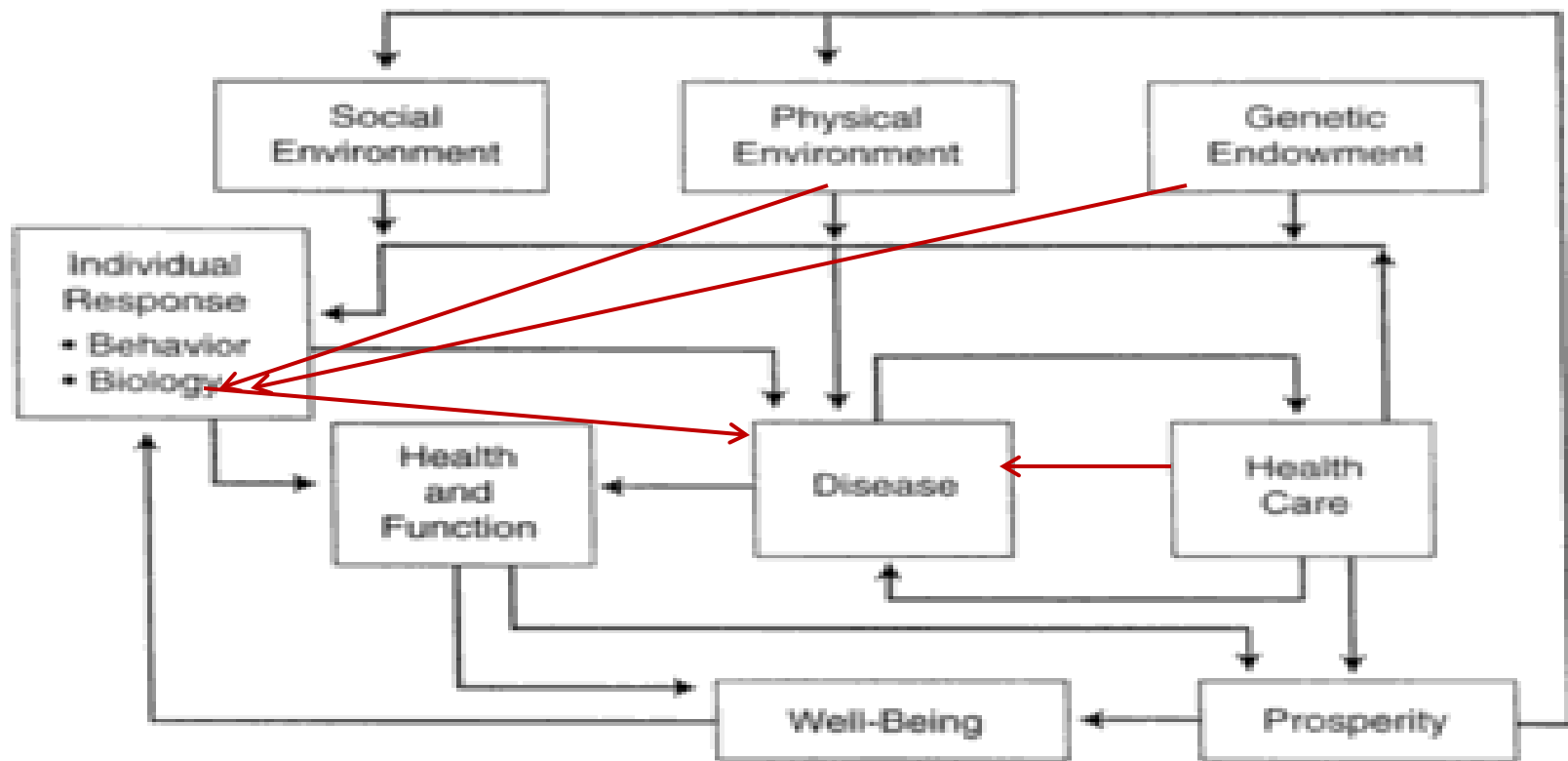



FIGURE 1-1 A model of the determinants of health. Source: Reprinted from R.G. Evans and G.L. Stoddart, 1990, *Producing Health, Consuming Health Care*, *Social Science and Medicine* 31:1347-1363, with permission from Elsevier Science Ltd, Kidlington, UK.



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 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)



Biopsychosocial Model: Implications for Health Providers

- **Science-based Health Care**
 - Health care 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)
- **Patient Safety Initiatives**
 - Electronic medical record
 - Decision support systems
 - Institute of Medicine report: Health IT and Patient Safety: Building Safer Systems for Better Care (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 Health Provider 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)
(<http://www.aacn.nche.edu/education-resources/ipecreport.pdf>)

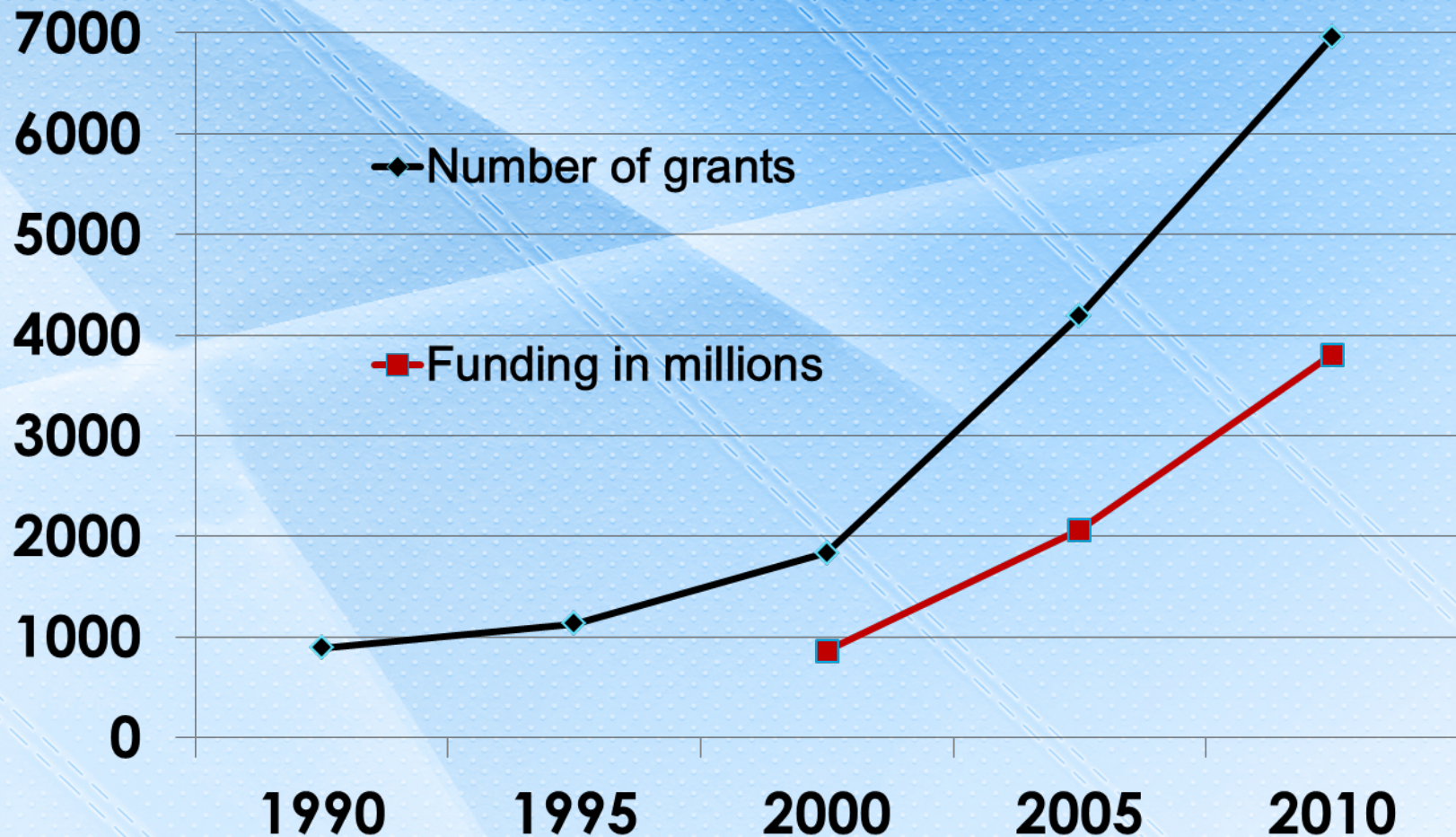


Biopsychosocial Model: Implications for Health Research

- **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**



US National Institutes of Health: 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 Graduate Education

- **Healthcare providers must be educated to:**
 - **delivering patient-centered care,**
 - **on interprofessional teams**
- **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**



**This presentation is available at
www.apa.org/president**



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