Health Services Research:
Applications to Allied Health

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Overview of Presentation

- **Definition of health services research**
- **Review of IOM's 6 aims of quality of care.**
  - Useful for "categorizing" areas of health services research
  - Useful for generating questions relevant to allied health
- **Present some examples of our work & work of others within context of quality.**
- **Highlight relevant/timely topics for allied health**
  - Comparative effectiveness research (CER)
  - Patient-centered outcomes research (PCOR)

Defining Health Services Research

- ….. examines how people get access to health care, how much care costs, and what happens to patients as a result of this care. The main goals of HSR are to identify the most effective ways to organize, manage, finance, and deliver high quality care; reduce medical errors; and improve patient safety. (AHRQ 2002)

- Multidisciplinary field. (Academy Health 2000)

- Research domains are individuals, families, organizations, institutions, communities, and populations. (Academy Health 2000)

Health Services Research

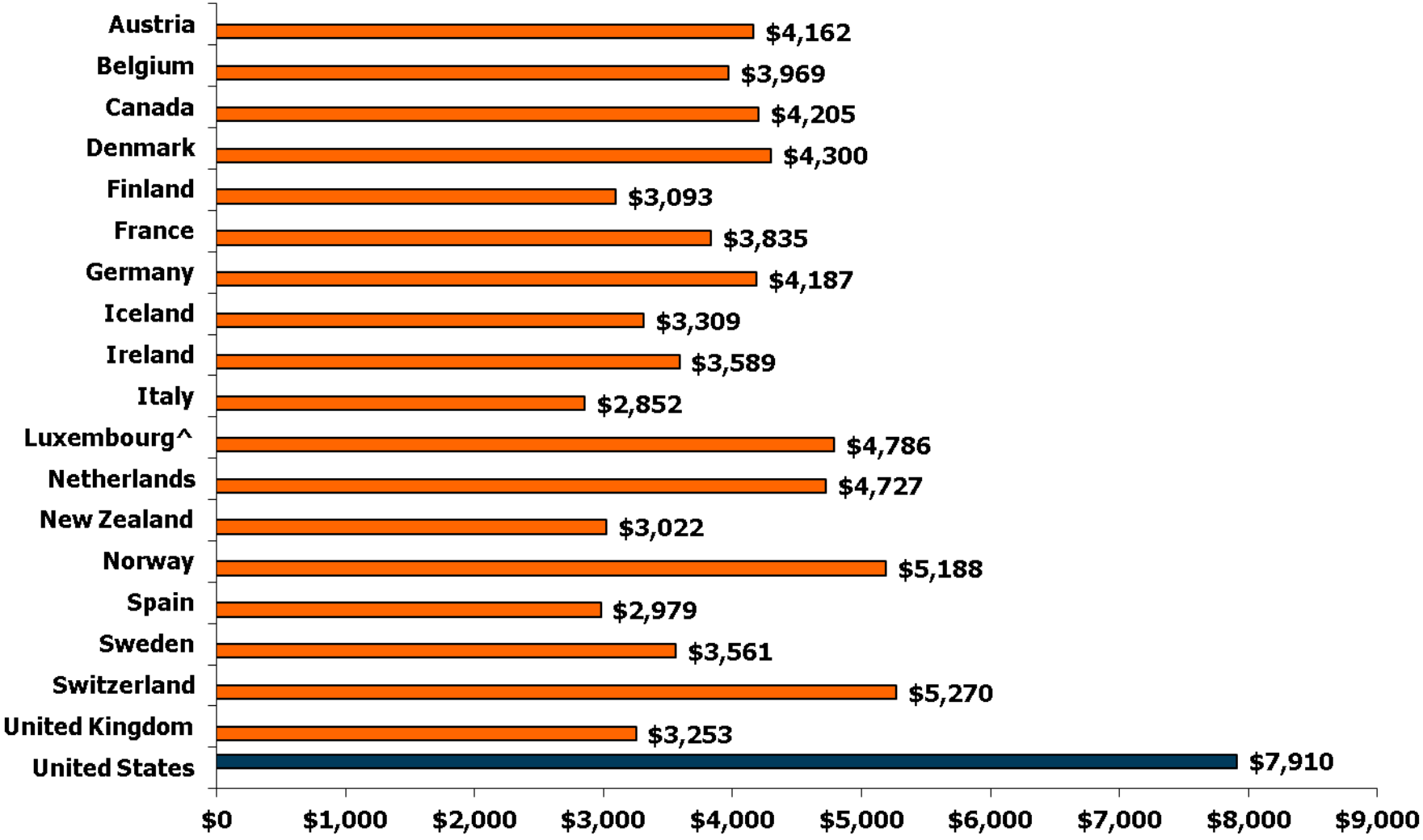
- Focuses on analyses in “real world” settings (observational designs, pragmatic trials).

- Key areas (not necessarily mutually exclusive)
  - Access to care
  - Quality of Care (includes effectiveness of care)
  - Cost of Care
  - Delivery/organization of care

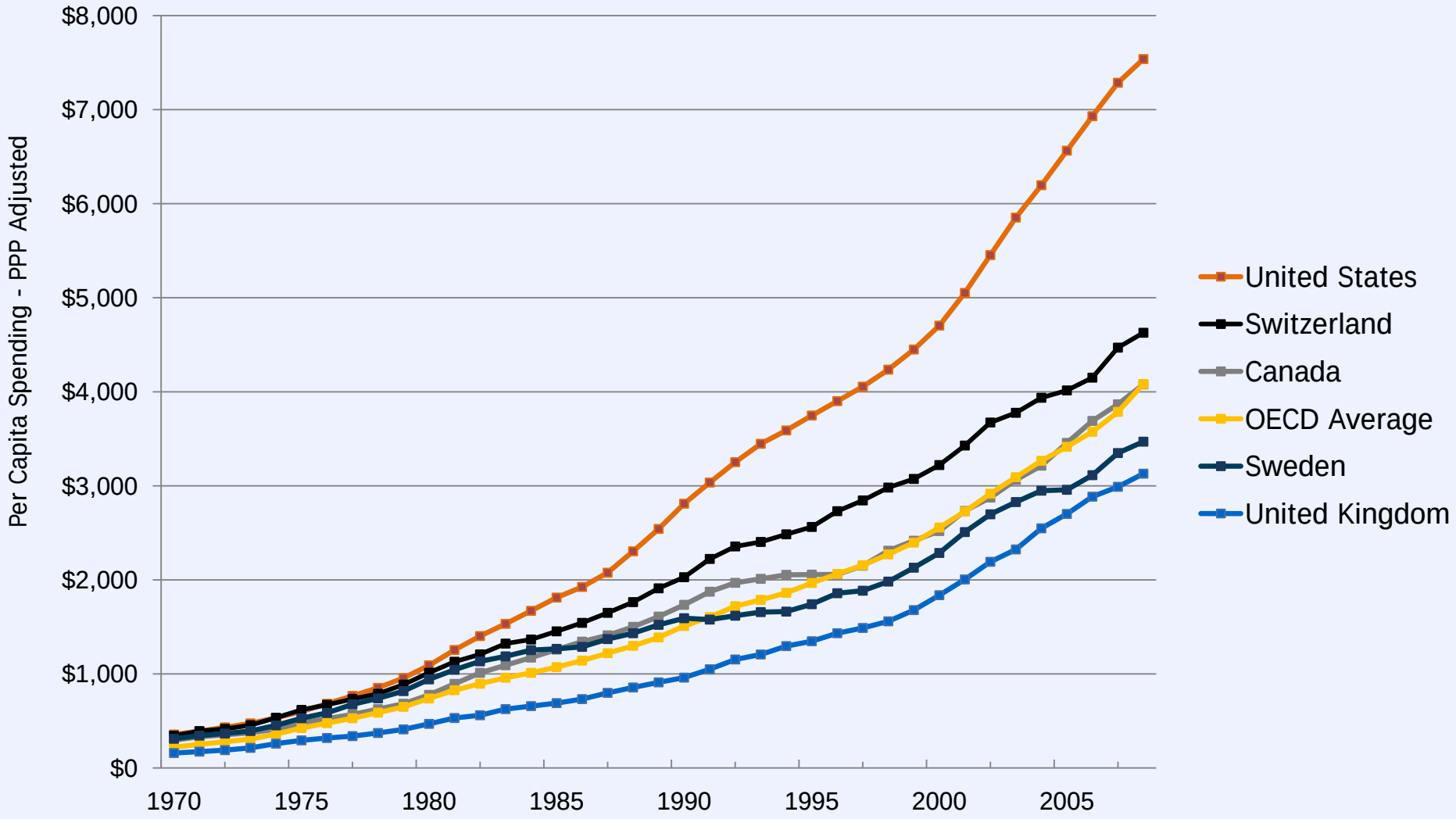
Why is HSR Important?

- Informs practice and policy on ways to improve the quality and value of healthcare with the **ultimate goal** of improving the health of individuals and populations.
- Much room for improvement in the U.S. health care system!

Per Capita Total Current Health Care Expenditures, U.S. and Selected Countries, 2010

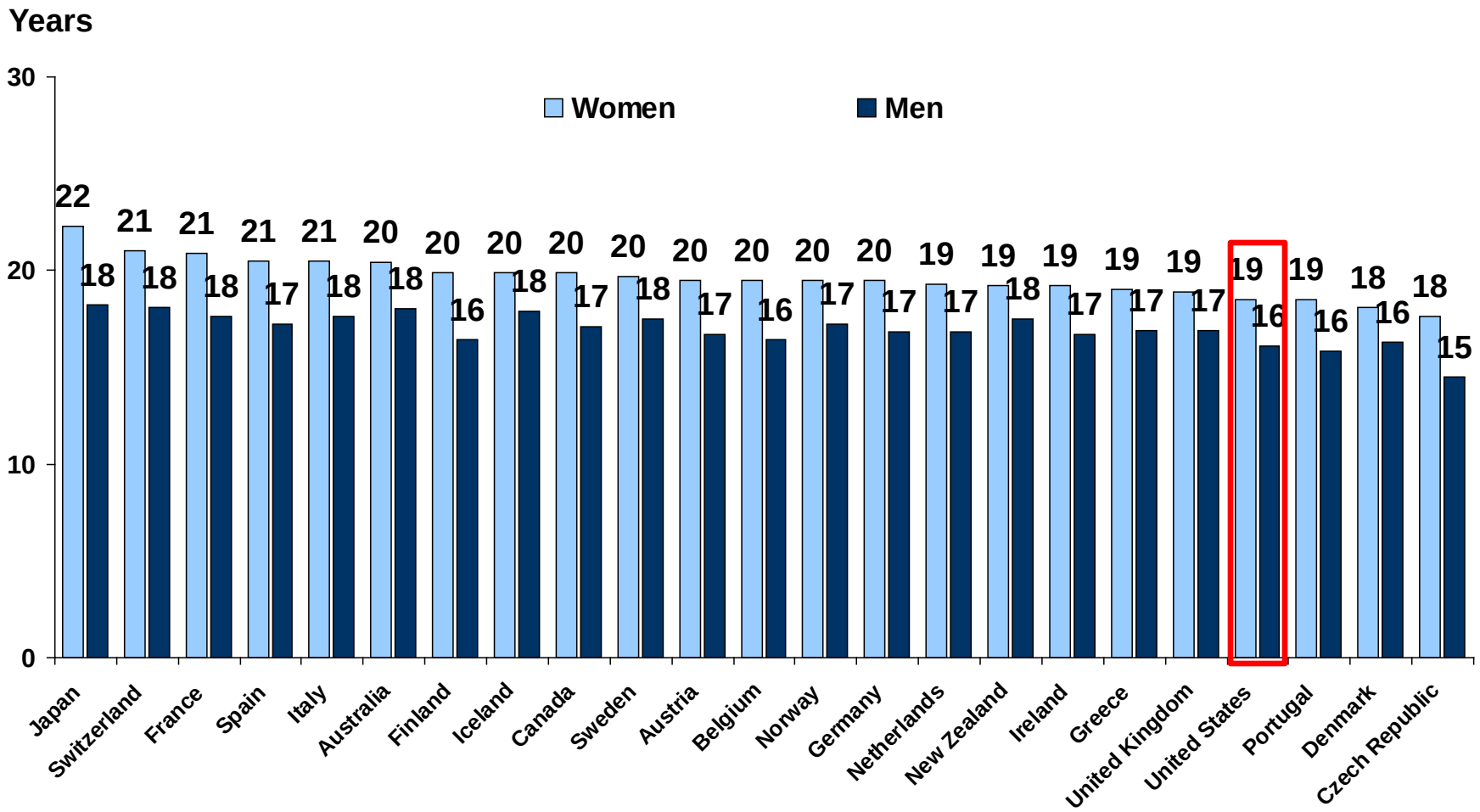


Growth in Total Health Expenditure Per Capita, U.S. and Selected Countries, 1970-2008



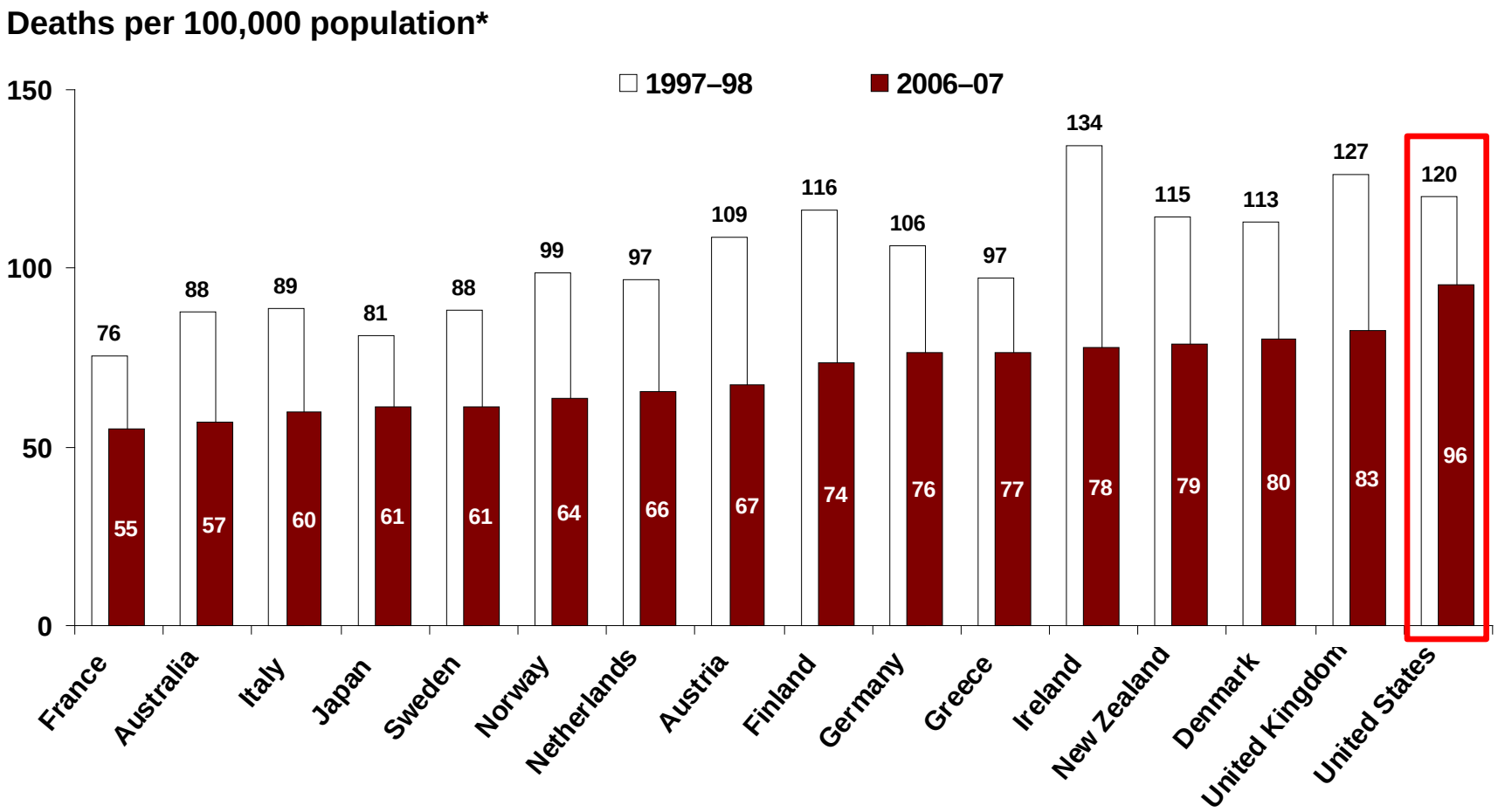
Source: Organisation for Economic Co-operation and Development (2010), "OECD Health Data", *OECD Health Statistics* (database).

Healthy Life Expectancy at Age 60, 2007



Data: Provided by C. Mathers. Unpublished data set consistent with HALE estimates published in *World Health Statistics 2009* (Geneva: World Health Organization).

Mortality Amenable to Health Care



* Countries' age-standardized death rates before age 75; including ischemic heart disease, diabetes, stroke, and bacterial infections. See Appendix B for list of all conditions considered amenable to health care in the analysis.
Data: E. Nolte, RAND Europe, and M. McKee, London School of Hygiene and Tropical Medicine analysis of World Health Organization mortality files and CDC mortality data for U.S. (Nolte and McKee, 2011).

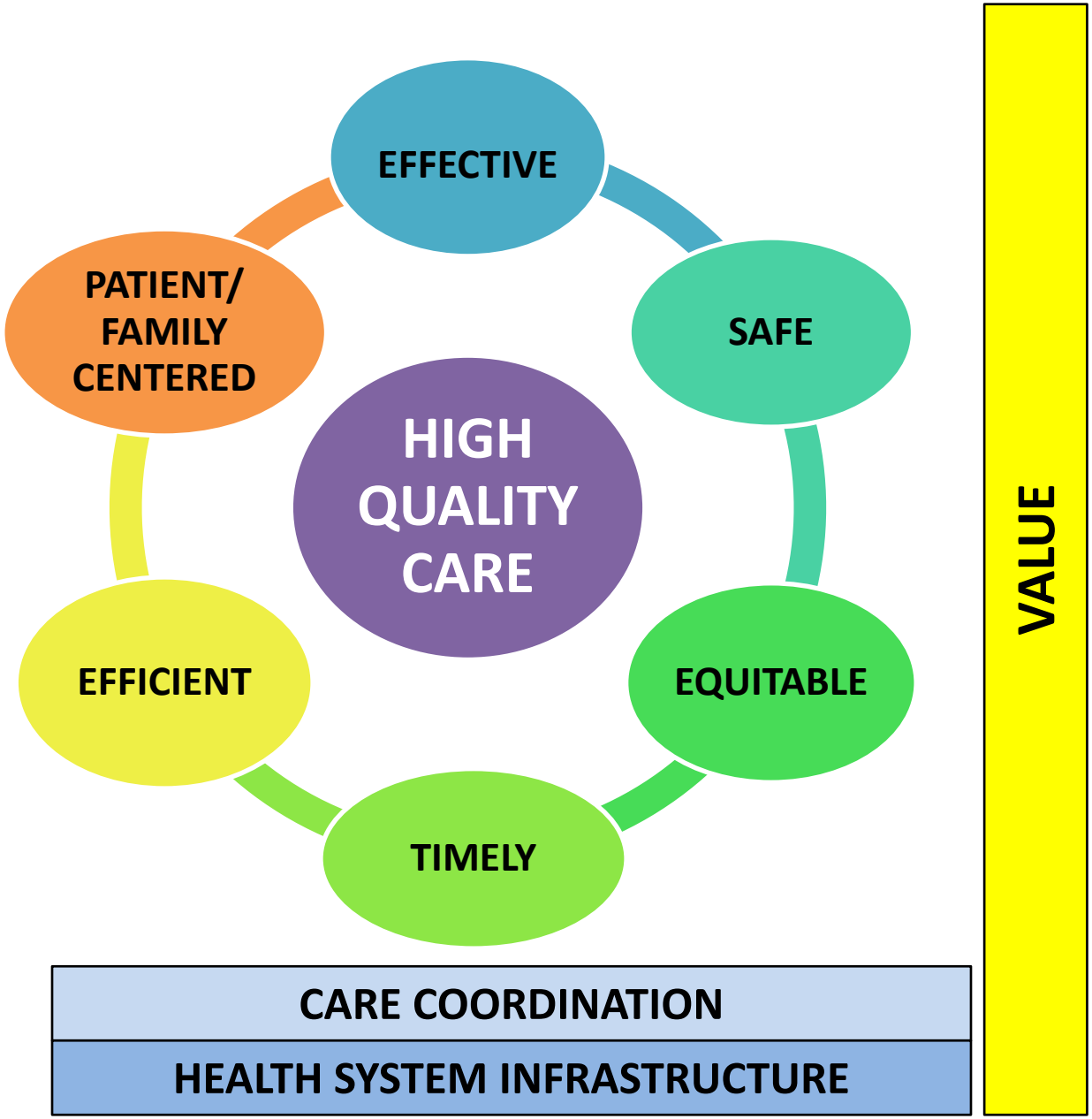
Exhibit ES-1. Overall Ranking

Country Rankings	
	1.00–2.33
	2.34–4.66
	4.67–7.00

	AUS	CAN	GER	NETH	NZ	UK	US
OVERALL RANKING (2010)	3	6	4	1	5	2	7
Quality Care	4	7	5	2	1	3	6
Effective Care	2	7	6	3	5	1	4
Safe Care	6	5	3	1	4	2	7
Coordinated Care	4	5	7	2	1	3	6
Patient-Centered Care	2	5	3	6	1	7	4
Access	6.5	5	3	1	4	2	6.5
Cost-Related Problem	6	3.5	3.5	2	5	1	7
Timeliness of Care	6	7	2	1	3	4	5
Efficiency	2	6	5	3	4	1	7
Equity	4	5	3	1	6	2	7
Long, Healthy, Productive Lives	1	2	3	4	5	6	7
Health Expenditures/Capita, 2007	$3,357	$3,895	$3,588	$3,837*	$2,454	$2,992	$7,290

Note: * Estimate. Expenditures shown in $US PPP (purchasing power parity).
Source: Calculated by The Commonwealth Fund based on 2007 International Health Policy Survey; 2008 International Health Policy Survey of Sicker Adults; 2009 International Health Policy Survey of Primary Care Physicians; Commonwealth Fund Commission on a High Performance Health System National Scorecard; and Organization for Economic Cooperation and Development, OECD Health Data, 2009 (Paris: OECD, Nov. 2009).

IOM Components of Quality Care: A Framework for HSR



SAFE

- **Avoiding injuries to patients from the care that is intended to help them.**
- **Carrying out treatment plans appropriately.**
- **Avoiding medical errors.**

PT/OT examples of unsafe treatment: preventable falls, burns from modalities, aggressive treatment that may delay recovery

EQUITABLE

- **Providing health care to all individuals in a manner that does not vary in quality because of personal characteristics such as gender, ethnicity, geographic location, and socioeconomic status.** (disparities)

- Related to **access to care** which requires:
  - **Gaining entry** into the health care system. (e.g., insurance)
  - **Finding providers** who meet the needs of individual patients. (e.g., geography/supply)
  - **Getting to sites of care** where patients can receive needed services. (e.g., ease of contacting provider & getting an appointment; transportation; physician referral)

Opportunities: EQUITABLE

- **Need a better understanding of access issues and disparities in different areas of allied health.**
  - By discipline
  - By setting
  - By diagnoses

- **Cannot assume racial disparities are present.**

Example: Studies on Use of Ambulatory PT

SAMPLE	DATA	EVIDENCE OF DISPARITIES	REFERENCE
CB adults w/ MSK problems	NAMCS	Insurance, physician type, geography, no racial disparities	Freburger & Holmes, 2003
CB Medicare Beneficiaries	MCBS	Income, geography, no racial disparities	Freburger & Holmes, 2005
CB adults w/ spine problems	NSN	Gender, education, geography, WC, litigation, no racial disparities	Freburger & Holmes, 2005
CB adults w/MSK Conditions	MEPS	Insurance, education, race, ethnicity, geography	Carter & Rizzo, 2007
CB w/ spine problems	MEPS	Income, education, gender, no racial disparities	Chevan & Riddle, 2011
NC residents w/ chronic LBP	Survey	Insurance, no racial/geographic disparities (main effect), interaction of race and urban/rural status	Freburger, Carey, Holmes 2011; Goode, Freburger, Carey 2013

CB=community-based

Opportunities: EQUITABLE

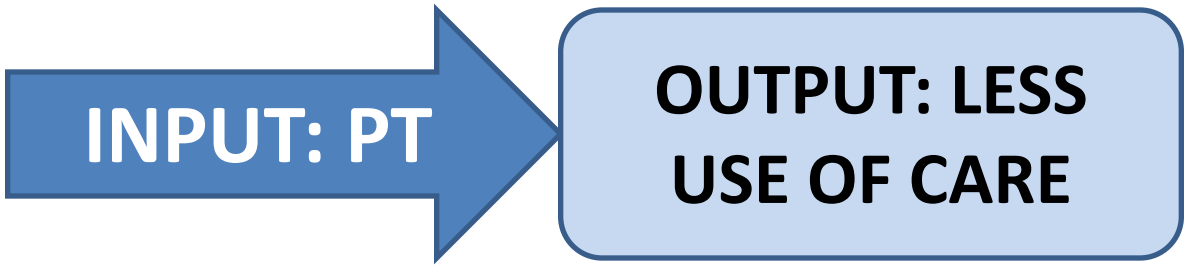
- **Studies on effective ways of reducing disparities.**
- **Where is change needed?**
  - **Policy level**
    - Insurance, health care coverage
    - Supply of health care providers
  - **Provider/organization level**
    - Educating providers
    - Changing organizational culture
- **Ultimate goal →improve population health**

EFFICIENT

- **Producing the best possible outputs from a given set of inputs.**
  - Maximizing the quality of care and outcomes given the resources committed.
  - Avoiding waste (equipment, supplies, ideas, energy).
- **Examples of inefficient care**
  - Overuse of care
  - Avoidable hospitalizations, re-hospitalizations
  - More costly care to achieve the same quality as a less costly alternative.

EXAMPLES: EFFICIENCY OF PT

- **Receipt of PT** after an episode of acute LBP associated with decreased odds of receiving spinal injections, decreased odds of frequent physician visits. *(Gellhorn, Chan, Martin, Friedly. Management patterns in acute low back pain: The role of physical therapy. Spine. 2010.)*



- **PTA to PT ratio:** Clinics with lower PTA/PT ratio had lower resource utilization and better outcomes. *(Resnik, Liu, Mor, Hart. Predictors of Physical Therapy Clinic Performance in the Treatment of Patients With Low Back Pain Syndromes Phys Ther 2008)*

Opportunities: EFFICIENT

Workforce issues: What tasks can be delegated to lower cost allied health providers with same quality/outcomes?

- **Comparing models of delivery within discipline**
  - PTA/PT ratios, OTA/OT ratios
- **Comparing models of delivery across disciplines (i.e., within larger healthcare system)**
  - Role of allied health professionals in PCMHs, ACO's
  - Shift of MD roles to other allied health professionals
- **Role of EHR in efficiency of care**

TIMELY

Reducing waits and sometimes harmful delays for both those who receive and those who give care.

EXAMPLES: Research on Early Mobilization

- ***Systematic review: Kress, JP. Clinical trials of early mobilization of critically ill patients. Critical Care Medicine. 2009.***
  - Early mobilization of ICU patients on mechanical ventilation reduces ICU LOS, hospital LOS, increases function.
  - No adverse events.
- ***Special series in PTJ December 2012 & February 2013: Rehab for People with Critical Illness.***
  - Effects of early mobilization in medical, surgical, and respiratory ICU's
  - Decreased ICU & hospital LOS, improved function, decreased mortality & readmissions

Opportunities: TIMELINESS

- **Timeliness of care in the acute care setting.**
  - Short term outcomes
  - Long-term outcomes: readmissions, use of post-acute care

- **Time from referral to actually being seen by an allied health professional.**
  - How does this impact recovery time?
  - How does this impact outcomes?

PATIENT/FAMILY-CENTERED

- **Providing care that is respectful of and responsive to individual patient preferences, needs, and values and ensuring that patient values guide all clinical decisions.**

- **Other components***(Berwick, Health Affairs, 2009)*
  - Transparency (understanding your care and your options)
  - Choice in all matters without exception

EFFECTIVE

- **Providing services based upon scientific knowledge and avoiding those services not likely to benefit.**
- Avoiding underuse or overuse of care.

UNDERUSE - When patients do not receive medically necessary care, or when proven health care practices are not followed.

OVERUSE - When treatments are given without medical justification, or when an equally effective option could have been followed that would have cost less or caused fewer side effects.

- **Does care follow current best evidence, clinical practice guidelines, findings of systematic reviews??**

Example: Under/Overuse of Care for Chronic LBP

UNDERUSE

- Only 30 % of individuals with functional limitations saw a PT in the past year.
- Uninsured individuals less likely to receive PT.
- Exercise underused by all types of practitioners.

OVERUSE

- 24% of individuals prescribed a corset or brace.
- 7% of individuals received mechnanical traction.
- High use of modalities no evidence of effectiveness.

(Freburger, Carey, Holmes, & others. Arthritis Rheum. 2009; Freburger, Holmes, Carey. Phys Ther. 2011).

Practice Variation/Geographic Variation

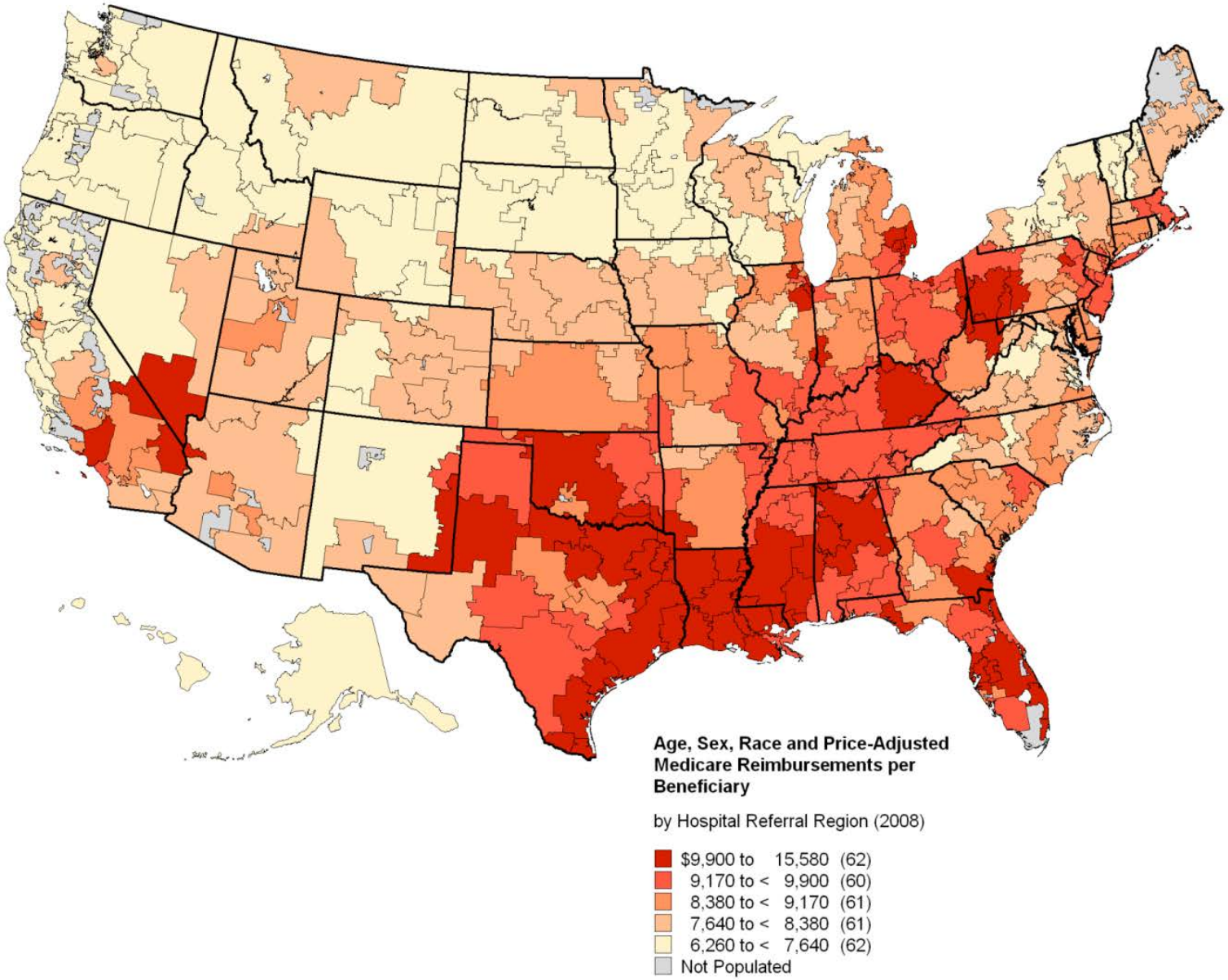
- **Striking variations in the quantity and quality of care delivered across the United States.**
  - Amount, type, and quality of care received depends, to some extent, on where you live.
  - Quality of care is not associated with amount of care received.

Fisher ES, Wennberg DE, Stukel TA, et al. "The Implications of Regional Variations in Medicare Spending. Part 1 and Part 2." Annals of Internal Medicine, 138(4): 273-298, 2003.

Institute of Medicine (2013). Interim Report of the Committee on Geographic Variation in Health Care Spending and Promotion of High-Value Care: Preliminary committee observations. Washington, DC: The National Academies Press.

Variation in Medicare Spending

Map 1. Price-adjusted Medicare expenditures per beneficiary by hospital referral region (2008)



More Care Isn't Always Better

- **Higher-spending regions deliver more health services:**
  - They have one-third more hospital beds and physicians per capita.
  - Patients have more hospital stays, doctor visits, specialist referrals, imaging, minor tests and procedures.
- **Quality of care no different:**
  - Patients get recommended care less frequently.
  - There are slightly higher death rates following heart attacks, hip fractures and colorectal cancer diagnosis.
  - Patients have poorer access to care and longer waiting times.
  - There is no difference in patient-reported satisfaction with care.
  - No differences in quality of care for selected conditions.

Practice Variation – WHY?

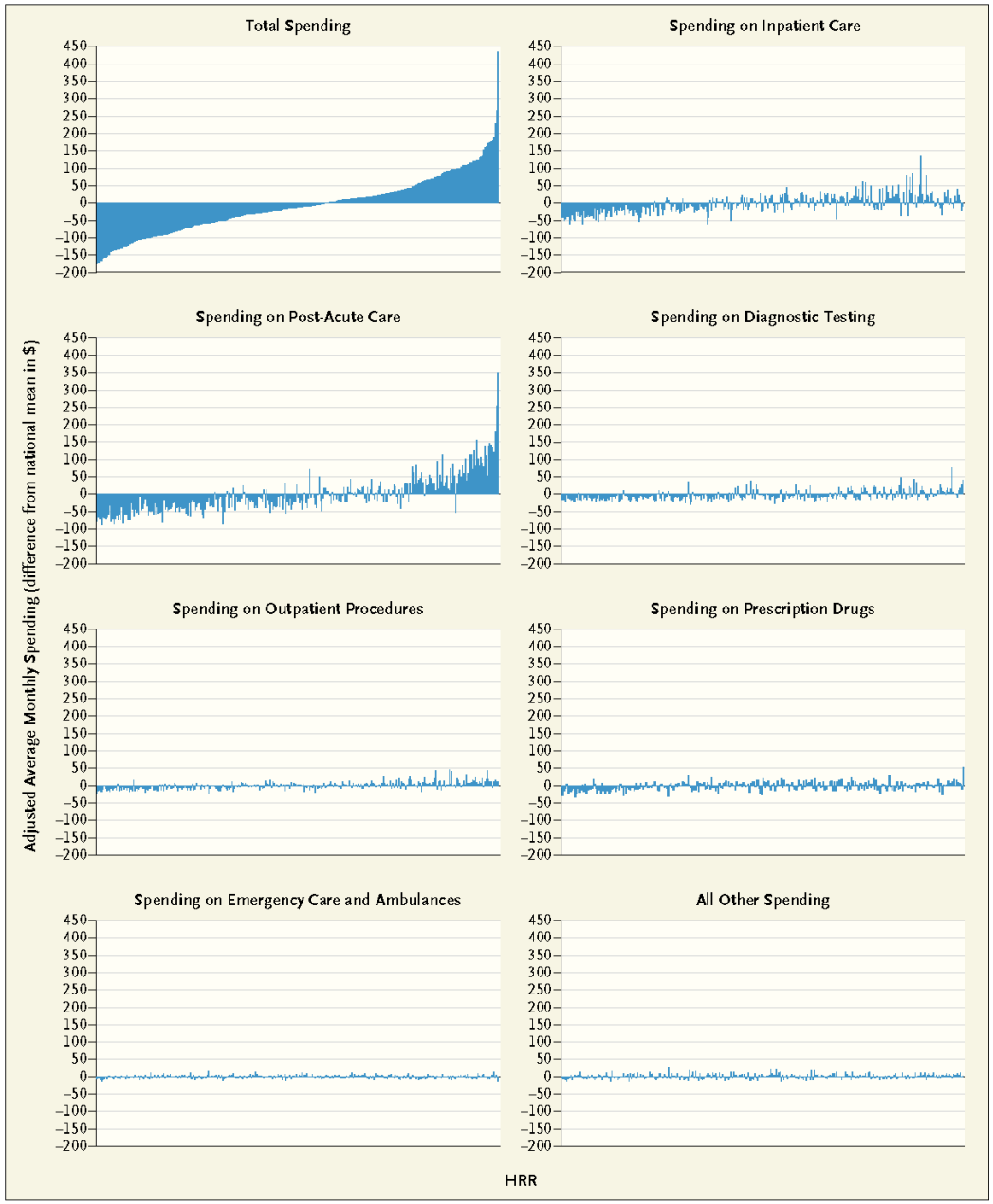
- **Lack of evidence on effectiveness**
  - Wide geographic variation in use of discretionary surgeries for LBP; less variation in joint replacement surgery *(Weinstein et al., Spine, 2006)*
- **Lag between discovery and implementation**
  - 17 years on average *(NCQA, 2007)*
- **Financial incentives/disincentives**
  - Supplier-induced demand, more use in areas of greater supply
  - Local practice patterns

Opportunities: EFFECTIVENESS

- **Better understanding of practice variation in allied health needed –** What are reasons behind variation? What is the right amount?
- **Evidence of variation in use of ambulatory PT by Medicare beneficiaries, PARC (Medicare and non-Medicare).** (Freburger, Holmes 2005; Freburger et al. 2011,2012)
- **IOM Report.** *Interim Report of the Committee on Geographic Variation in Health Care Spending and Promotion of High-Value Care, 2013.*
  - Use of post-acute care* is the primary source of variation in Medicare spending.
  - No association between spending and quality of care for various medical conditions.

* includes HH, SNF, rehab facilities, LTC hospitals, hospice

Geographic Variation in Medicare Services. Newhouse & Garber. NEJM. March 2013.



Variation in Adjusted Average Monthly Spending by Medicare per Beneficiary in the 306 Hospital Referral Regions, According to Type of Service, 2007–2009.

Opportunities: EFFECTIVENESS

- **More studies on overuse, underuse of care**
  - Identify areas for improvement
  - Inform profession of the use of EBM
- **Cost-effectiveness studies**
  - Need to consider value
- **Comparative Effectiveness Research (CER) & Patient-Centered Outcomes Research (PCOR)**

Comparative Effectiveness Research (CER)

- CER is the generation and synthesis of evidence that compares the benefits and harms of alternative methods to prevent, diagnose, treat, and monitor a clinical condition or to improve the delivery of care.

- The purpose of CER is to assist consumers, clinicians, purchasers, and policy makers to make informed decisions that will improve health care at both the individual and population levels.

Comparative Effectiveness Research (CER)

- **In the broad sense, nothing new**

- **Different from efficacy studies (RCTs)**
  - Gold standard, but not always generalizable
  - Subgroups often under-represented (elderly, multiple comorbid conditions)

- **CER uses a variety of data sources**
  - Systematic reviews
  - Secondary data (claims, registries, EHR)
  - Primary data collection

- **Study designs**
  - Non-experimental (prospective cohort)
  - "Practical" experimental (pragmatic trials, alternatives to conventional RCT)

Patient-Centered Outcomes Research (PCOR)

….helps people and their caregivers communicate and make informed health care decisions, allowing their voices to be heard in assessing the value of **health care options**.

Answers patient-centered questions such as:

1. "Given my personal characteristics, conditions and preferences, what should I expect will happen to me?"
2. **"What are my options and what are the potential benefits and harms of those options?"**
3. "What can I do to improve the outcomes that are most important to me?"
4. "How can clinicians and the care delivery systems they work in help me make the best decisions about my health and healthcare?"

"Hot" Topics in CER & PCOR

- **Non-experimental designs using secondary data**
  - Linkage of EHR data, clinical database, and/or registry data with administrative data
    - Examples: Medicare data to cancer registry, Medicare data to dialysis clinical database
  - National data infrastructure - PCORI

- **Opportunities for Allied Health**
  - Secondary Data Analyses – compare within/across discipline
  - Profession-specific databases: APTA's NOD, FOTO, NOMS
  - Claims data (Medicare, commercial)
    - Outcomes – readmissions, subsequent health care use
    - Comparator – health care substitutes (PT vs DC; PT vs OT); care with versus without allied health professional
  - Linking claims and clinical data – the Holy Grail!

"Hot" Topics/Areas in CER & PCOR

- **Alternatives to the conventional RCT**
  - SMART trials (sequential multiple assignment randomized trials)
  - MOST trials (multiphase optimization strategy)
  - Other
- **Opportunities for Allied Health:** consider new, novel trial designs

- **Comparing models of delivery (PCMH, ACOs)/systems of care**
  - Effects on transitions of care, coordination of care
  - Patient outcomes
- **Opportunities for Allied Health:** role of allied health in these care delivery models

“Hot” Topics in CER & PCOR

- **Patient Engagement in CER/PCOR:** using patients to inform study design
- **Opportunities for Allied Health**: determining effective methods of engaging patients and getting useful information

- **Dissemination of Findings:** what are effective ways of getting the information to stakeholders, transferring knowledge to action
- **Opportunities for Allied Health**: determining effective ways to disseminate findings of research

Valuable Resources for CER and PCOR

- AHRQ's Effective Healthcare Program: http://effectivehealthcare.ahrq.gov/
  - CER Methods
  - Systematic reviews, future needs to ID gaps in literature
- PCORI website: www.pcori.org

Thank You
&
Questions