Improving Health and Health Care Delivery

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Director, Quality Scholars Progam
VA Tennessee Valley Healthcare System

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Disclosures

- **Robert S. Dittus, MD, MPH** has no personal relevant commercial or financial relationships related to this work or presentation.
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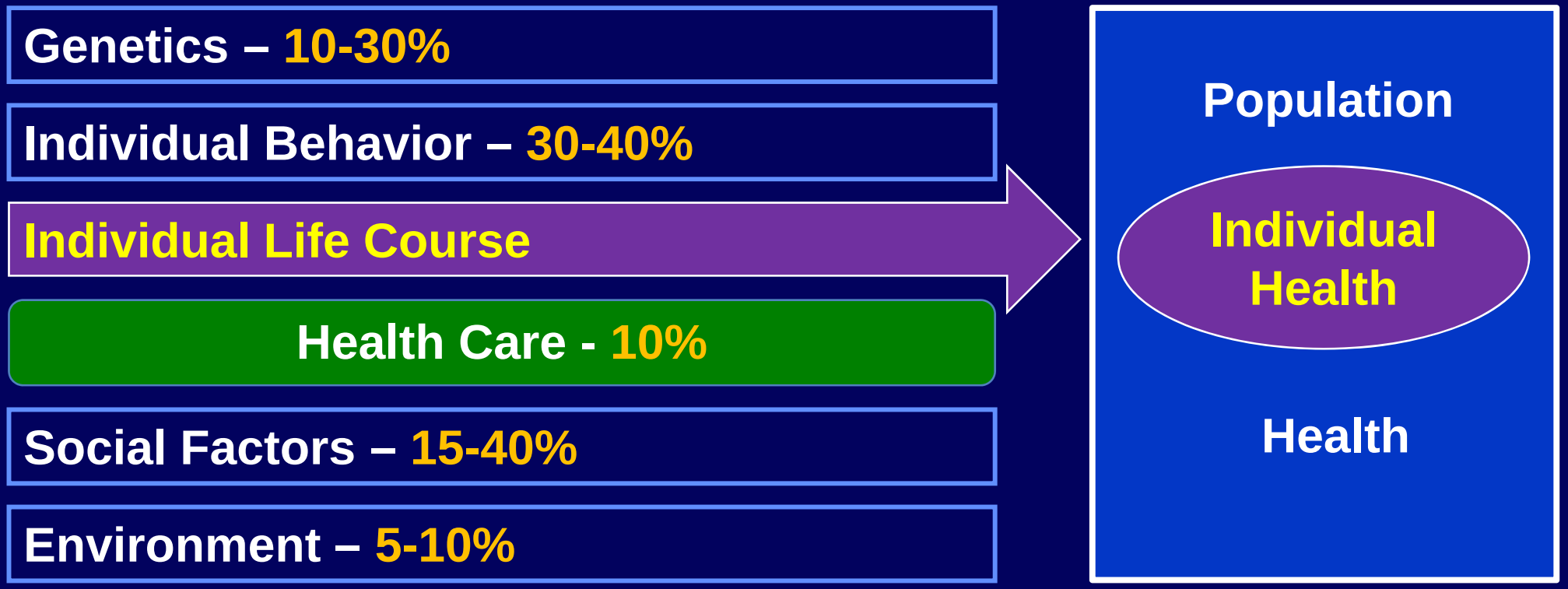
Learning Objectives

- Describe the determinants of health
- Describe the historical development and current context of health care quality improvement
- Understand conceptual models that integrate the development of new knowledge and its application to health care delivery
- List approaches to quality improvement
- Be able to use the PDSA cycle for continuous improvement
- Be aware of some QI resources and activities at VUMC

Determinants of Health



Public Health in the 20th Century

Added 25 years of life expectancy in the U.S.

Top Accomplishments:

- Immunizations
- Motor Vehicle Safety
- Workplace Safety
- Control of Infectious Diseases
- Declines in Death from Heart Disease and Stroke
- Safer and Healthier Foods
- Healthier Mothers and Babies
- Family Planning
- Fluoridation of Drinking Water
- Tobacco as a Health Hazard

Public Health in the 21th Century

2015 CDC Winnable Battles

Top Accomplishments:

- Immunizations
- Motor Vehicle Safety
- Workplace Safety
- Control of Infectious Diseases - **HIV**
- Declines in Death from Heart Disease and Stroke
- Safer and Healthier Foods
- Healthier Mothers and Babies
- Family Planning – teen pregnancy
- Fluoridation of Drinking Water
- Tobacco as a Health Hazard

Public Health & Health Care for the 21th Century

Additional Target Accomplishments:

- Access to Health Care
- Health Equity
- Precision Public Health
- Public & Population Health Informatics
- Improvement in Healthy Behaviors
- Reduction in Obesity
- Reduction in Chronic Diseases
- Health Care-Associated Infections

2015 CDC Winnable Battles

Public Health & Health Care for the 21th Century

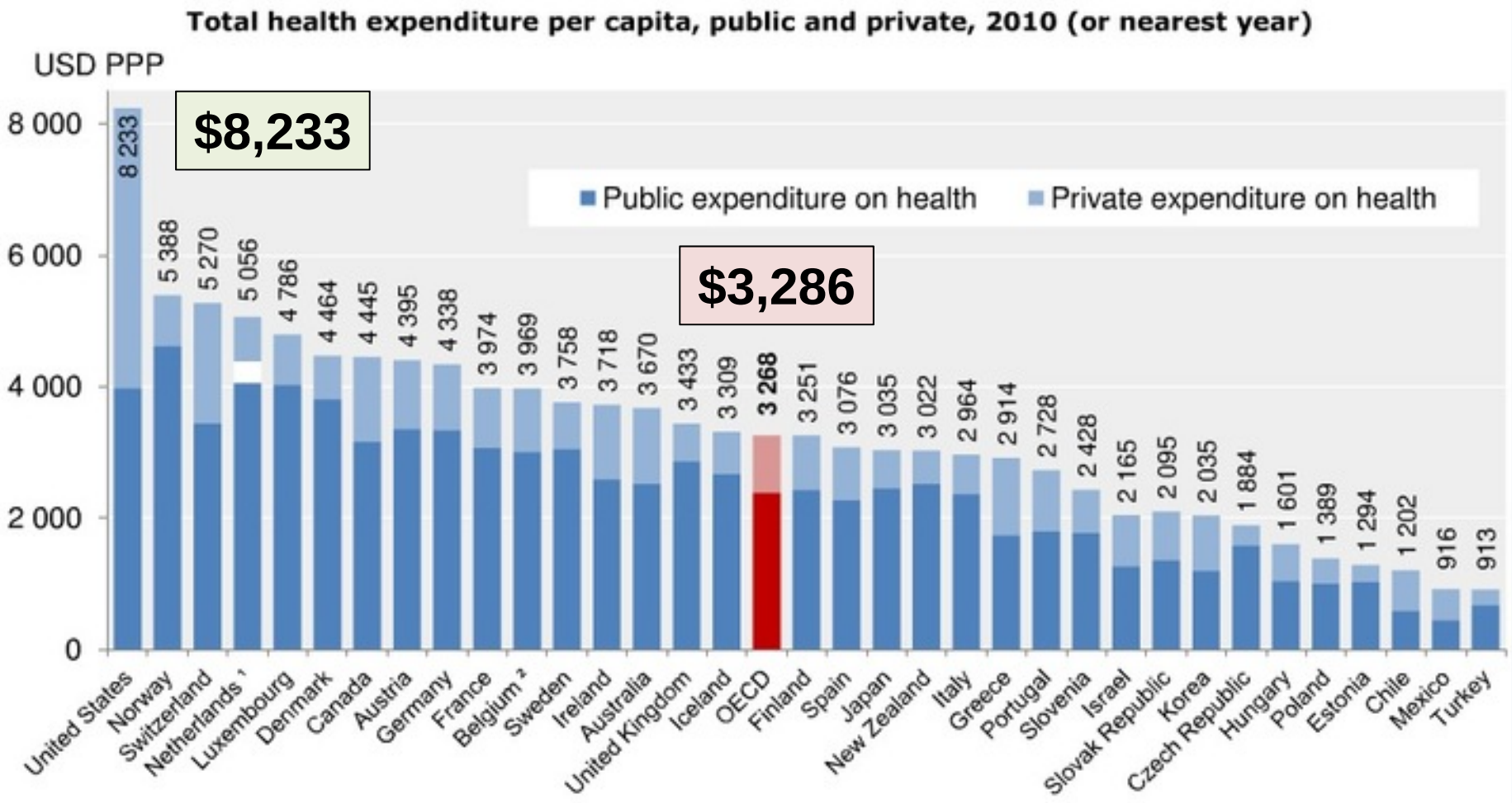
Additional Target Accomplishments:

- Integration of Public Health and Care Delivery
- Alignment of Policy, Structure, Funding and Process of Health Promotion/Disease Management Sectors
- Population Health Improvement
- Improved Safety of Health Care Delivery
- Improved Effectiveness of Health Care Delivery
- Health Care Workforce Design
- Smarter Investments in Health Care Delivery

Future of Health and Health Care

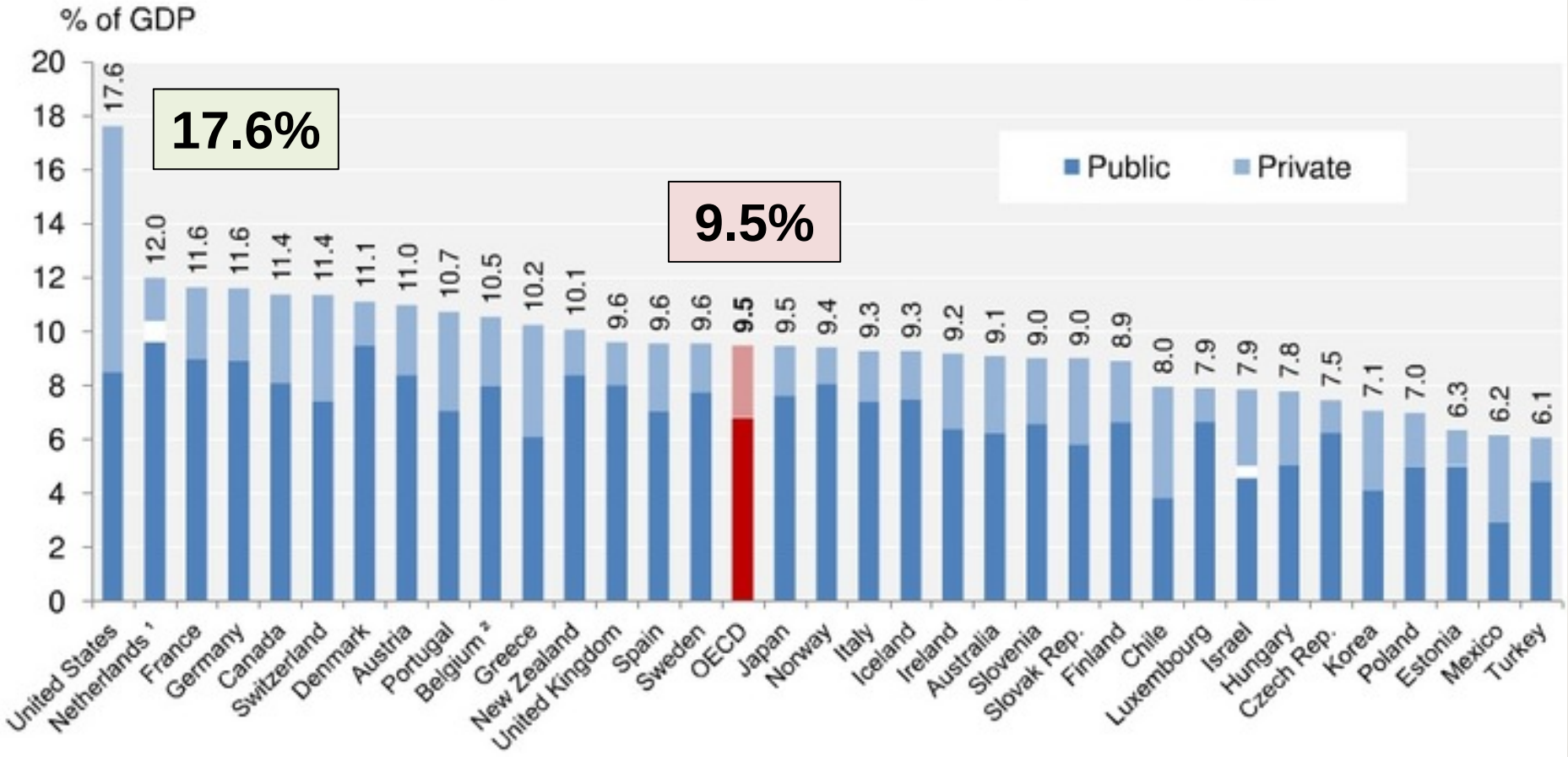
- Key Drivers of Change
  1) **Cost of Care**
  2) **Health Outcomes**
  3) Payment Reform
  4) Population Health
  5) **Safety and Quality**
  6) Efficiency and Value
  7) Personalized Health Care
  8) Organization of Health Sector

US spends two-and-a-half times the OECD average



At 17.6% of GDP in 2010, US health spending is one and a half as much as any other country, and nearly twice the OECD average

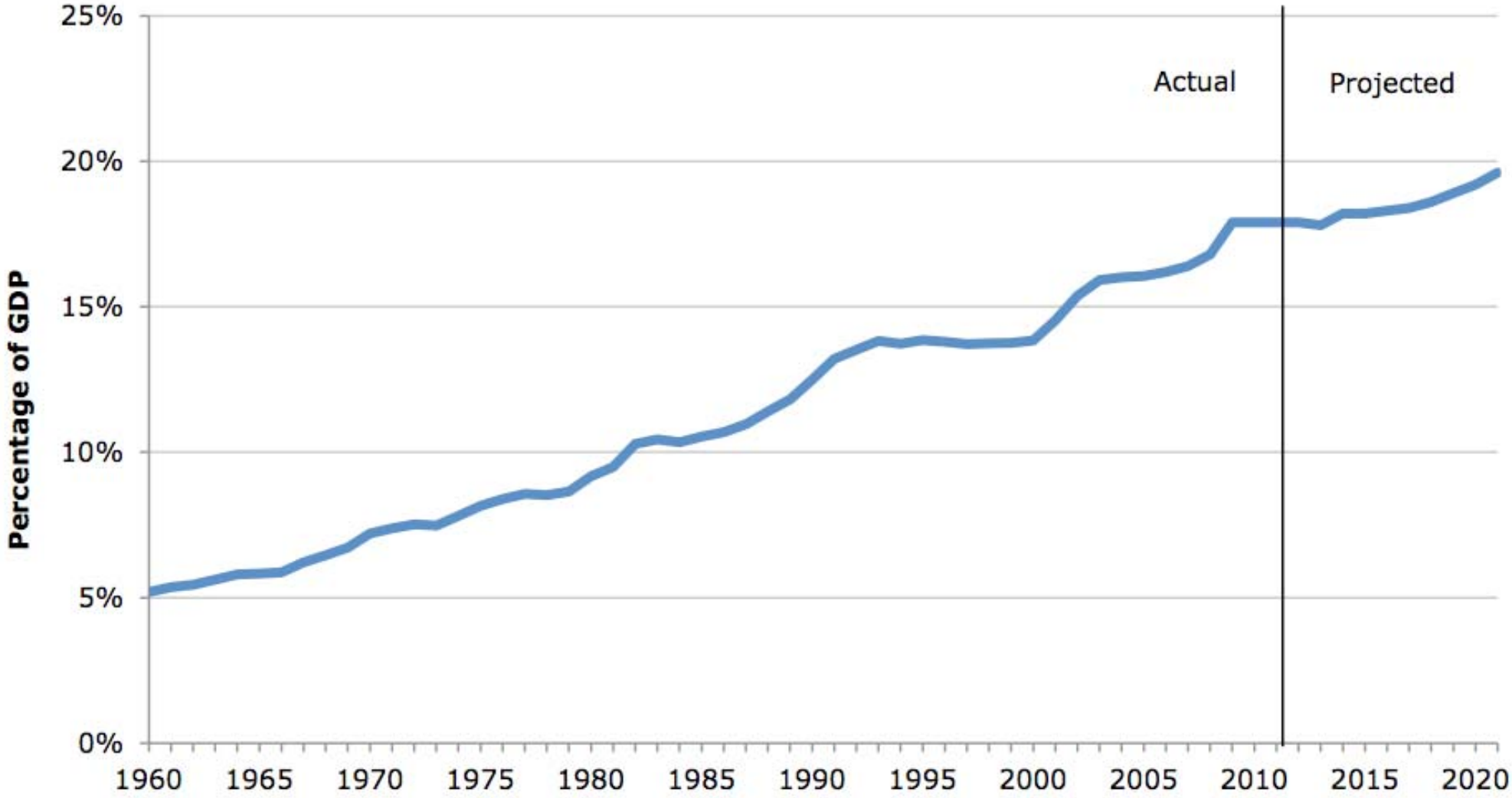
Total health expenditure as a share of GDP, 2010 (or nearest year)



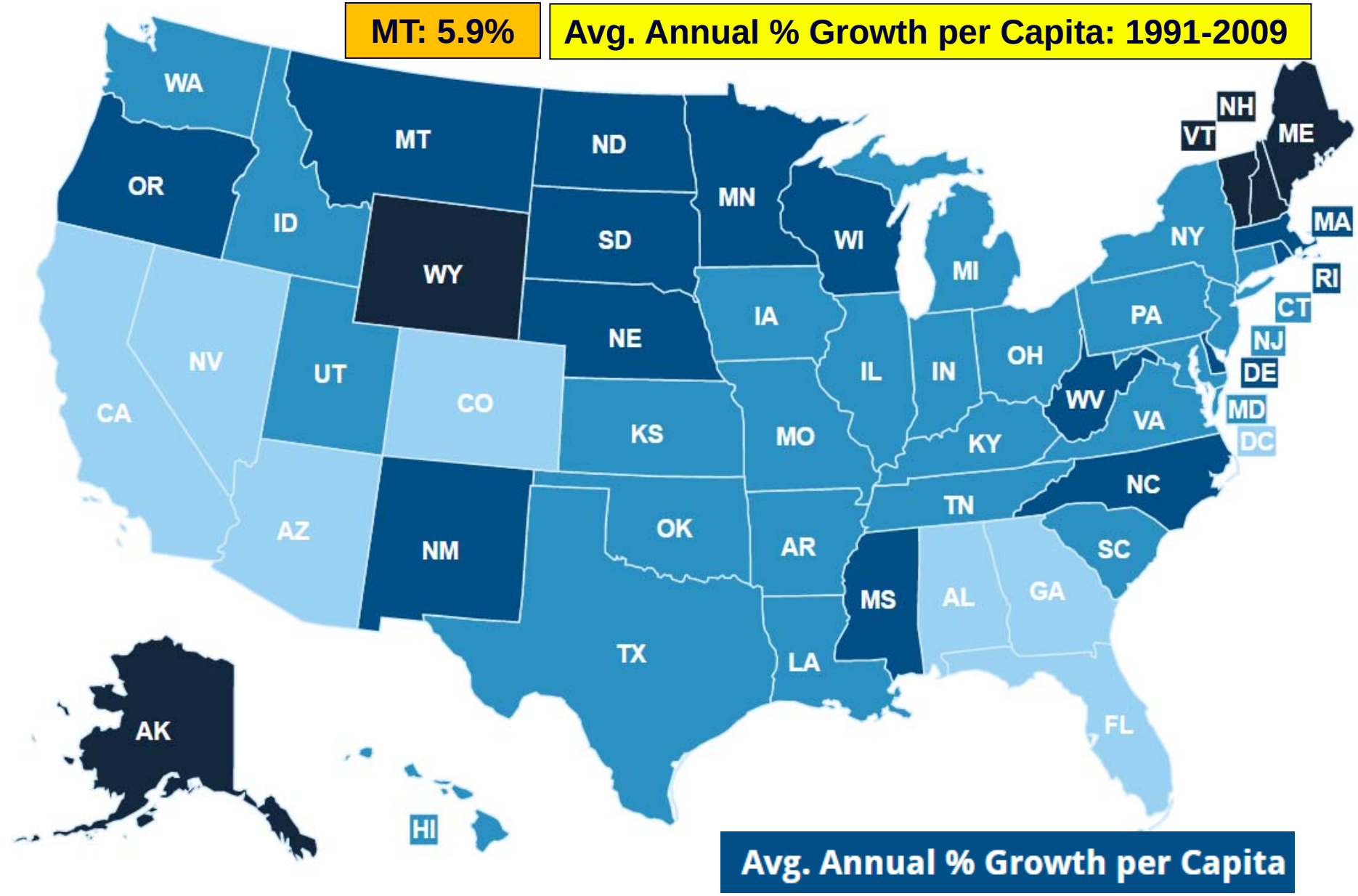
1. In the Netherlands, it is not possible to clearly distinguish the public and private share related to investments.
2. Total expenditure excluding investments.
Information on data for Israel: http://dx.doi.org/10.1787/888932315602.

Source: OECD Health Data 2012.

Figure 2: U.S. National Health Expenditures as a Share of GDP, 1960-2021

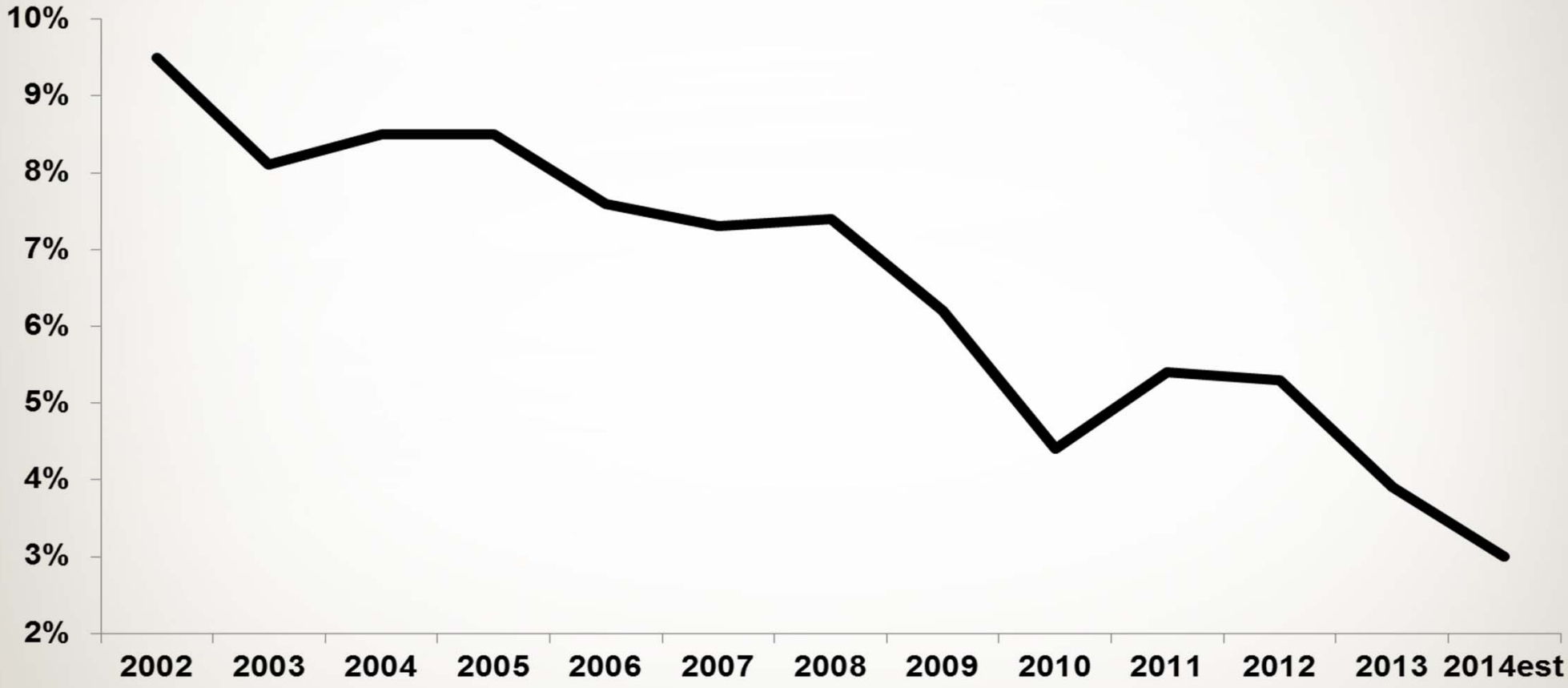


Source: Centers for Medicare and Medicaid Services.


MT: 5.9%
Avg. Annual % Growth per Capita: 1991-2009
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
AK
HI
Avg. Annual % Growth per Capita
4.4% - 5.1%
5.2% - 5.8%
5.9% - 6.3%
6.6% - 7.3%

U.S. Healthcare Revenue Growth Dampens

U.S. Nonprofit Healthcare Revenue Trend (2002 – 2014_{est})



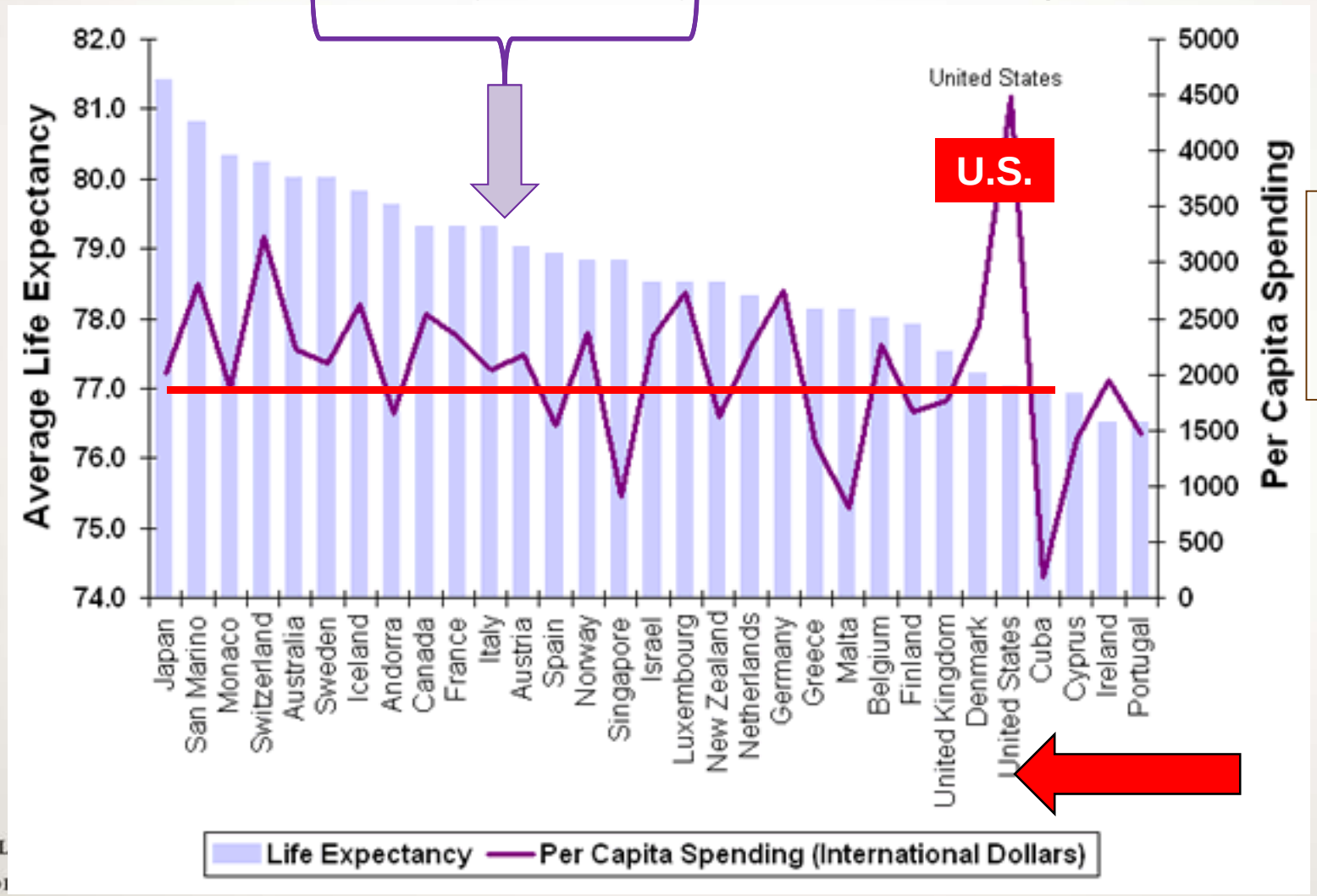
Source: Moody's Investors Service

Waste in Healthcare

- Total U.S. health care spend
  - approaching $3 trillion
- Wasteful spending
  - ~$1 trillion
- Changing the payment structure is necessary,….
  - **but not sufficient;**
  - **the underlying process of health care must also change.**

U.S. Health Outcomes

- #37 WHO best overall health care (5 indicators)
- #29 WHO **life expectancy** (#34 under age 20)

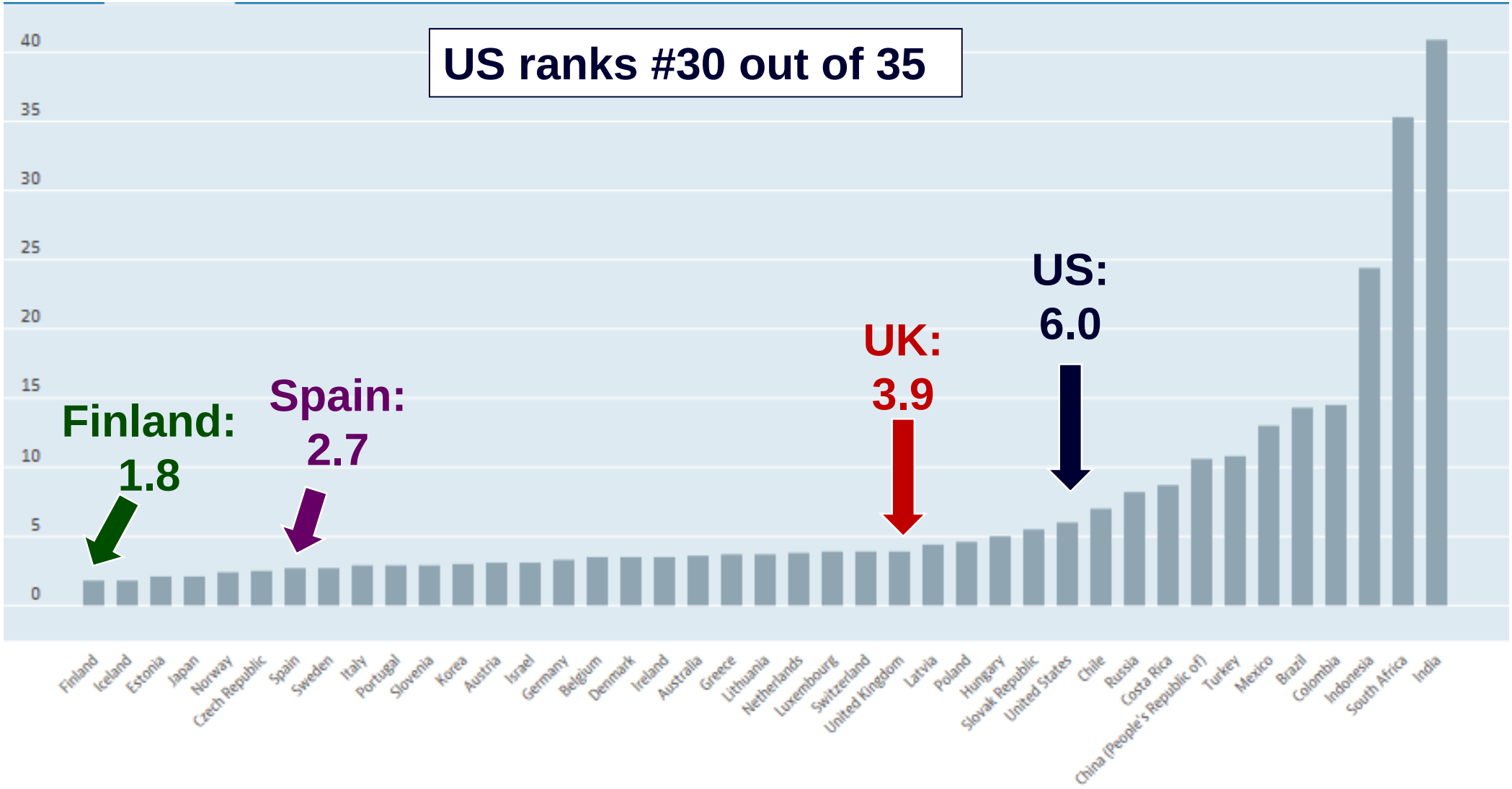


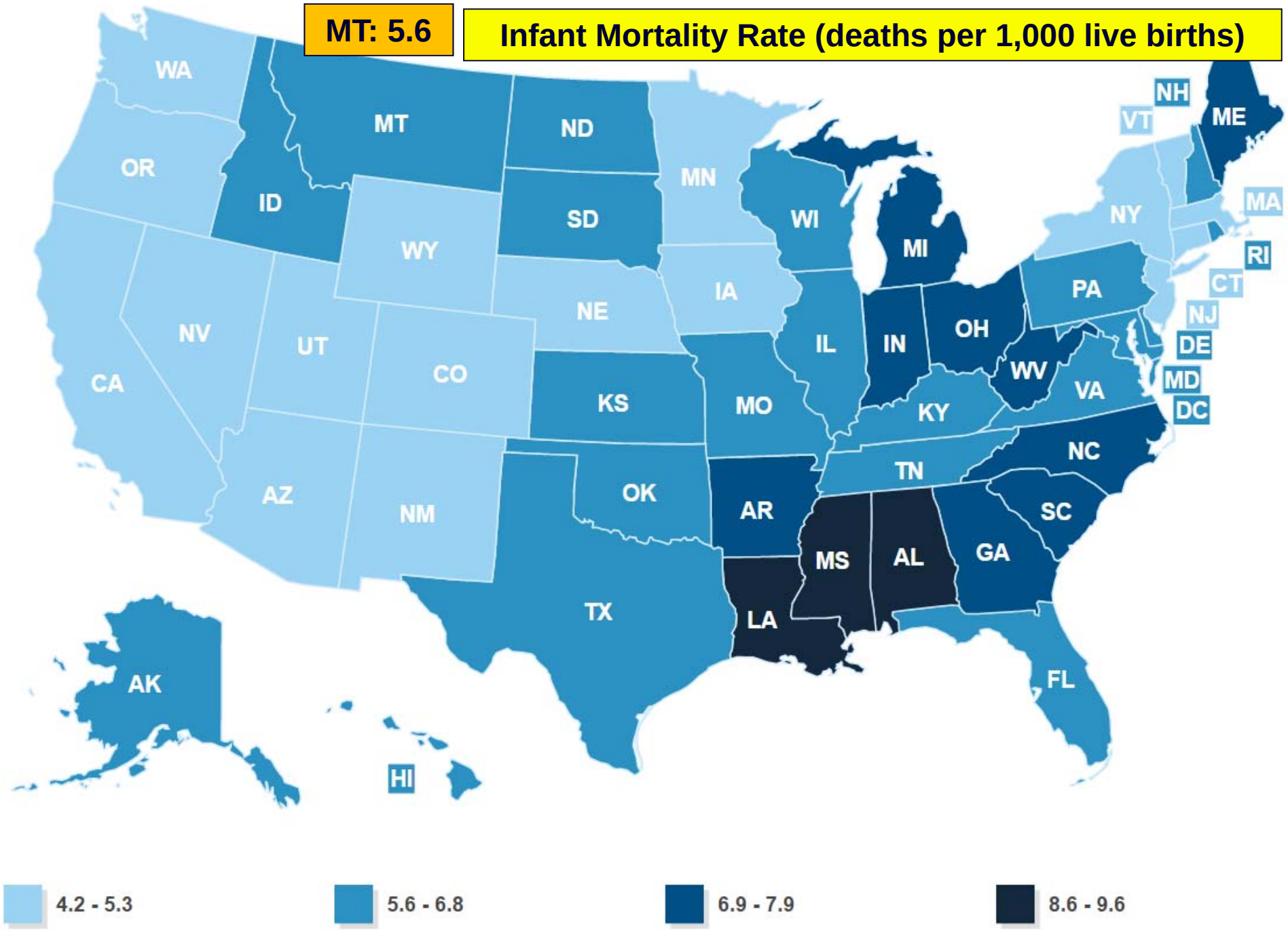
Per Capita Spending

U.S. Health Outcomes Compared to OECD Countries (Organization for Economic Co-operation and Development)

	United States			OECD average		Rank among OECD countries*
	2012		2000	2012	2000	
Health status						
Life expectancy at birth (years)	78.7	(2011)	76.7	80.2	77.1	27 out of 34
Life expectancy at birth, men (years)	76.3	(2011)	74.1	77.5	74.0	26 out of 34
Life expectancy at birth, women (years)	81.1	(2011)	79.3	82.8	80.2	29 out of 34
Life expectancy at 65, men (years)	17.8	(2011)	16.0	17.7	15.6	20 out of 34
Life expectancy at 65, women (years)	20.4	(2011)	19.0	20.9	19.1	25 out of 34
Mortality from cardiovascular diseases (age-standardised rates per 100 000 pop.)	261.2	(2010)	395.4	296.4	428.5	17 out of 34
Mortality from cancer (age-standardised rates per 100 000 pop.)	198.7	(2010)	236.7	213.1	242.5	25 out of 34

Infant mortality rate among OECD countries (deaths per 1,000 live births - 2013




MT: 5.6
Infant Mortality Rate (deaths per 1,000 live births)
WA
OR
CA
ID
NV
MT
WY
UT
AZ
CO
NM
ND
SD
NE
KS
OK
TX
MN
IA
MO
AR
LA
WI
IL
MS
MI
IN
KY
TN
AL
OH
WV
GA
FL
SC
NC
VA
PA
NY
VT
NH
ME
MA
RI
CT
NJ
DE
MD
DC
AK
HI
4.2 - 5.3
5.6 - 6.8
6.9 - 7.9
8.6 - 9.6

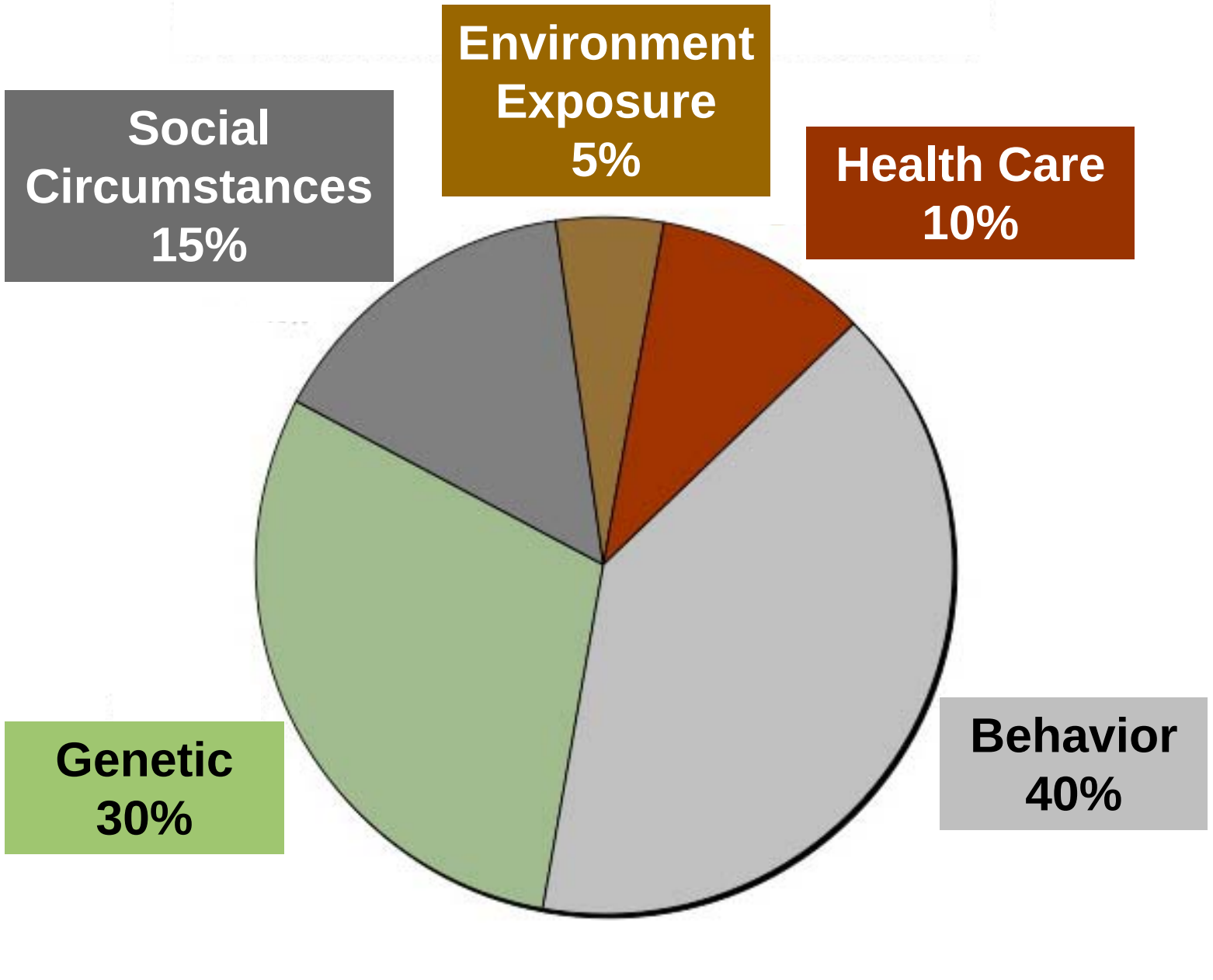
Why Such Outcomes?

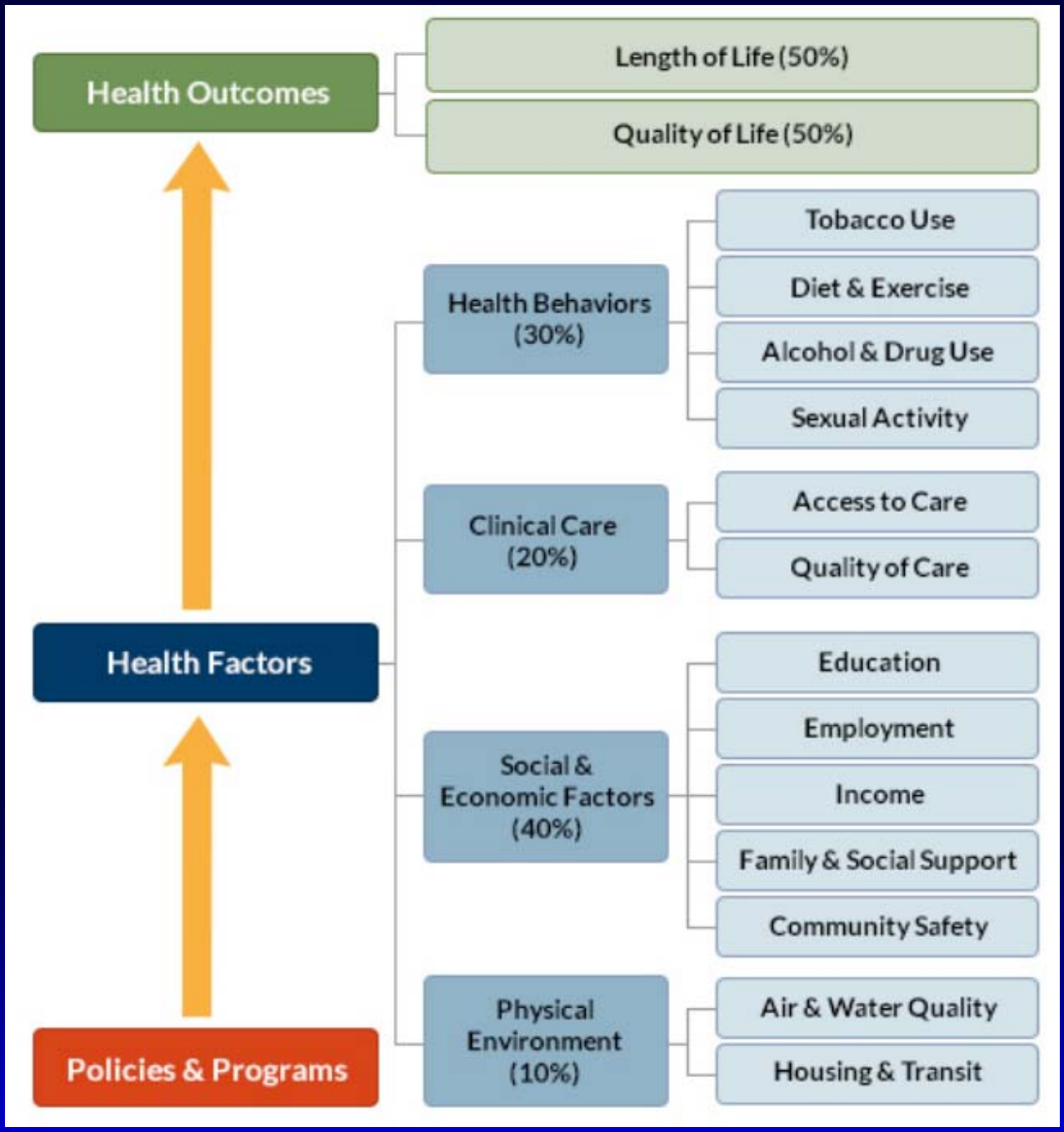
- Focus on care, not health
- Lack of a coordinated system of care (much less health)
- Malalignment of incentives
- Overuse, underuse and misuse of health services
  - ~ 50% of evidence-supported care is not reliably provided
- Beyond the content of care, the processes are suboptimal
  - Preventable hospital acquired infections among the leading causes of death & adds substantial costs
- Inadequate attention to prevention

Why Such Outcomes?

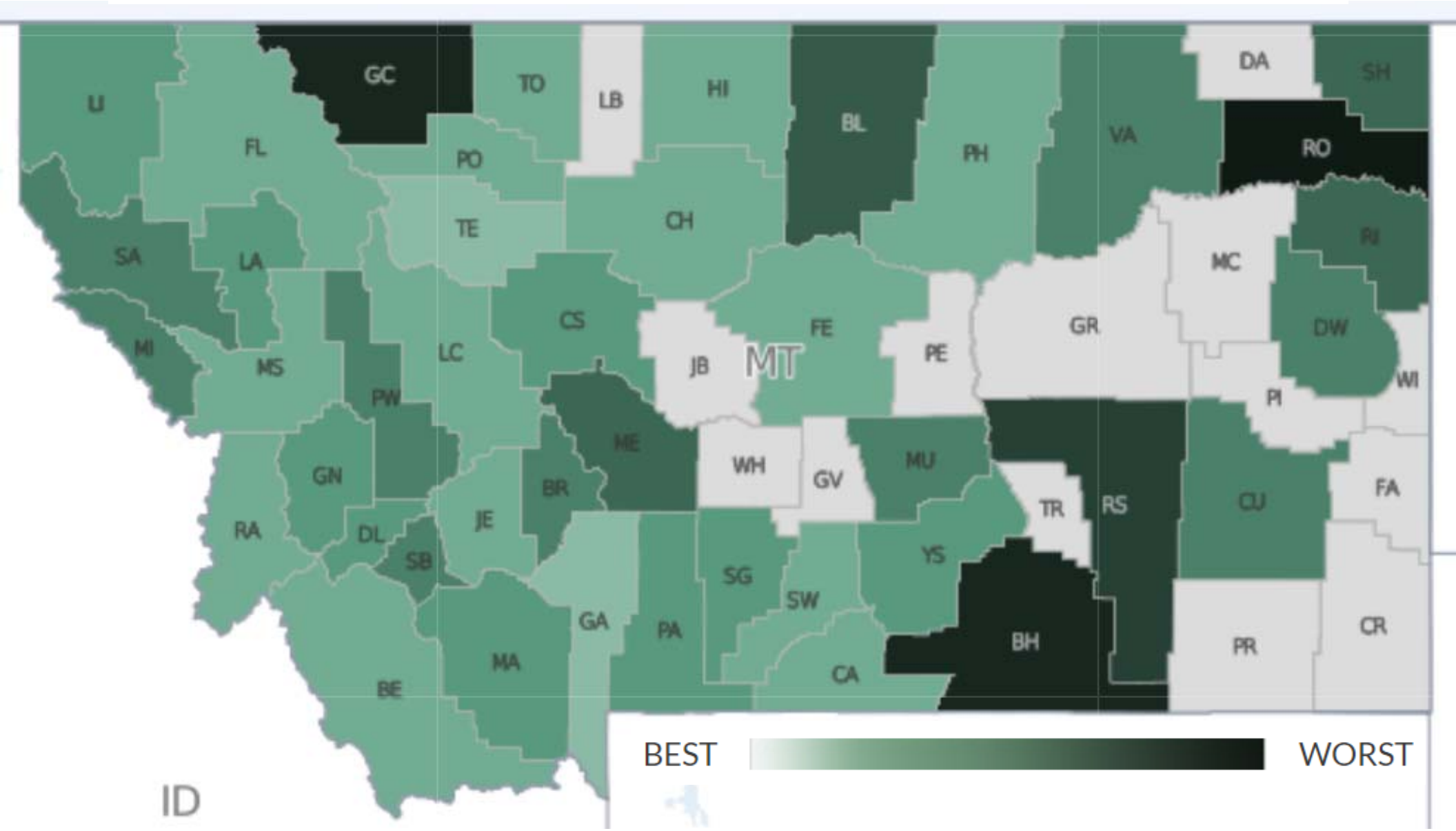
- Up to 50% of patients do not comply with care recommendations
  - 20% of patients do not fill initial prescriptions
  - 50% of patients do not take prescriptions as recommended
  - Lifestyle changes can be more challenging
- Navigation of our complex health system is challenging:
  - Patients asked to perform more complex self-care
  - Patients only recall 20% of what is told to them in MD's office
  - Less than 50% of patients know their discharge meds or plan
- Significant inter-group disparities
- Inadequate attention to important determinants of health

Determinants of Health

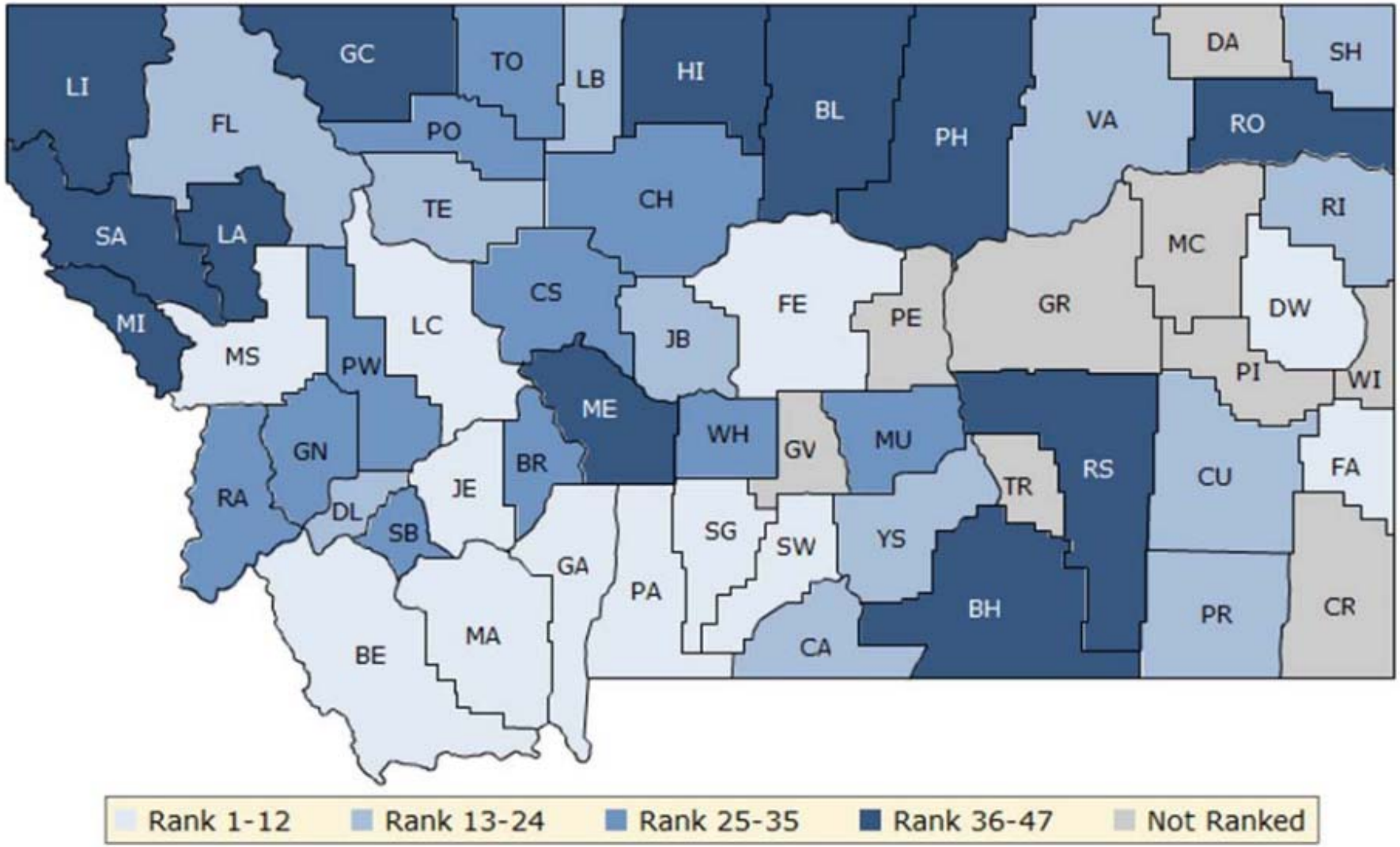



Health Outcomes
Length of Life (50%)
Quality of Life (50%)
Health Factors
Health Behaviors (30%)
Tobacco Use
Diet & Exercise
Alcohol & Drug Use
Sexual Activity
Clinical Care (20%)
Access to Care
Quality of Care
Social & Economic Factors (40%)
Education
Employment
Income
Family & Social Support
Community Safety
Physical Environment (10%)
Air & Water Quality
Housing & Transit
Policies & Programs

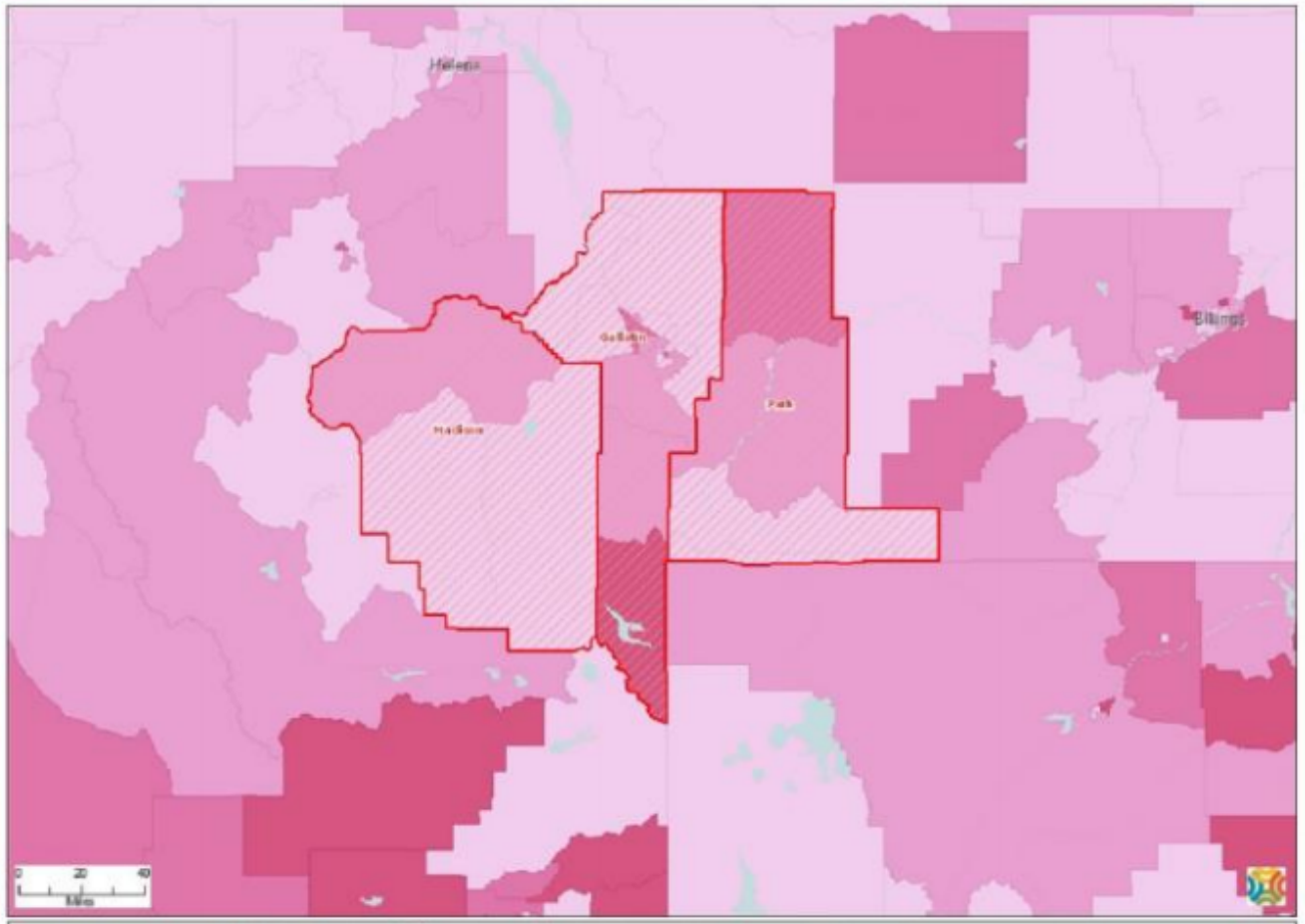
Years of potential life lost before age 75 per 100,000 population (age-adjusted)



Health Factors: Behaviors, Clinical Care, Social, Economic, Environmental



Population in Linguistically Isolated Households, Percent by Tract, ACS 2008-2012



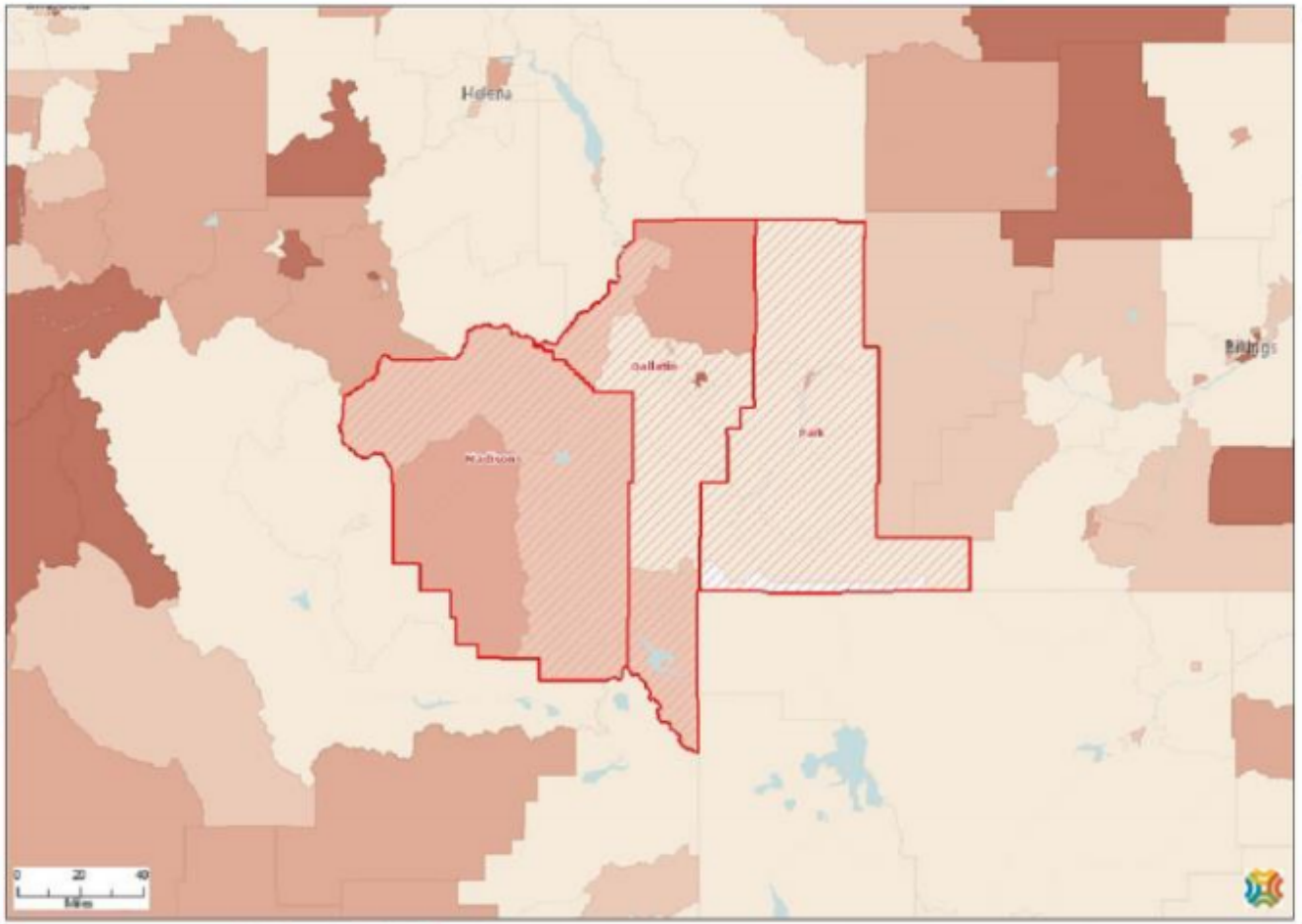
Map Legend

Population in Linguistically Isolated Households, Percent by Tract, ACS 2008-12

- Over 3.0%
- 1.1 - 3.0%
- 0.1 - 1.1%
- No Population in Linguistically Isolated Households
- No Data or Data Suppressed

Community Commons, 12/1/2014

Children (0-17) Living Below 200% of Poverty, Percent by Tract, ACS 2008-2012



Map Legend

Population Below the Poverty Level, Children (Age 0-17), Percent by Tract, ACS 2008-12

- Over 30.0%
- 22.6 - 30.0%
- 15.1 - 22.5%
- Under 15.1%
- No Population Age 0-17 Reported
- No Data or Data Suppressed

Community Commons, 12/1/2014

2016 *COUNTY HEALTH RANKINGS*: MEASURES AND NATIONAL/STATE RESULTS

Measure	Description	US Median	State Overall	State Minimum	State Maximum
HEALTH OUTCOMES					
Premature death	Years of potential life lost before age 75 per 100,000 population	7,700	7,300	4,600	20,500
Poor or fair health	% of adults reporting fair or poor health	16%	14%	10%	24%
Poor physical health days	Average # of physically unhealthy days reported in past 30 days	3.7	3.9	2.9	5.2
Poor mental health days	Average # of mentally unhealthy days reported in past 30 days	3.7	3.4	2.9	4.6
Low birthweight	% of live births with low birthweight (< 2500 grams)	8%	7%	4%	14%
HEALTH FACTORS					
HEALTH BEHAVIORS					
Adult smoking	% of adults who are current smokers	18%	20%	15%	31%
Adult obesity	% of adults that report a BMI ≥ 30	31%	25%	16%	37%
Food environment index	Index of factors that contribute to a healthy food environment, (0-10)	7.2	7.2	3.1	8.4
Physical inactivity	% of adults aged 20 and over reporting no leisure-time physical activity	28%	22%	15%	33%
Access to exercise opportunities	% of population with adequate access to locations for physical activity	62%	67%	0%	94%
Excessive drinking	% of adults reporting binge or heavy drinking	17%	21%	16%	25%
Alcohol-impaired driving deaths	% of driving deaths with alcohol involvement	31%	47%	0%	100%
Sexually transmitted infections	# of newly diagnosed chlamydia cases per 100,000 population	287.7	379.8	65.3	1,583.2
Teen births	# of births per 1,000 female population ages 15-19	40	33	7	102

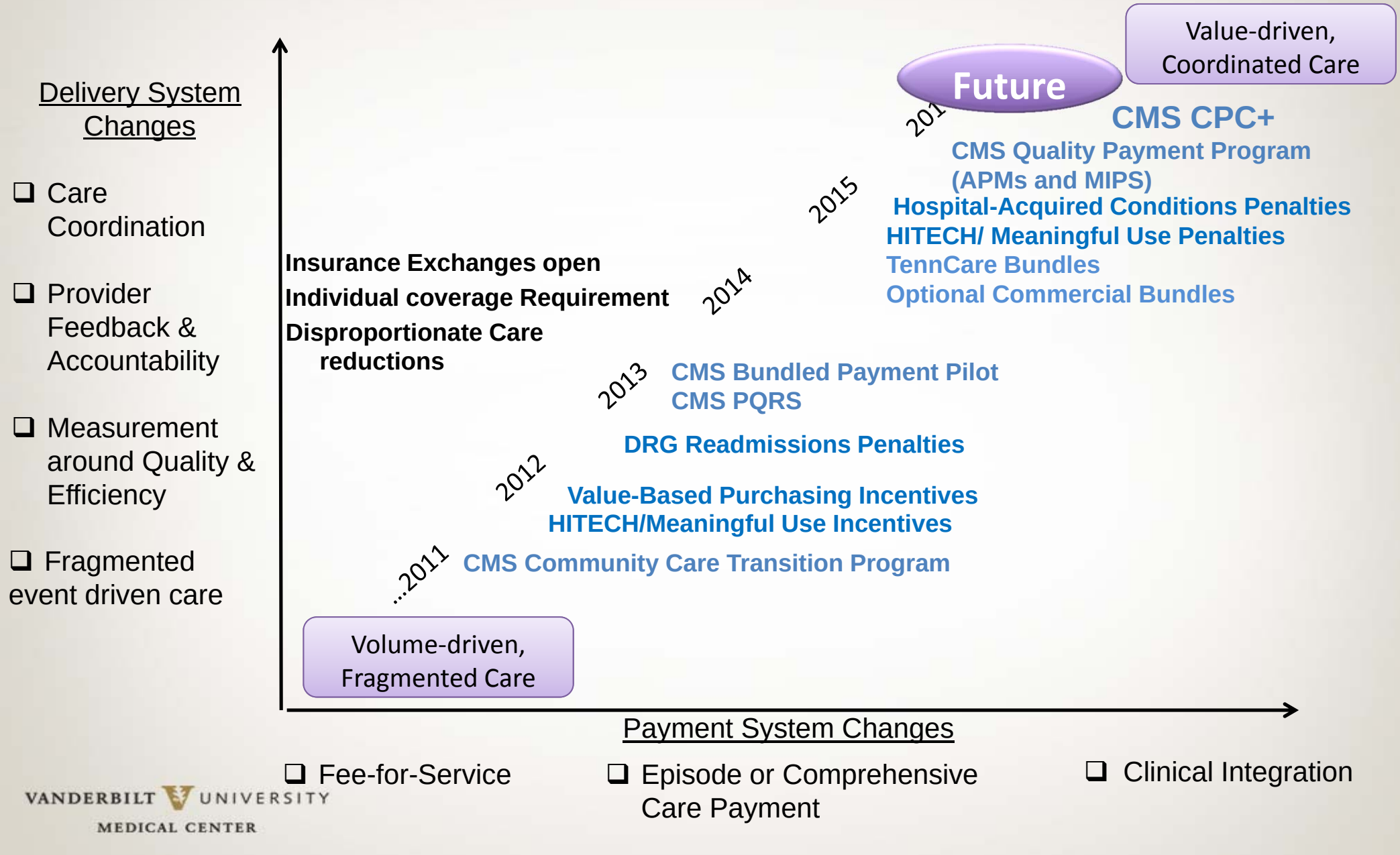
Future of Health and Health Care

- Key Drivers of Change
  1) Cost of Care
  2) Health Outcomes
  3) **Payment Reform**
  4) **Population Health**
  5) **Safety and Quality**
  6) Efficiency and Value
  7) Personalized Health Care
  8) Organization of Health Sector

Health Care Funding Reform

- Health care delivery → **Population health**
- Process volume → **Outcome value**
- Services delivered → **Size of population**
- Expanding high margin business → **Creating effective, safe and efficient care**
- Fee for service → **Holding and/or sharing financial gain & risk**

Changing Market and Regulatory Environment



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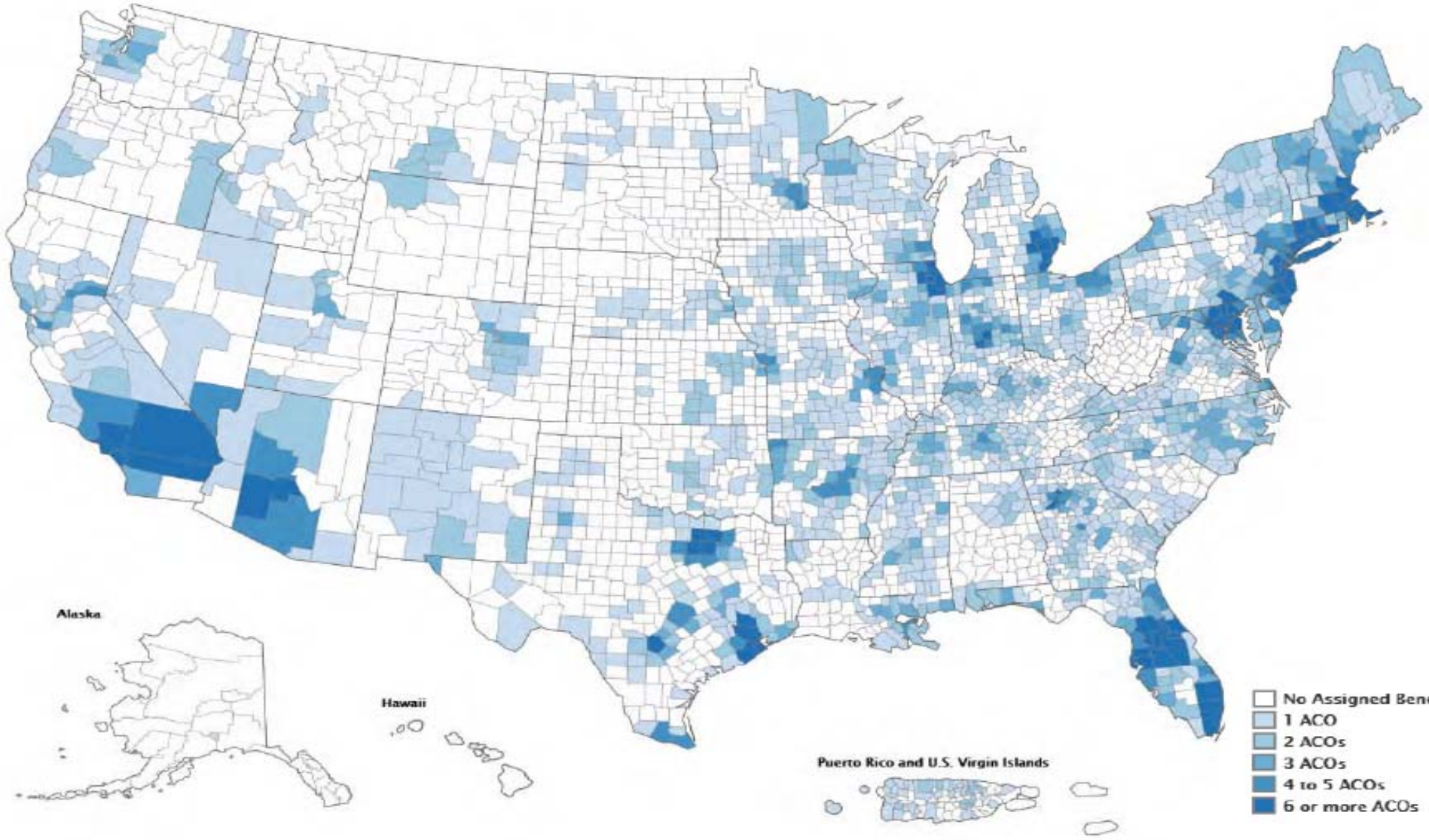
ACOs

- ~ 30 million patients now enrolled (CMS and Commercial)
- Initial evaluations of CMS ACOs suggest modest reduction in initial costs (~1%) with significant improvements in quality metrics
- New CMS ACO models emphasize:
  - Integrated care for assigned Medicare beneficiaries
  - Shared savings or losses dependent on:
    - Costs from baseline assessment
    - Quality metrics

JAMA, 2016
CMS, 2016

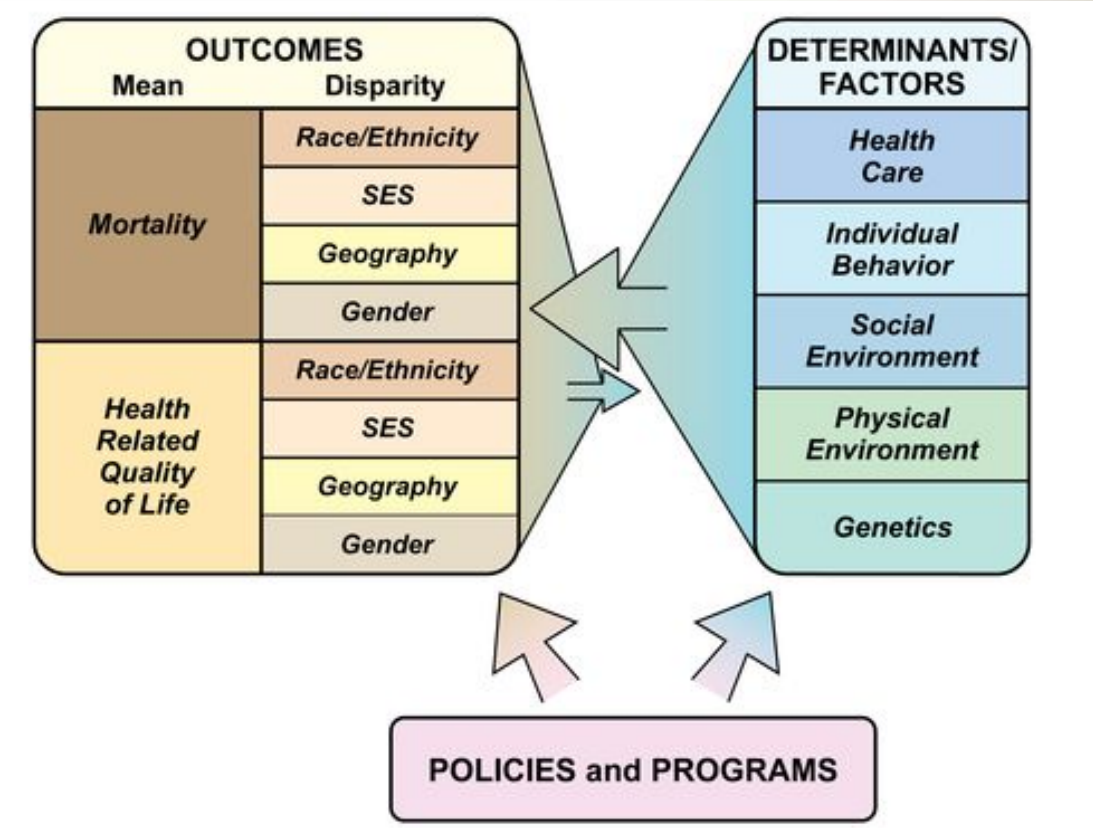
Medicare Shared Savings Program ACO and Pioneer ACO Assigned Beneficiary Population by ACO by County

(counties with more than 1 percent of an ACO's assigned beneficiaries)



Population Health

- The health outcomes of a group of individuals, including the distribution of such outcomes within the group [1,2].
- Geography
- Age
- Social Factor
- Insurance
- Risk Factor, Disease, Procedure
- Insurance



1.Kindig DA. Understanding Population Health Terminology. *Milbank Quarterly* 2007; 85 (1) 139-161.
2. Kindig D, Asada Y., Booske B. A Population Health Framework for Setting National and State Health Goals. *JAMA* 2008; 299:2081-2083

Future of Health and Health Care

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Health Care Quality: Content

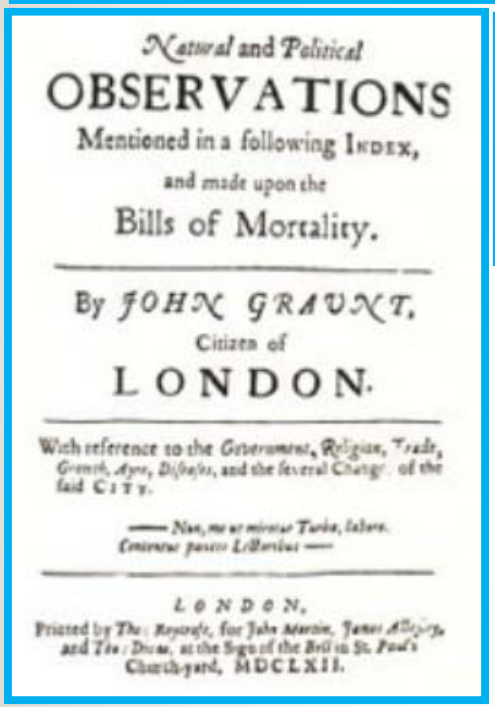
- Basis for “Quality”:

Training

Expertise/role

Improving Health Care: Data Collection

John Graunt - 1662



Natural and Political
OBSERVATIONS
Mentioned in a following INDEX,
and made upon the
Bills of Mortality.

By JOHN GRAUNT,
Citizen of
LONDON.

With reference to the Government, Religion, Trade, Growth, Ayre, Diseases, and the several Changes of the said CITY.

LONDON,
Printed by Tho: Roycroft, for John Martin, James Allestry, and Tho: Dicas, at the Sign of the Bell in St. Paul's Church-yard, MDCLXII.

First use of data collection for purpose of understanding health status

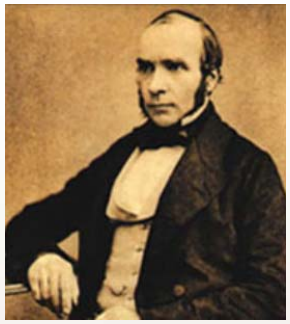
Florence Nightingale-1850

Pioneer in statistical graphics

Birth of applied statistics, demography

William Farr - 1839

John Snow - 1855



Birth of applied epidemiology

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Improving Health Care: Outcomes

Ernest Codman - 1911

- ***Measured surgical outcomes for purposes of improvement***
- ***First bone tumor registry***
- ***Made data public***
- ***Lost staff privileges (MGH)***
- ***Founded American College of Surgeons***
- ***Founded what became JCAHO***

Health Care Quality: Content

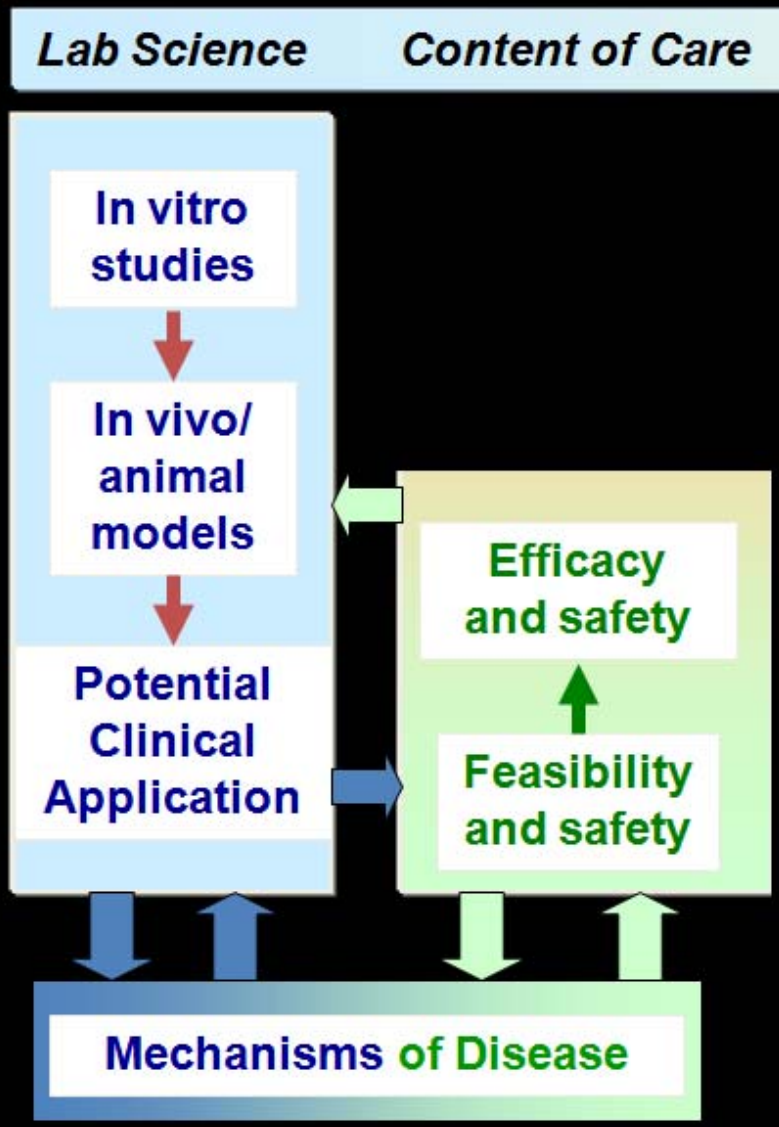
- Basis for “Quality”:

Training

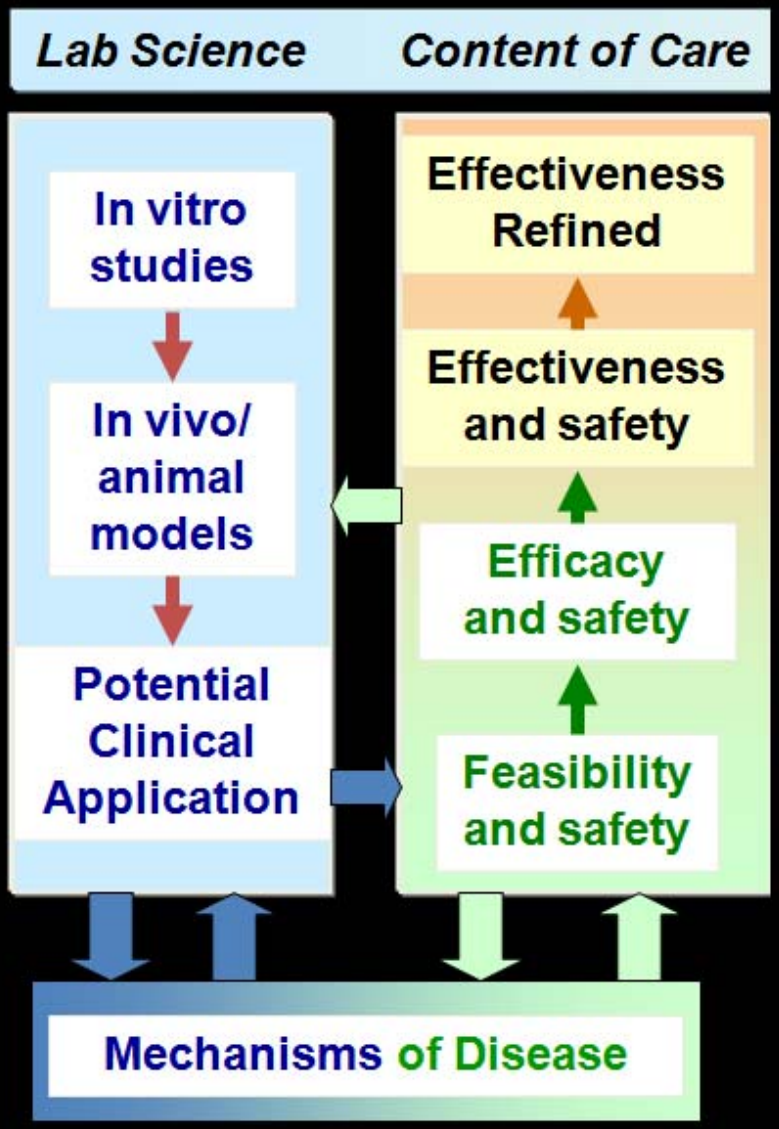
↳ Expertise/role

↳ Evidence

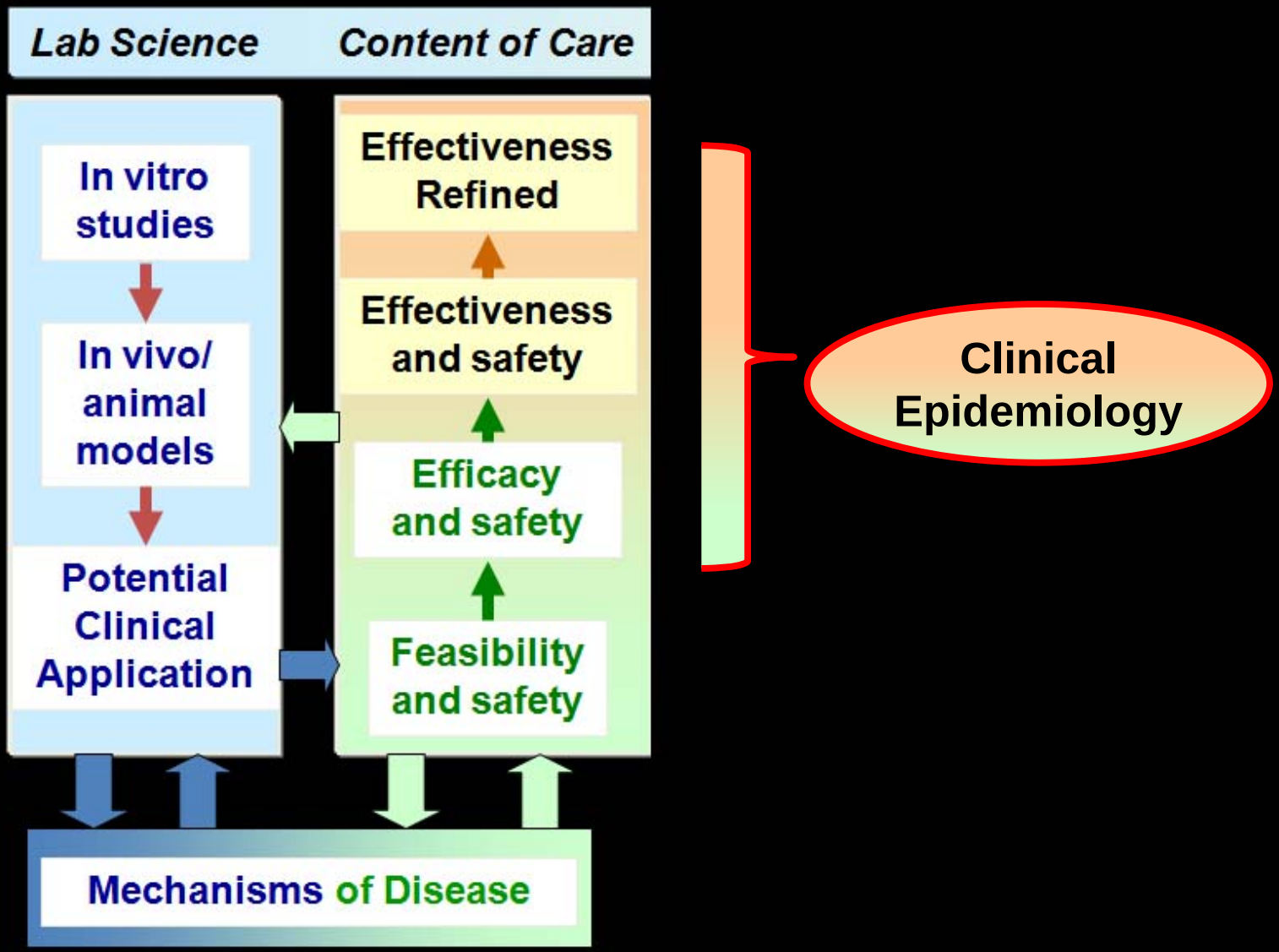
Clinical and Translational Science



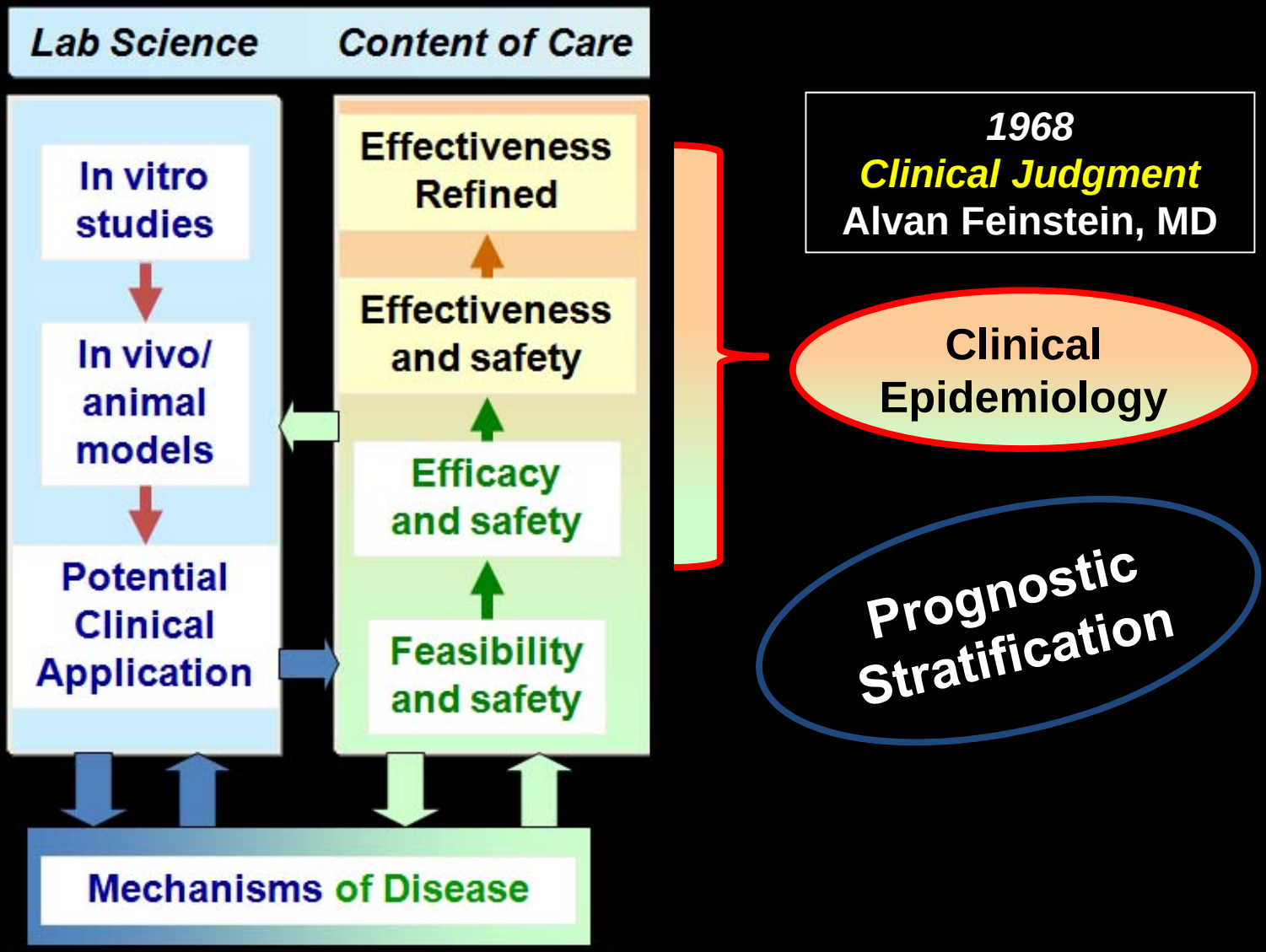
Clinical and Translational Science



Clinical and Translational Science



Clinical and Translational Science

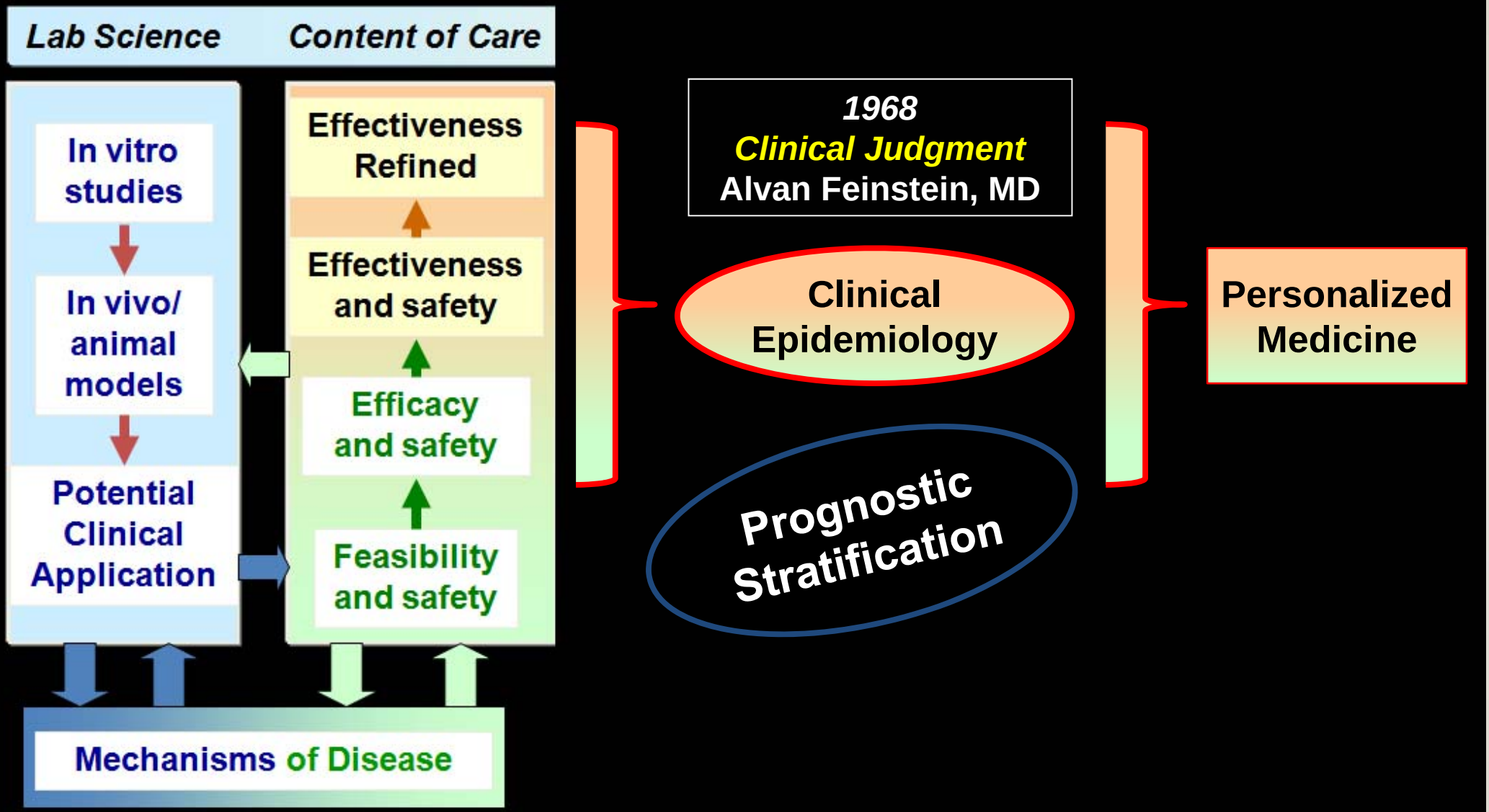


1968
Clinical Judgment
Alvan Feinstein, MD

Clinical Epidemiology

Prognostic Stratification

Clinical and Translational Science



Health Care Quality: Content

- Basis for “Quality”:

Training

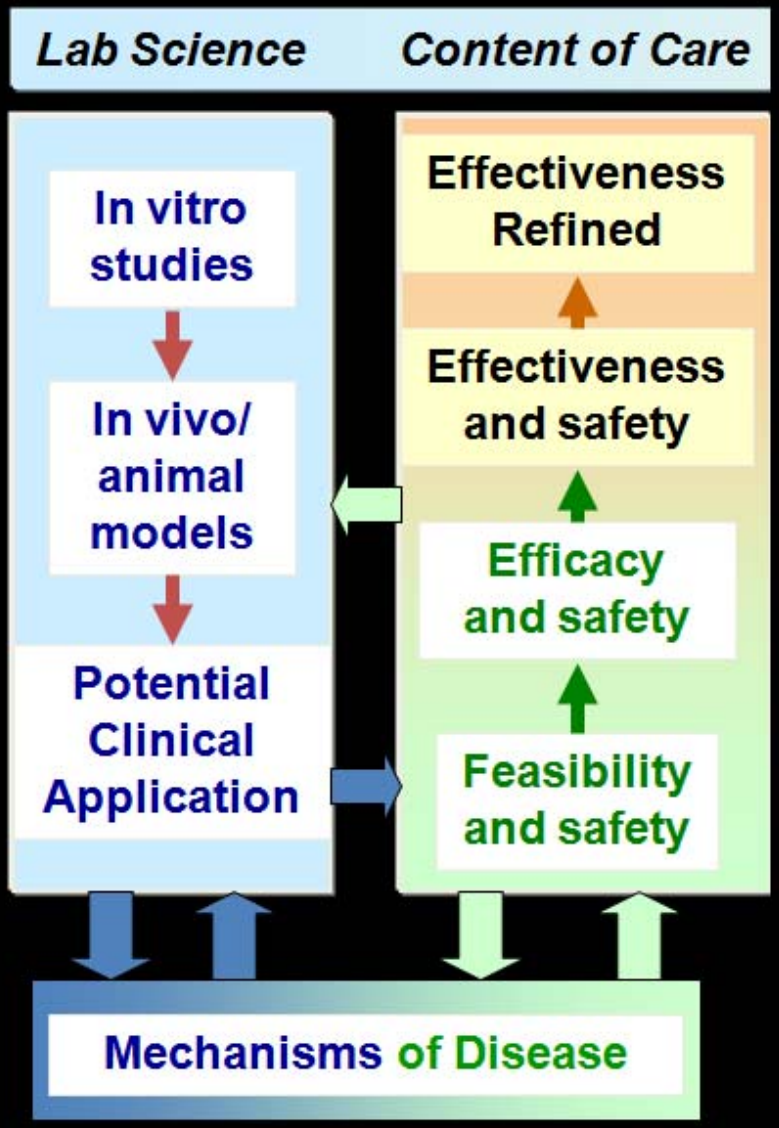
↳ Expertise/role

↳ Evidence

↳ Rigorous evidence

↳ Personalized rigorous evidence

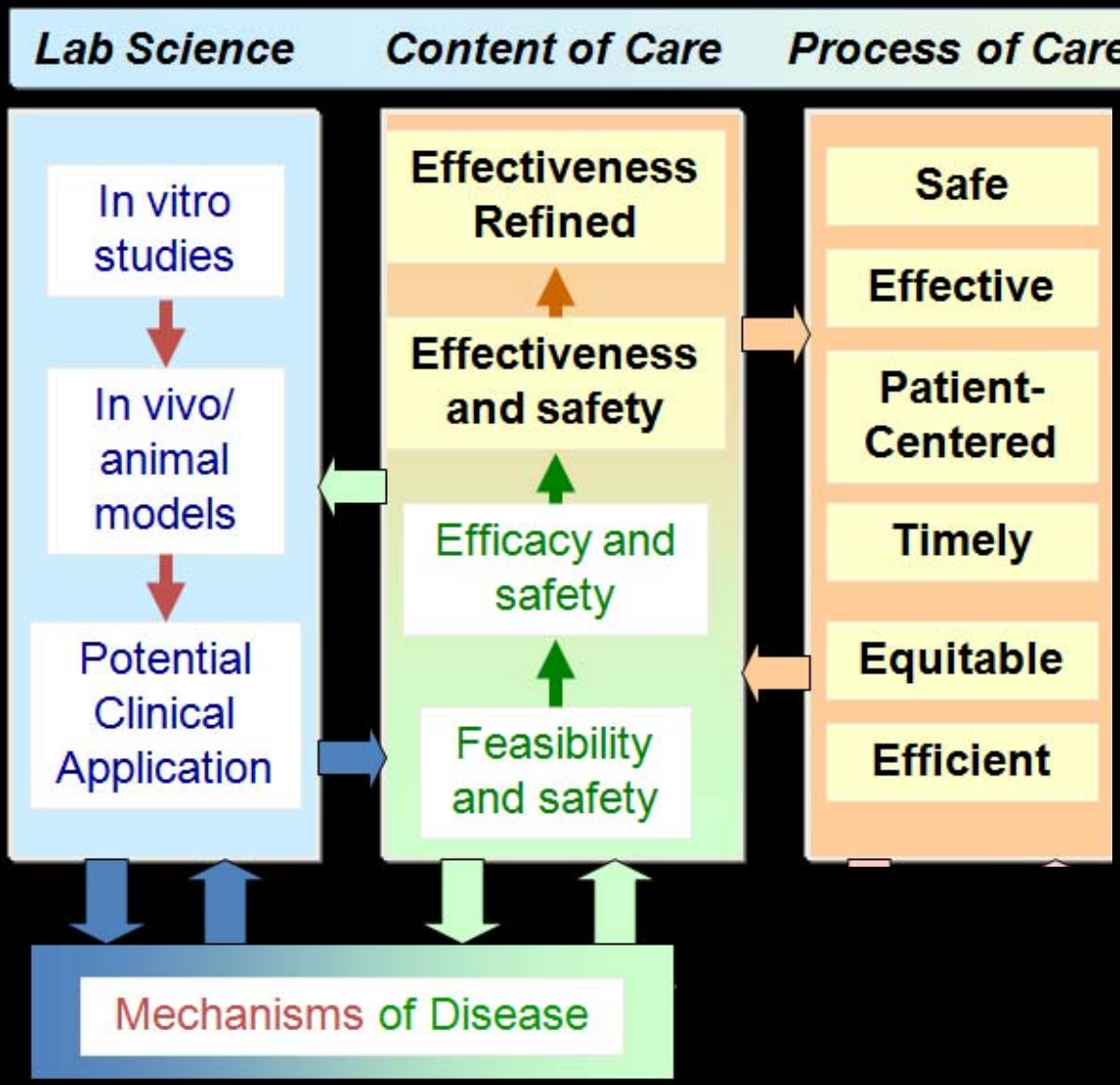
Clinical and Translational Science



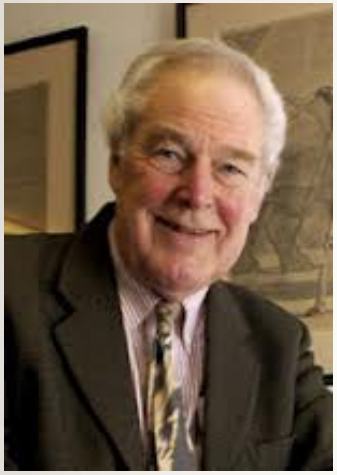
1972
RWJ Clinical Scholars Program

1981
Association for Health Services Research (AcademyHealth)

Clinical and Translational Science

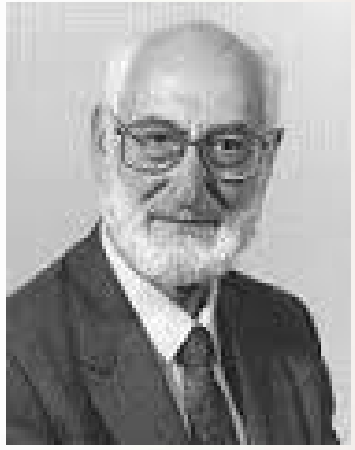


Quality Improvement



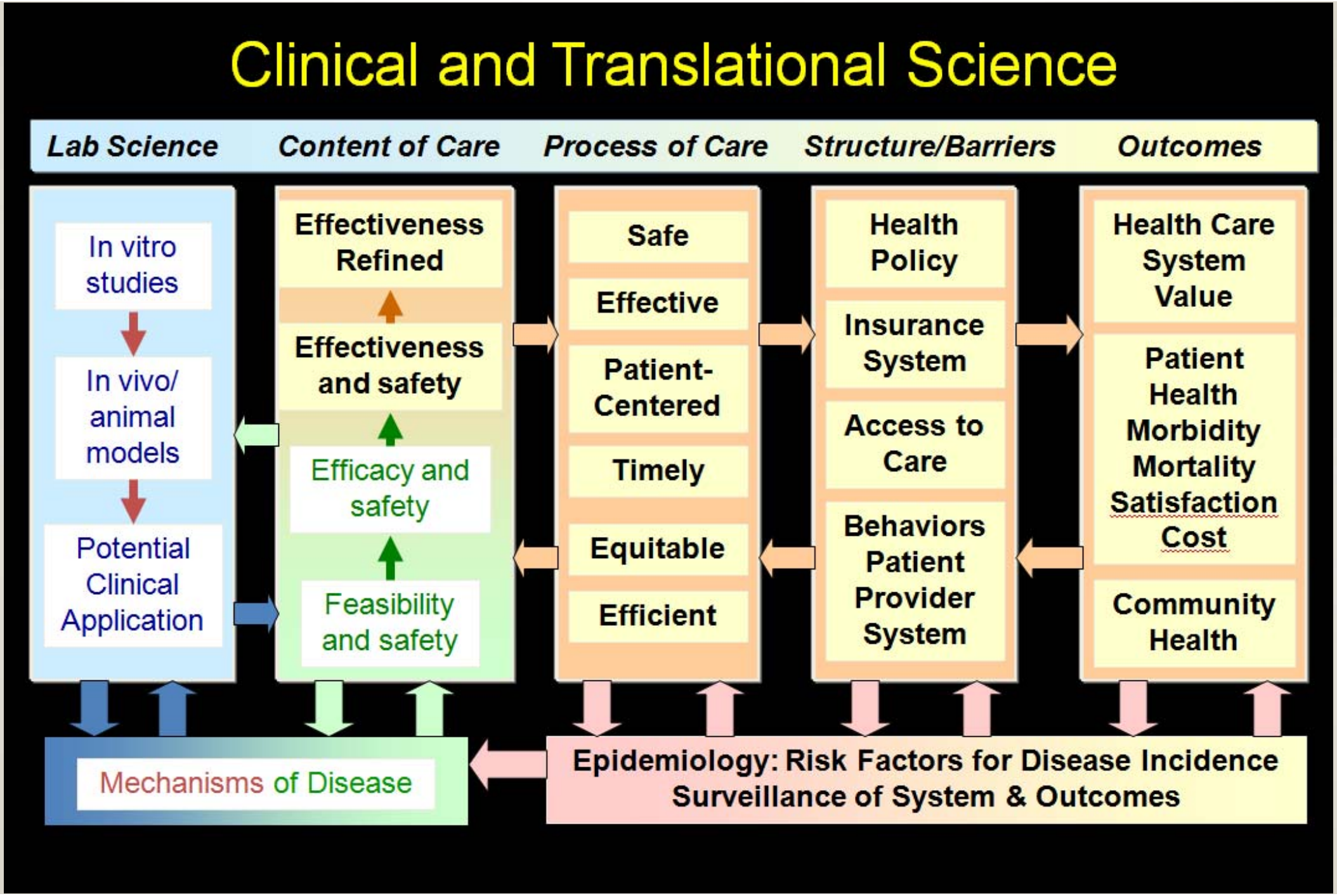
Jack Wennberg - 1967

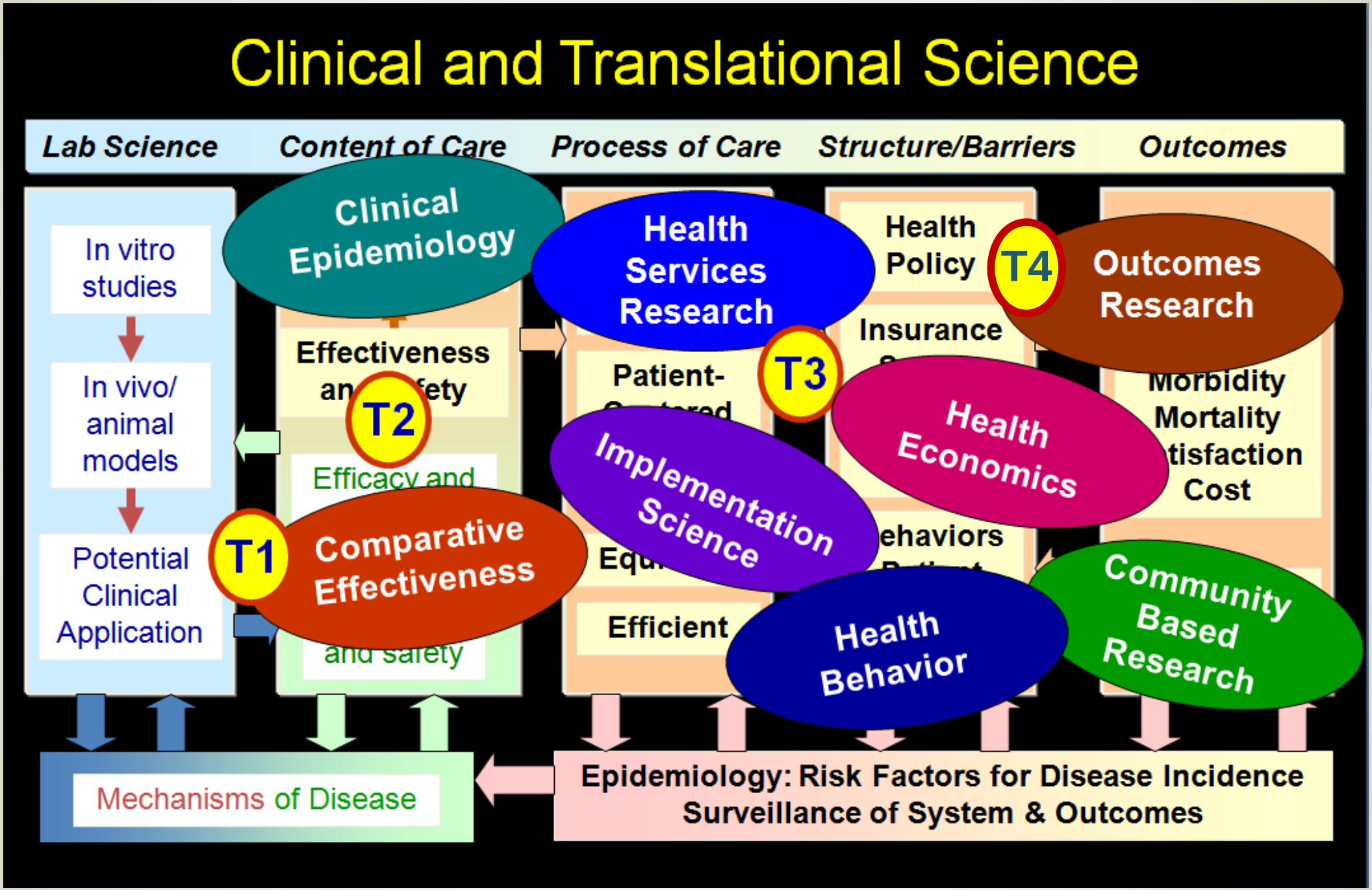
Variation in Care
Dartmouth Atlas



Avedis Donabedian - 1988

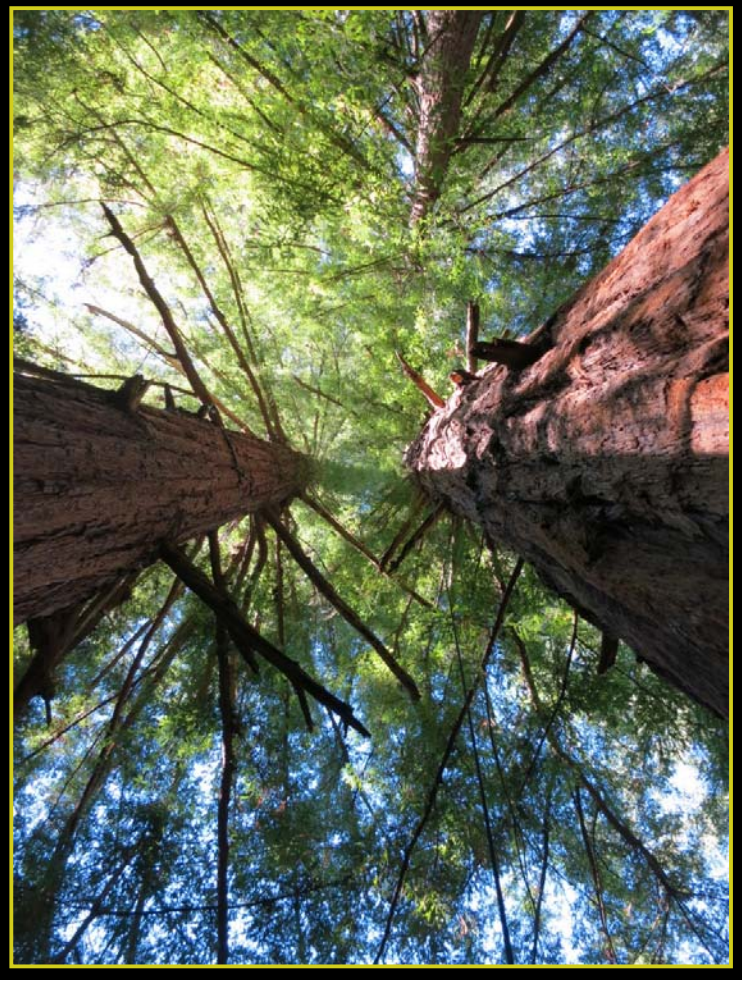
Structure – Process - Outcome


Clinical and Translational Science
Lab Science
Content of Care
Process of Care
Structure/Barriers
Outcomes
In vitro studies
In vivo/ animal models
Potential Clinical Application
Effectiveness Refined
Effectiveness and safety
Efficacy and safety
Feasibility and safety
Safe
Effective
Patient-Centered
Timely
Equitable
Efficient
Health Policy
Insurance System
Access to Care
Behaviors Patient Provider System
Health Care System Value
Patient Health Morbidity Mortality Satisfaction Cost
Community Health
Mechanisms of Disease
Epidemiology: Risk Factors for Disease Incidence
Surveillance of System & Outcomes


Clinical and Translational Science
Lab Science
Content of Care
Process of Care
Structure/Barriers
Outcomes
In vitro studies
In vivo/ animal models
Potential Clinical Application
Clinical Epidemiology
Effectiveness
T2
Efficacy and
and safety
T1
Comparative Effectiveness
Health Services Research
Patient-
Efficient
T3
Implementation Science
Health Policy
Insurance
T4
Outcomes Research
Health Economics
ehaviors
Health Behavior
Morbidity
Mortality
tisfaction
Cost
Community Based Research
Mechanisms of Disease
Epidemiology: Risk Factors for Disease Incidence
Surveillance of System & Outcomes

Knowing is not enough; we must apply.
Willing is not enough; we must do.”

Johann Wolfgang von Goethe



Quality Improvement: Process of Care

W. Edwards Deming - 1950

System of Profound Knowledge

- Appreciating a system
- Understanding variation
- Psychology (human behavior)
- Epistemology (theory of knowledge)

Don Berwick - 1989

- IHI
- Translate and apply Deming's work
- 100,000 Lives Campaign

Quality Improvement Education

Paul Batalden

VA Quality Scholars Program - 1998

- **Train MDs for careers in QI:**
  - **scholarship**
  - **leadership**
- **Vanderbilt one of 6 founding sites**
- **2010 added nursing (PhD, DNP) - QSEN**
- **Other programs have replicated**

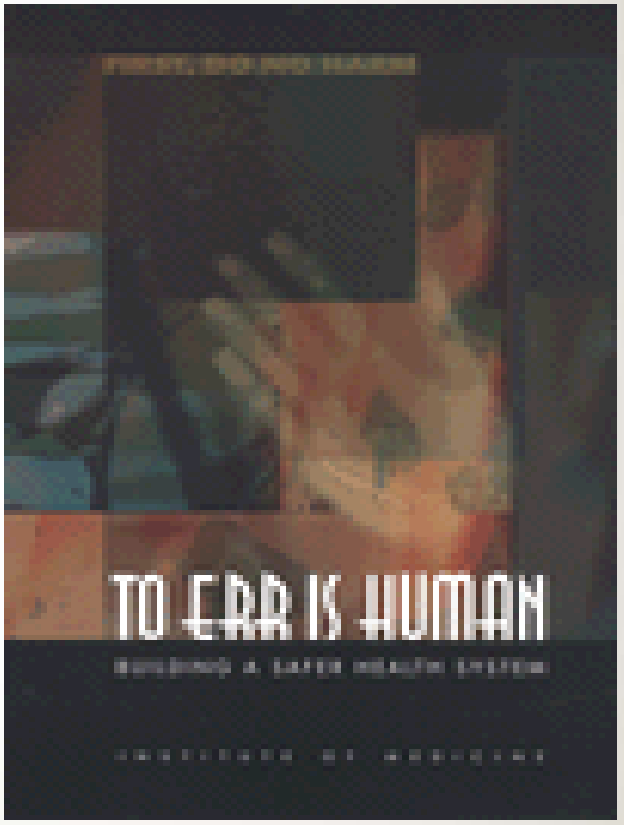
"Every system is perfectly designed to get the results it gets"

Paul Batalden

Significance of Error in Health Care

IOM 1999

- Safety
  - 100,000 deaths in US annually due to preventable errors[1]
- Effectiveness
  - Americans receive only 50-60% of recommended care[2]

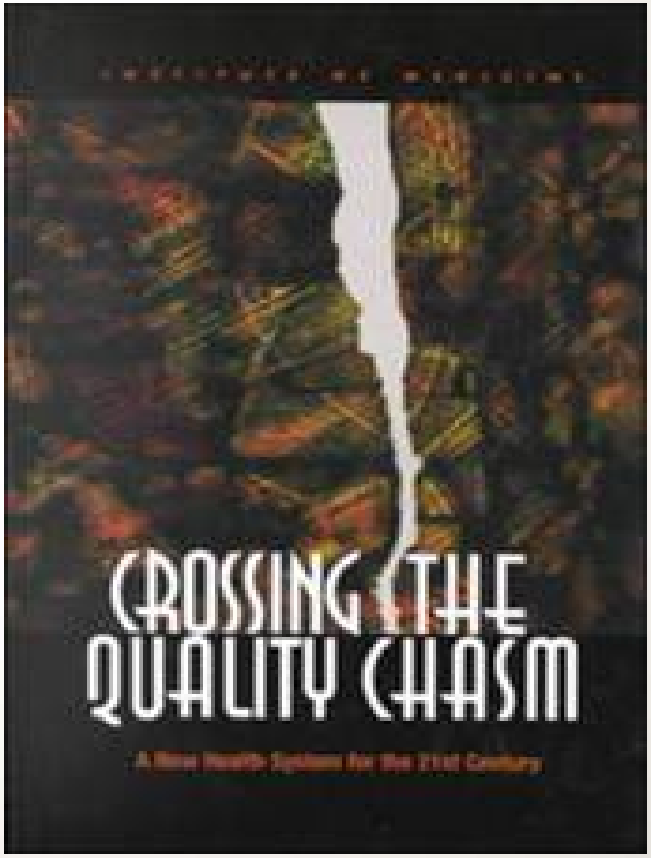


1. Institute of Medicine: *To Err is Human: Building a Safer Health System. Washington, DC. National Academy Press, 1999.*
2. *McGlynn, et al. The quality of health care delivered to adults in the United States. NEJM 2003. 348:2635:2645.*

Improving Quality of Care

- ***21st Century Aims:***
  - **Safe**
  - **Effective**
  - **Patient-Centered**
  - **Timely**
  - **Efficient**
  - **Equitable**

IOM 2001



ACGME and Medical Special Boards Core Competencies

- *Patient Care*
- *Medical Knowledge*
- *Professionalism*
- *Interpersonal and Communication Skills*
- *Systems-Based Practice*
- *Practice-Based Learning and Improvement*


Epistemology
Problem Solving
Information
Knowledge
Perspective
Leadership
Innovation
Change Management
Culture
Paradigms
Context
Incentives
Process Improvement
Restructure
Behavior
Safe
Effective
Timely
Patient-centered
Efficiency
Equitable
Satisfaction
Quality of Life
Outcomes
Biologic Process
Cost
Behavior
Motivations
Authority
Responsibility
Accountability
Communication
Coordination
Complexity
Process
Structure
Experimentation
Learning
Decision Making
Adaptability
Spread
People
Technology
Optimization
Constraints
Justice
Content
Evidence-based Practice
Personalized Care

Improving the Quality of Health Care: 2016

- Public awareness - demand for safe, effective, timely and equitable care
- Empowered patients want patient-centered care
- Economy requires efficient care
- Not at efficiency frontier
  - Can improve care & reduce costs

Quality Improvement: Models of Change

- Roger's Diffusion of Innovation
  - Knowledge; Persuasion; Decision Implementation; Confirmation
  - Innovators; early adopters; early majority late majority; laggards
- Precede-proceed
- Social Marketing
- Social influence theory; motivational theories; action theories

Closing the Quality Gap: A Critical Analysis of Quality Improvement Strategies. Shojania et al, eds. AHRQ, 2004.

Quality Improvement: Practice-based Approaches

- **Total Quality Management**
  - Deming, SPC, PDSA, Japan
- **Lean**
  - Toyota Production System, Eliminate waste
- **Six Sigma**
  - Reduce variation, DMAIC, Motorola, GE
- **Theory of Constraints**
  - Throughput, not cost focus; a chain is no stronger than its weakest link
- **Process Reengineering**
  - Clean-sheet redesign, discontinuous thinking

Quality Improvement: What to do?

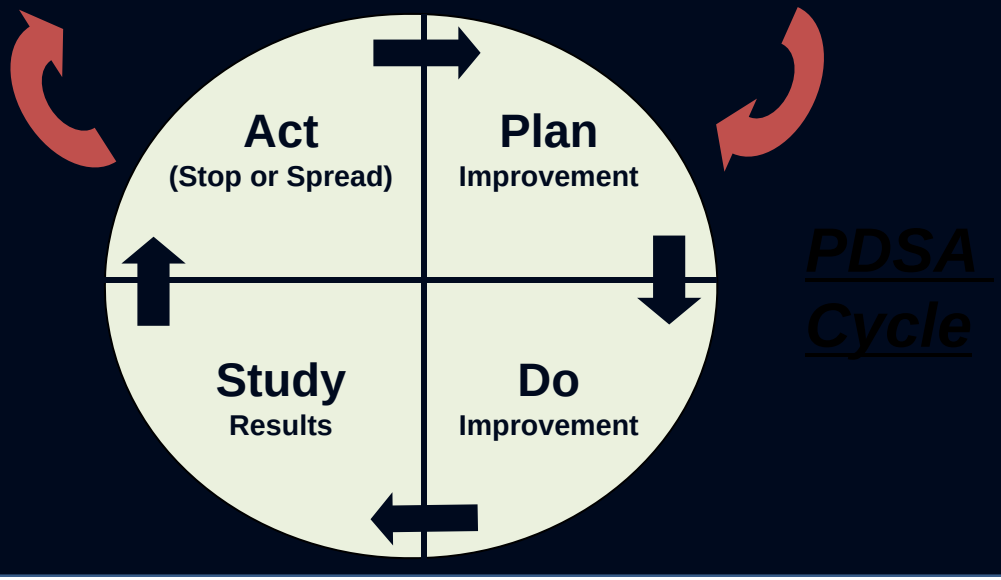
- Lean: best reach and depth as a holistic enterprise-wide approach
- Total Quality Management, Lean, Six Sigma have a highly complementary, tightly clustered set of common elements
- Thus, integrate these as a common core integrated management system
- Selectively include features from Theory of Constraints, Process Reengineering, Agile Manufacturing
- **All use continuous process improvement as key mode of improvement and change**

Model of Improvement

Aims
What are we trying to accomplish?

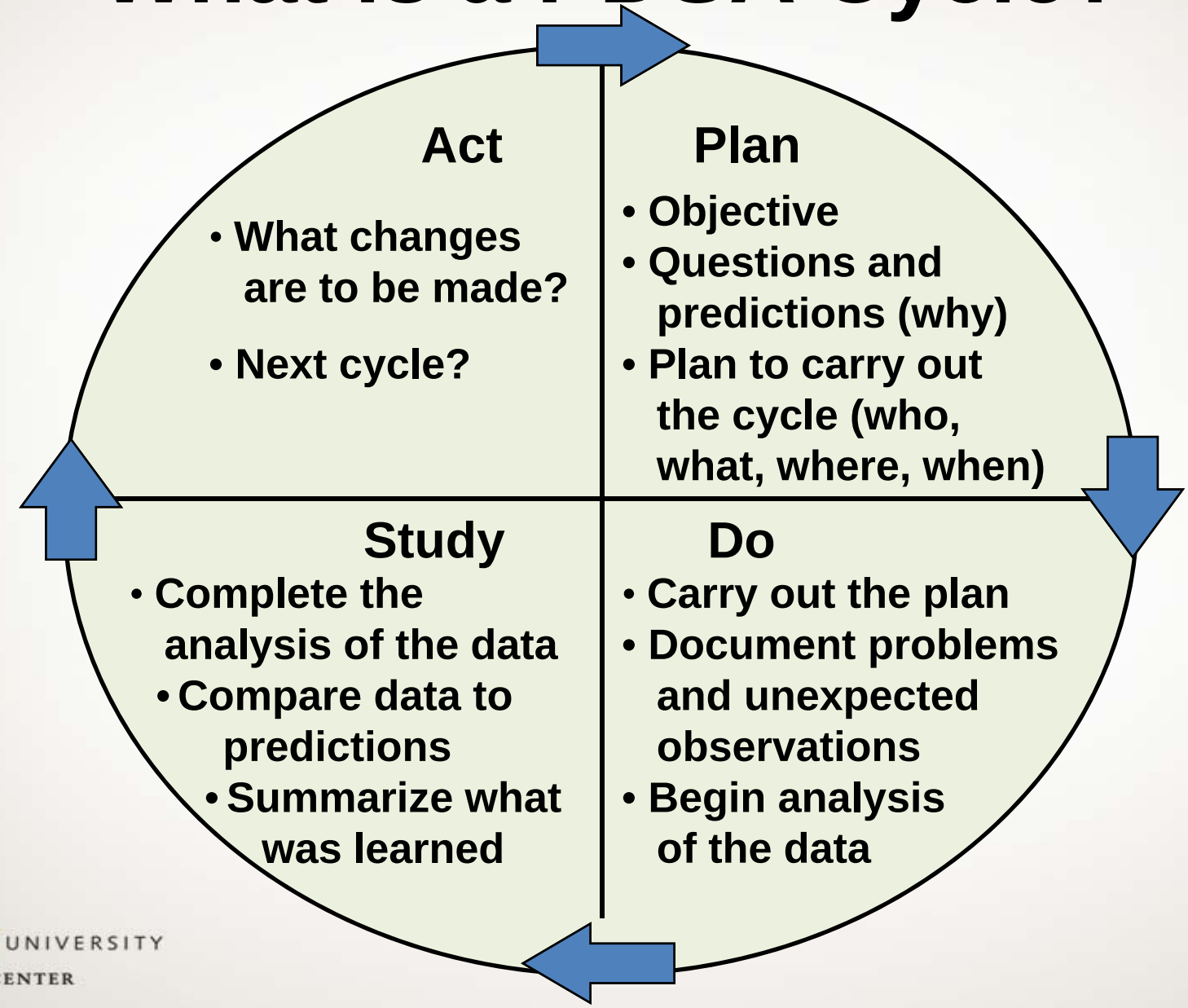
Measures
How will we know if a change is an improvement?

Process Analysis
What changes can we make that will result in improvement?



PDSA Cycle

What is a PDSA Cycle?



VANDERBILT UNIVERSITY MEDICAL CENTER

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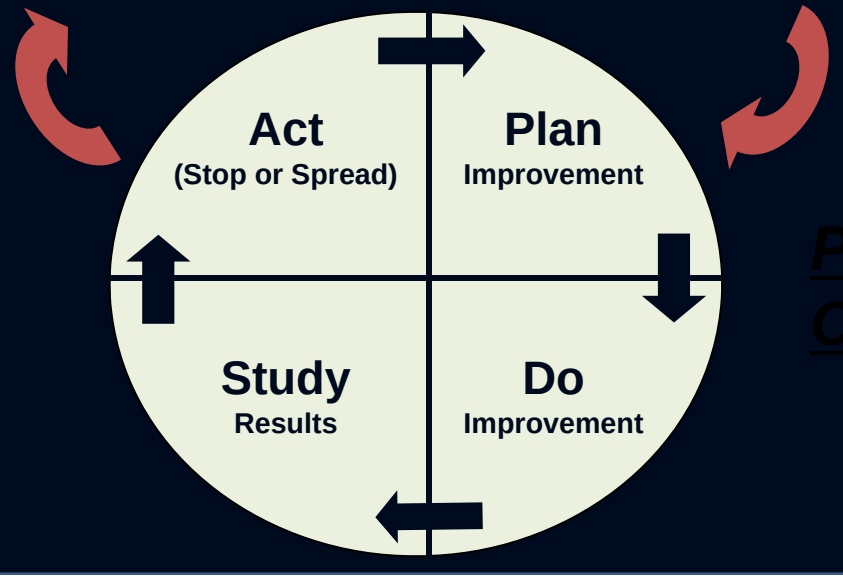


PDSA Cycle

Simple model, Complicated process

Reminds us:

- Start with a goal NOT a solution
- Think early about defining success

Use of a Multidisciplinary Non-VA Care Coordination Team to Improve Access, Quality, and Communication in VA care

Leanne Boehm, PhD(c), RN; Amelia Maiga, MD, MPH; Caroline Presley, MD
Cathy Ivory, PhD, RN-BC; Lorraine Mion, PhD, RN; Russell L. Rothman, MD, MPP;
Christianne L. Roumie, MD, MPH; Theodore Speroff, PhD; Robert S. Dittus, MD, MPH

Veteran's Affairs Tennessee Valley Healthcare System (TVHS), Nashville & Murfreesboro, TN

Background

- *Blueprint for Excellence* provides a framework for the evolution of Veteran health services from provider-centric to Veteran-centric.
- **Strategy 8:** Become a model integrated health services network through innovative academic, intergovernmental and community relationships, information exchange, and public-private partnerships.

Aim

- Describe and analyze a TVHS initiative for addressing Strategy 8 of the *Blueprint*.

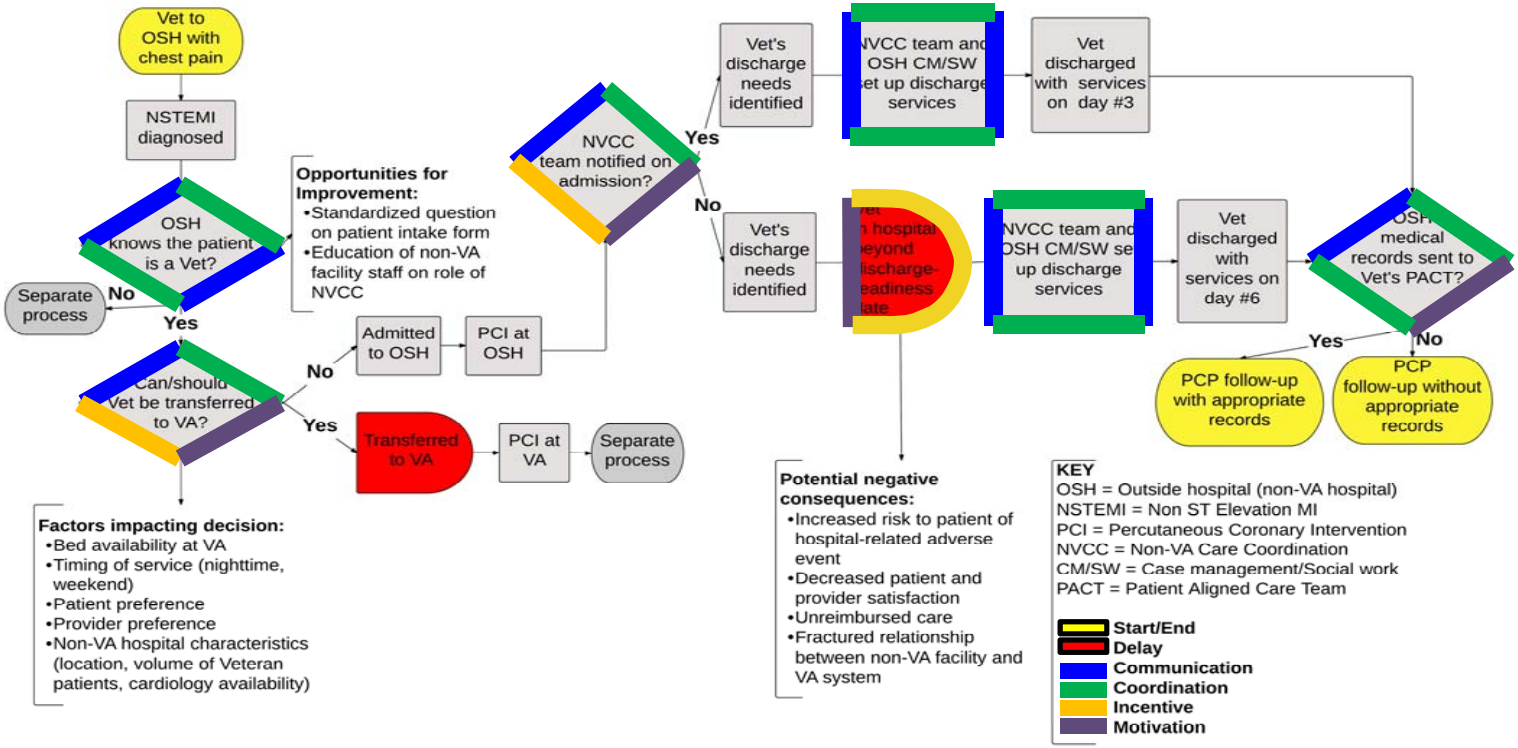
TVHS Description

- 453 bed Level 1A general medical/surgical center
  - Nashville: 158 acute care beds
  - Alvin C. York: 102 acute care beds, 238 community living center beds
- Only VA nationally to support all solid organ transplants
- 13 CBOCs in Tennessee & Kentucky
- True North Key Drivers establish areas of focus for *Blueprint* at TVHS: Access, Quality, and Communication

Leadership	
Roger Jones, MD	Chief of Staff
Janice Cobb, RN	Associate Director, Patient Care Services
Anthony Gomez	Senior Analyst, Systems Redesign
Paul Carter, MD	ACOS, Non-VA Care Coordination

Methods

- Semi-structured interviews of above key leaders
- Mapping of actual process to represent a Veteran's movement through non-VA care using a hypothetical clinical situation



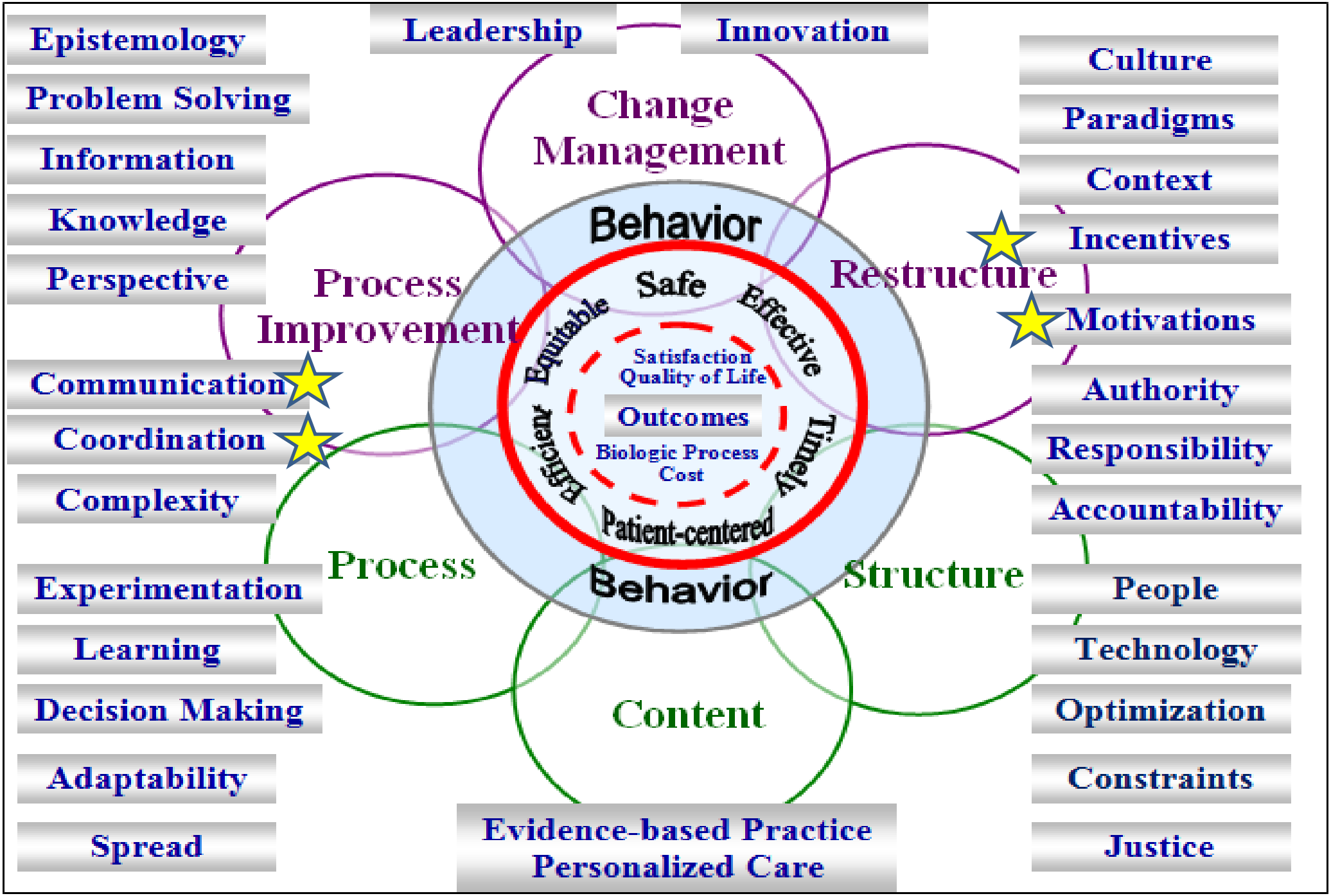
Results: Non-VA Care Coordination

- Innovative, physician-led, multidisciplinary team unique within VHA to oversee quality & availability of care, information flow, provider & hospital relations
- 20-60 TVHS Veterans admitted to non-VA facilities at any given time
- Conduit for communication and transition of Veterans back into the VA system of care
- Key quotes:
  - "…seamless co-management, rather than dual management."
  - "…consistent communication approach to meet the needs of Veterans."
  - "…are they (OSH) recommending things that are not necessary?"
  - "…working with OSH so Vets have what they need when they go home."

Lessons Learned

- Unique challenge in TVHS with 2 campuses, 2 academic affiliates, and large catchment area
- Need for Systems Redesign to work with NVCC to identify and act on leverage points
- Importance of clear metrics to measure success
- Need for adaptability in the changing landscape of Veterans healthcare (e.g., CHOICE Act)
- Potential opportunity for sharing best practices and success stories across VISNs
- Recognition of factors outside control of NVCC that need to be addressed (e.g., culture, adaptability, leadership)

This material is based upon work supported by the Office of Academic Affiliations, Department of Veterans Affairs, VA National Quality Scholars Program and with resources and the use of facilities at VA Tennessee Valley Healthcare System, Nashville TN.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Behavior
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Adaptability
Spread
Structure
People
Technology
Optimization
Constraints
Justice
Content
Evidence-based Practice
Personalized Care

Defining Your Goal

Mission:

- What is the overall goal?
- What do people care about?
- Write a goal/mission statement for improving the care for your selected topic.
  - Our mission is to ….
  - The “one” sentence that says what your project is about and why it is important.
  - 10 second statement

Some Key Questions

- What are we trying to accomplish?
  - Establish the goal for your project
  - Something people care about!
  - Specifically, what do you think a change will result in?
- What is the culture and climate?
  - Dialogue – Psychology of Change
  - Context – Leadership, Resources, Assets, Challenges, Barriers, Support
  - Readiness for change – Buy In

Some Key Questions

- Who should work on this?
  - Consider all the people who could be helpful in this effort
  - Make sure you include people other than physicians
  - Could patients offer a helpful perspective?
- What is needed for teamwork?
  - Form a team – orientation and training
  - Roles: Project Leader, Clinician Champion, Facilitator
  - Team Meetings

Model of Improvement

Aims
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Measures
How will we know if a change is an improvement?

Process Analysis
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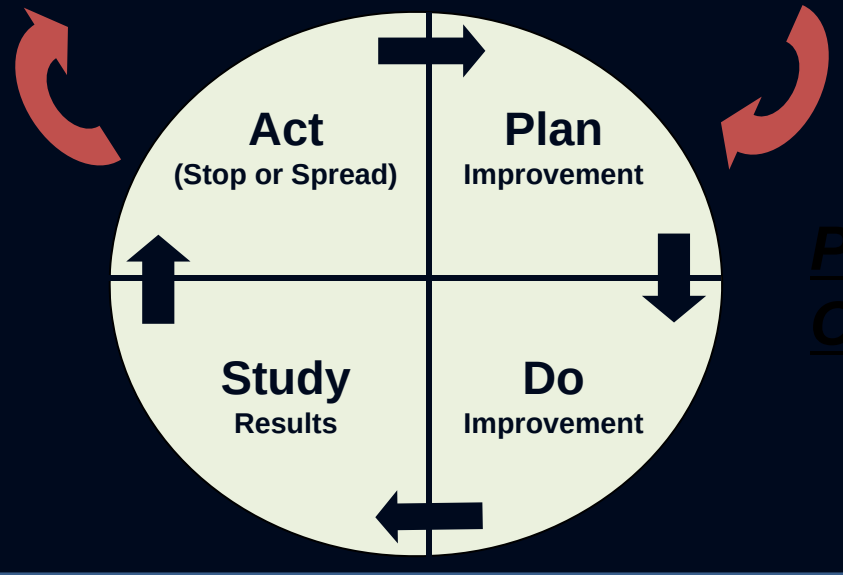

PDSA Cycle

1. Define your goal and your team
2. Define your Aims

SMART Aim Statements

- Specific
- Measurable
- Achievable
- Relevant
- Time limited

Improving Endoscopic Surveillance for Colorectal Cancer at a Veterans Affairs Hospital

Kummerow, K, MD, Smalley W, MD, MPH, Dittus R, MD, MPH, Roumie C, MD, MPH
Tennessee Valley Healthcare System Veterans Affairs Hospital

This material is based upon work supported by the Office of Academic Affiliations (OAA), Department of Veterans Affairs, VA National Quality Scholars Program and with use of facilities at VA Tennessee Valley Healthcare System, Nashville Tennessee.

Background

Colorectal cancer is a common cause of cancer and cancer-related death in Veterans. At the Tennessee Valley Healthcare System (TVHS) Veterans Affairs Hospital in Nashville, TN, less than 40% of Veterans receive post-resection endoscopic surveillance recommended by national guidelines. TVHS VA is a 238 bed facility that provides acute inpatient and outpatient care, including surgery, gastroenterology, and oncology services.

Project Aim

We aimed to increase performance of surveillance colonoscopy at recommended intervals among eligible colorectal cancer patients who underwent surgical resection at TVHS.

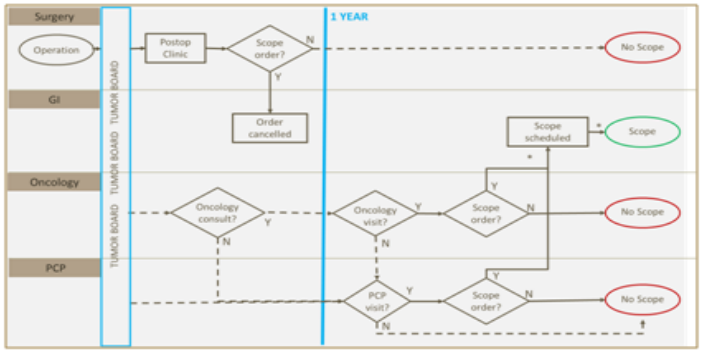

Figure 1. Initial process flow for colorectal cancer surveillance

Understanding the Problem

- Conducted stakeholder interviews
- Reconstructed patient narratives for receipt and non-receipt of surveillance endoscopy
- Mapped of current processes

Intervention

Identified OWNERS and LEVERAGE POINTS	Developed VIRTUAL CLINIC	Wrote clinic Standard Operating Procedures (SOP)
STANDARDIZED note templates	TRAINED involved services	TRACKING process &outcome measures

Measurements

PROCESS MEASURES
- Virtual Clinic enrollment
- Endoscopy requested
- Endoscopy scheduled

OUTCOME MEASURE
- Surveillance endoscopy performed within 18 months of surgical resection

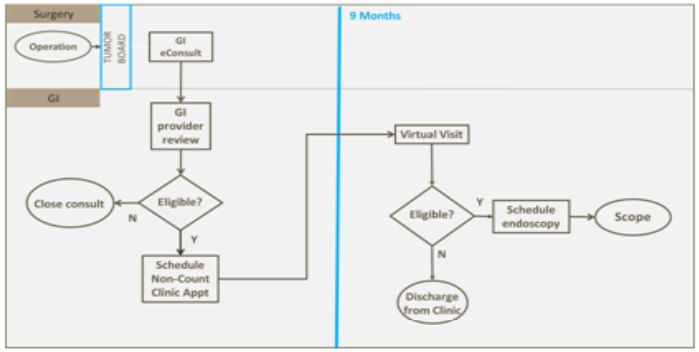

Figure 2. Modified process flow for colorectal cancer surveillance

Results

- Virtual Clinic enrollment: 100% (29/29)
- Endoscopy scheduled: 93% (11/14) of due/overdue patients
  Endoscopy performed: 64% (9/14)

- Outcome data on appropriately-timed surveillance endoscopy for patients enrolled since clinic establishment will be collected over the next year.

Conclusions

Implementation of a clearly defined process with established provider roles may increase guideline-concordant endoscopic surveillance after colorectal cancer resection at a VA facility, increasing quality of cancer care for Veterans.

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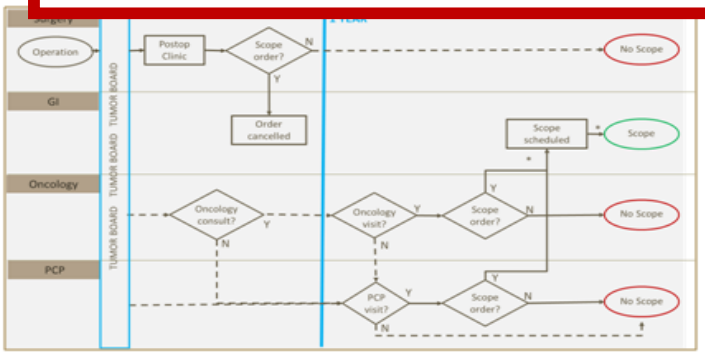

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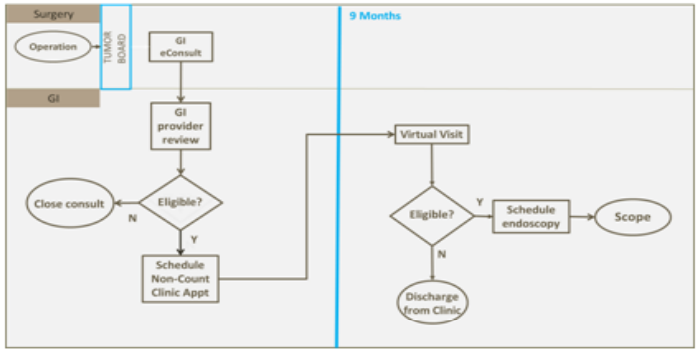

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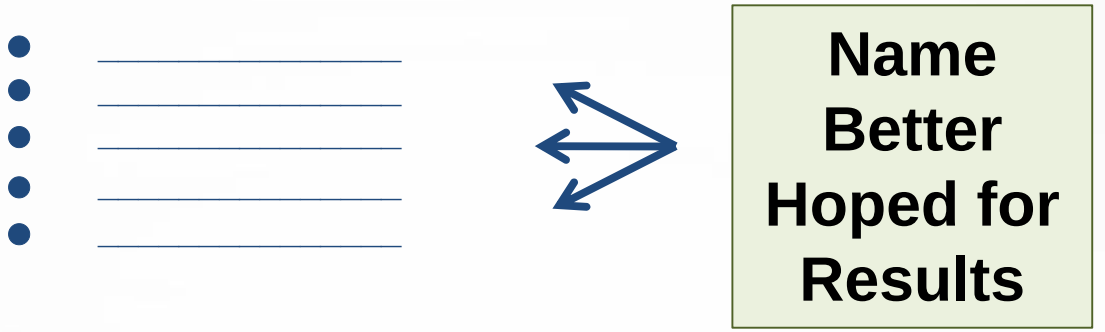
Model for Improvement
What are we trying to accomplish?
Aim Statement

1. The aim is to improve the quality and value of... (name the process) .

2. The clinical care process starts with... (name start point) and the process ends when… (name end point) .

Structured Aim: (cont'd.)

3. By working on this we expect to:



4. It's important to work on this now because...

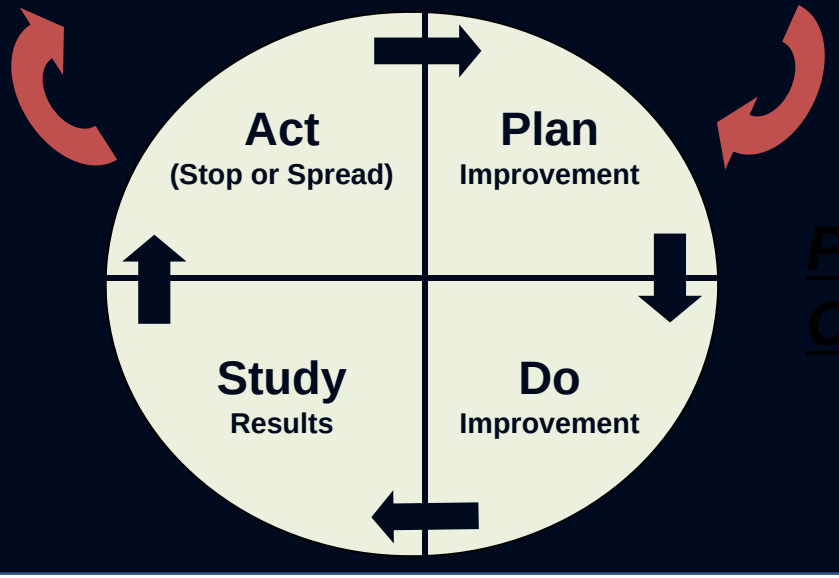
LIST STRATEGIC, PRACTICAL REASONS

Model of Improvement

Aims
What are we trying to accomplish?

Measures
How will we know if a change is an improvement?

Process Analysis
What changes can we make that will result in improvement?



PDSA Cycle

1. Define your goal and your team
2. Define your Aims
3. Define your measures
4. Analyze your process

Types of Metrics

Clinic Wait Times

- Outcome Measures
  - Example: Patient satisfaction
- Process Measures
  - Example: Average wait time
- Balancing Measures
  - Example: Provider satisfaction

Reducing Foley Catheter Utilization in VA-TVHS: Dissemination and Sustainability of a Successful Intervention

Thomas Spain, MD; Cecelia N. Theobald, MD, MPH; Matthew J. Resnick, MD, MPH
Robert S. Dittus, MD, MPH; Christianne L. Roumie, MD, MPH
Veteran's Affairs Tennessee Valley Healthcare System, Nashville TN

Background and Context

- Catheter-associated urinary tract infections (CAUTI) are a preventable adverse event.
- Previous pilot of interdisciplinary strategy to decrease local CAUTI rates in 2013 on one unit (2N) at VA-TVHS.
- Lesson learned: Over 50% of urinary catheters on acute medicine unit placed before arrival to unit.

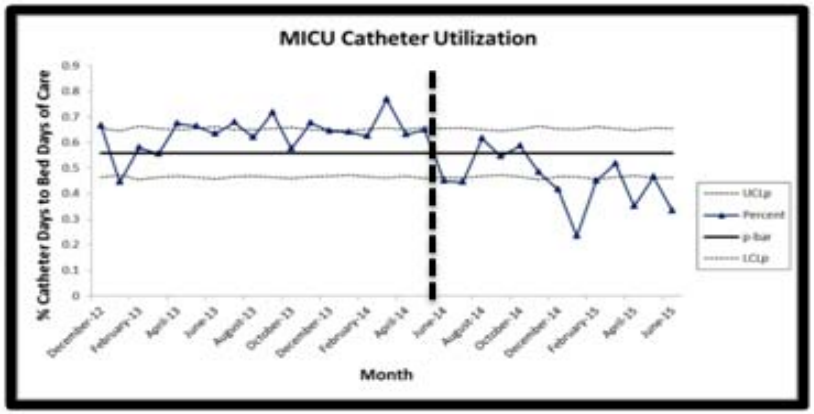
Goals

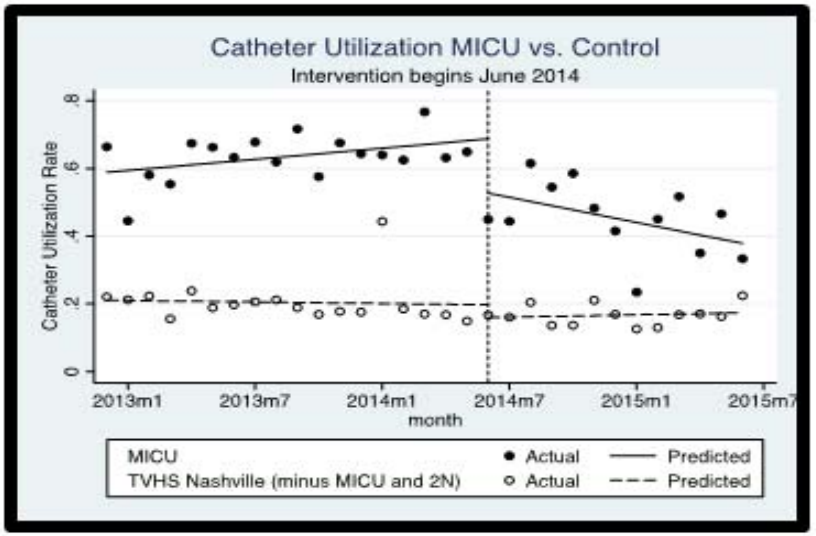
- Sustainably deploy intervention to a second clinical microsystem at TVHS-Nashville, the medical intensive care unit (MICU).
- Reduce foley catheter utilization in VA-TVHS Nashville MICU.

Methods

- Formed multidisciplinary team with physician, nurse, quality, and informatics representation.
- Based on local expertise, the original bundle was modified for MICU microsystem (changes in red).
- Implemented June 2014

Structured Catheter Placement Electronic Order Set in CPRS	• Provider chooses from preapproved indications • Automatic order expiration at 48 hours. • Nurse contacts provider at expiry to confirm catheter removal or obtain new order.
Nurse Protocol for Catheter Discontinuation	• Tiered steps as necessary, including: voiding trial, bladder scan, intermittent





Results

- Mean Catheter Utilization Rate (CUR)
  - 63.4% (Baseline: 12/2012 – 05/2014)
  - 45.4% (Post-intervention: 06/2014 – 06/2015)
- Mean CURs for TVHS-Nashville during same time periods were 20.3% and 15.5%, respectively.
- Monthly CUR p-chart demonstrates special cause variation at June 2014 and sustained improvement to date.
- On interrupted time series (control = TVHS Nashville minus MICU and 2N), level change approaches significance (p=0.086) with significant change in trends (p=0.014).
- As of July 2015, structured order set and daily team discussion remain part of unit routine.

Conclusions

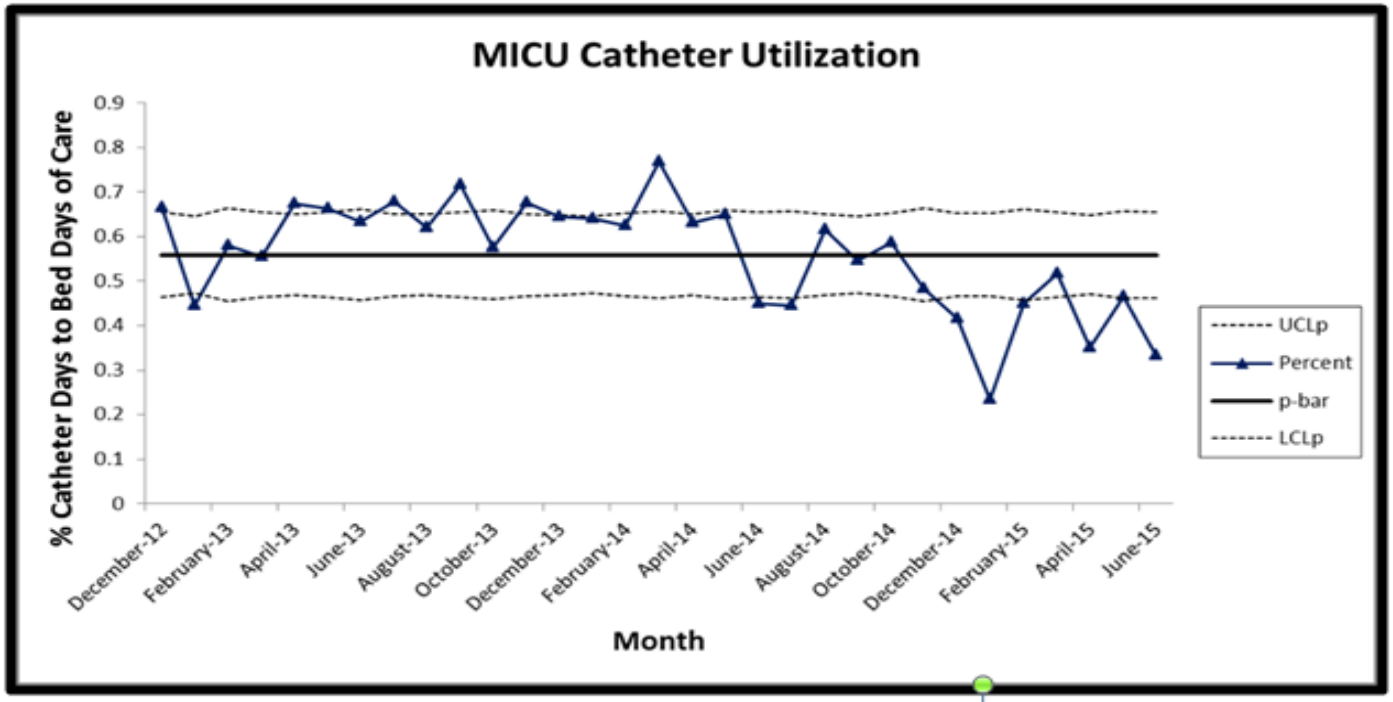
- Multidisciplinary bundle to reduce urinary catheter utilization was successfully adapted to a second distinct microsystem.
- Leveraging "hard-wired" system changes such as computerized order sets and structured team-based rounds may contribute to sustainability of improvement initiatives.

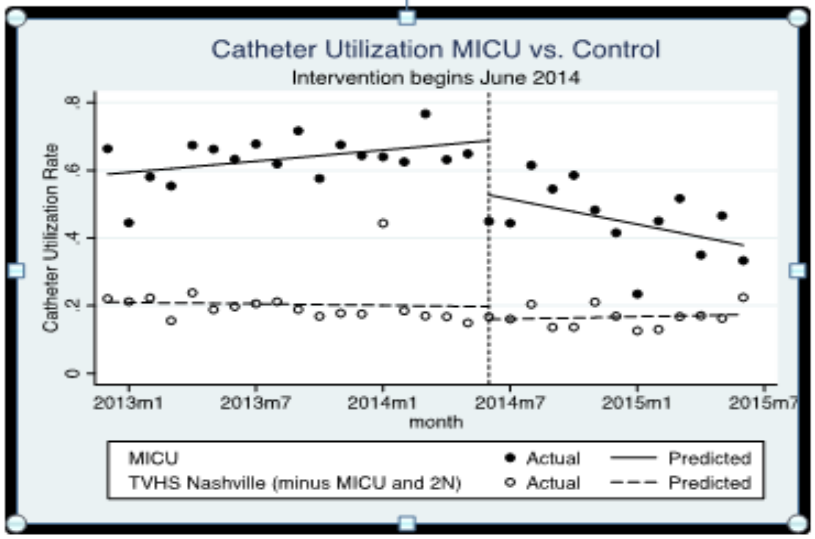
Future Work

- Spread of intervention to additional clinical units at TVHS-Nashville, including emergency department and surgical units.
- Consider appropriate descalation of initiative with changing institutional priorities.

Acknowledgments

- Cindy Bare, RN – Infection Control, TVHS





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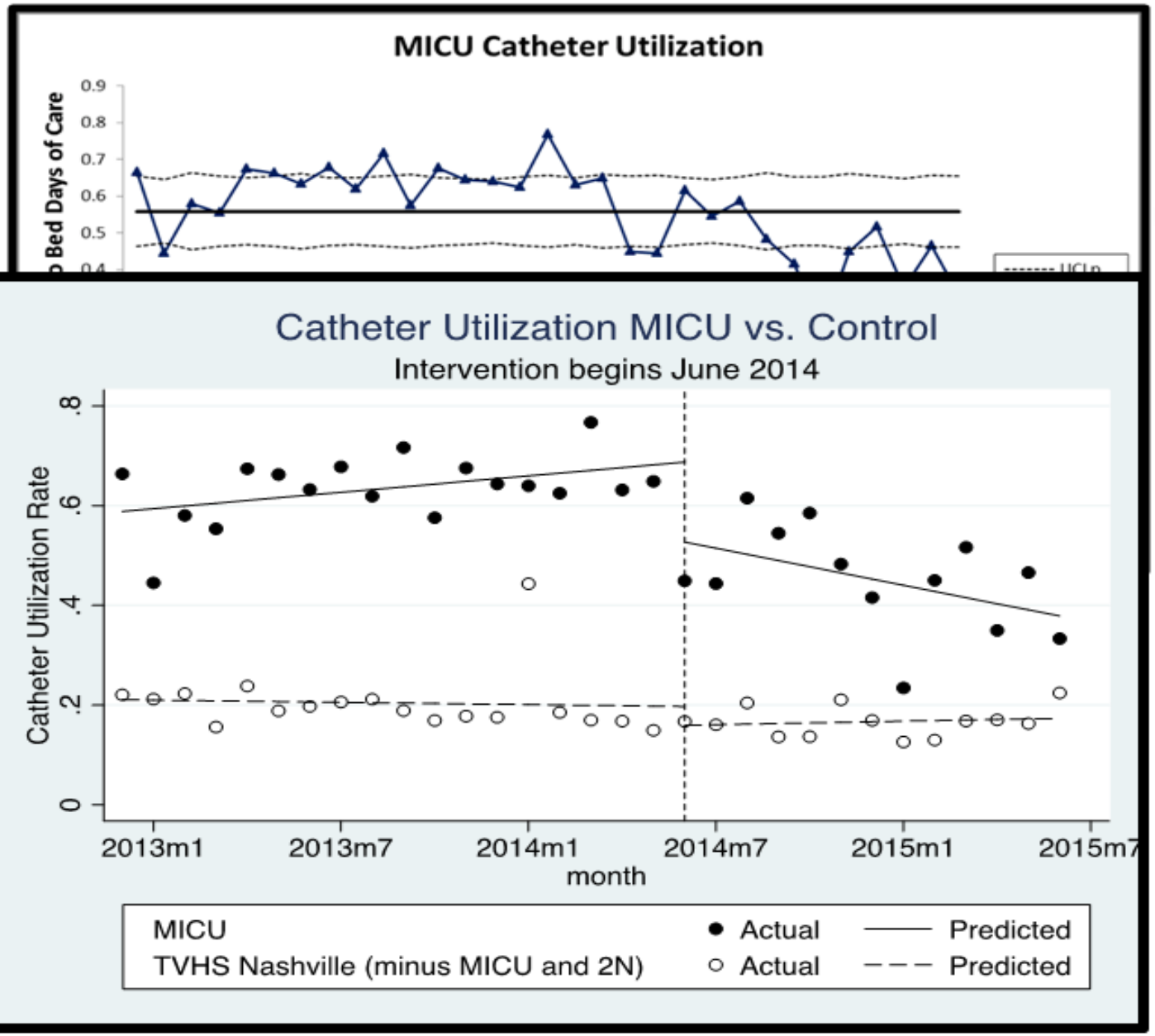

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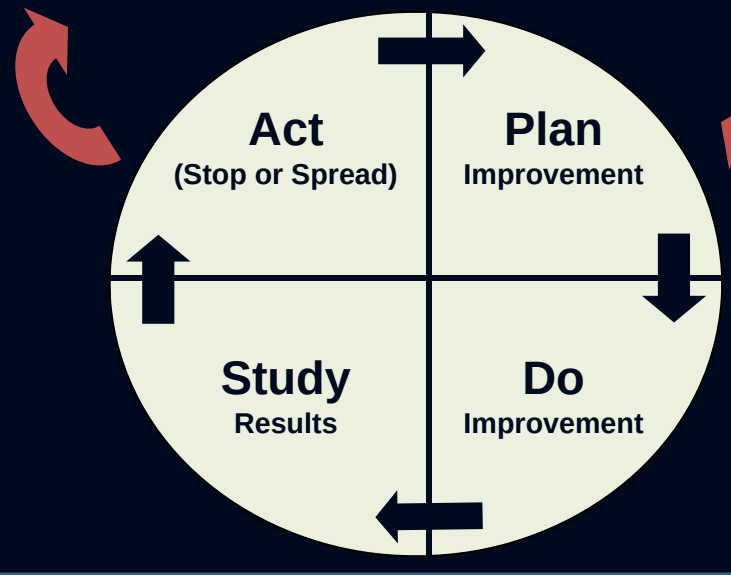
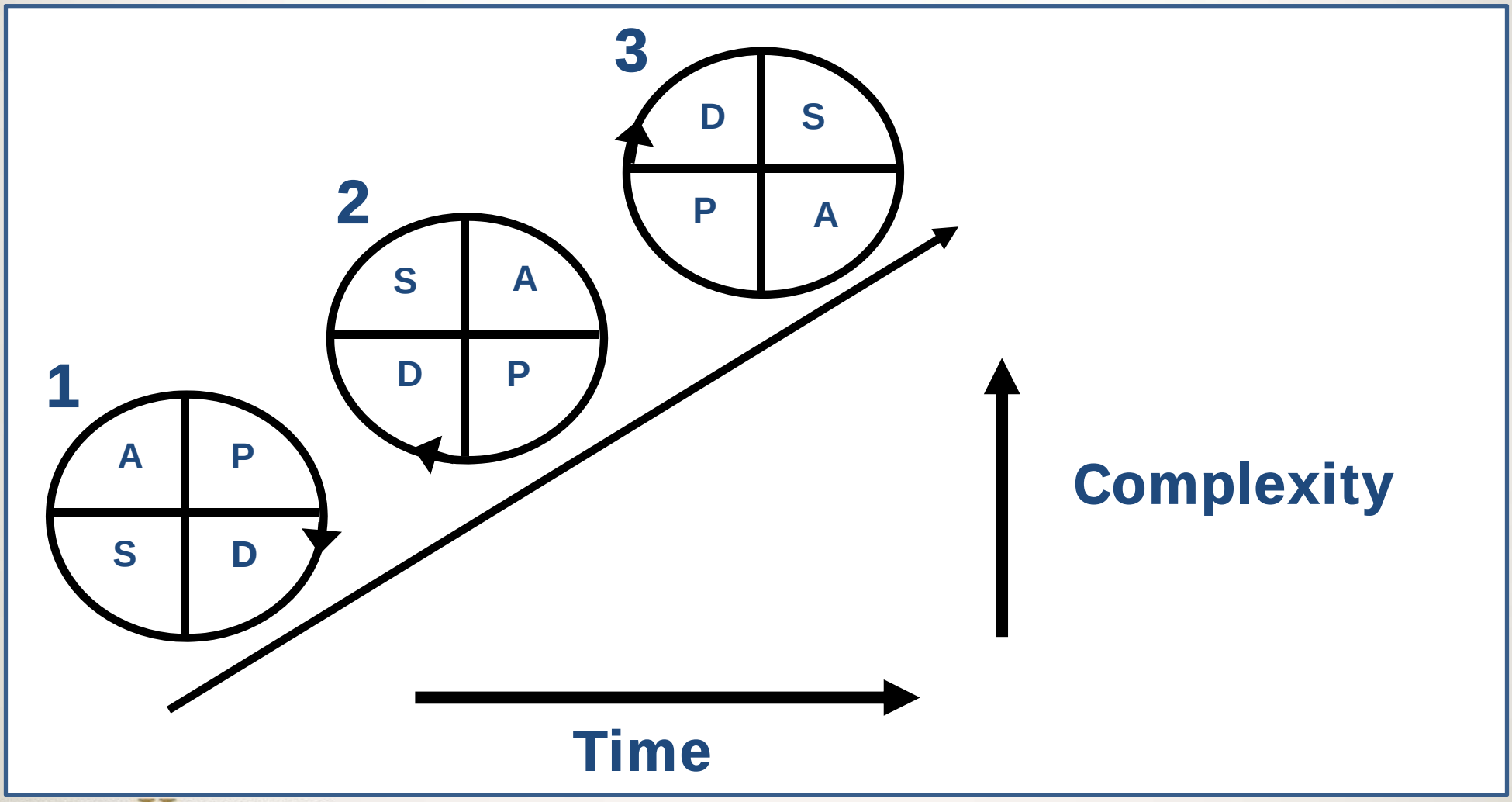


PDSA Cycle

1. Define your goal and your team
2. Define your Aims
3. Define your measures
4. Analyze your process
5. Plan

Multiple Small Interventions



Joiner and Nolan

The Seven "C's" of Teamwork

1. Capability	Right **people** with the right mix of KSA's?
2. Cooperation	Right **attitudes** about and willingness to team?
3. Coordination	Demonstrate necessary teamwork **behaviors**?
4. Communication	**Communicate** effectively with each other and outside?
5. Cognition	Possess a **shared understanding** (e.g., priorities, roles, vision)?
6. Coaching	Leader and/or team members demo **leadership behaviors**?
7. Conditions	Have favorable **conditions** (e.g., resources, culture)?

Implementation Science

ABOUT | ARTICLES | SUBMISSION GUIDELINES

RESEARCH ARTICLE | OPEN ACCESS | OPEN PEER REVIEW

Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science

Laura J Damschroder ✉, David C Aron, Rosalind E Keith, Susan R Kirsh, Jeffery A Alexander and Julie C Lowery

Implementation Science 2009 **4**:50 | **DOI:** 10.1186/1748-5908-4-50

Received: 05 June 2008 | **Accepted:** 07 August 2009 | **Published:** 07 August 2009

Consolidated Framework for Implementation Research

- Intervention characteristics
- Outer setting
- Inner setting
- Characteristics of individuals
- Process of implementation

Implementation Science **August, 2009**

VANDERBILT  THE INSTITUTE FOR MEDICINE AND PUBLIC HEALTH

VANDERBILT THE INSTITUTE FOR MEDICINE AND PUBLIC HEALTH

Home | Centers | Mission | Leadership | Research | Academics | Publications | News | Contact

IMPH investigators' research is in the news!

News and Highlights

Ellen Clayton, MD, JD, wins the David Rall Medal from the Institute of Medicine

E. Wesley Ely, MD, James Goldenring, MD, PhD, and **Marie Griffin, MD, MPH**, elected to membership in the Association of American Physicians

Laurence Zwiebel, PhD, named to the Cornelius Vanderbilt Chair in Biological Sciences

Ellen Clayton. MD, JD, elected to American Pediatrics Society

Vanderbilt established The Institute for Medicine and Public Health as a university-wide entity that will guide the institution's efforts at the intersection of medicine and public health.

The mission of the Institute for Medicine and Public Health is to improve personal and public health through discovery, training and service programs aimed to protect against threats to health, promote healthier living, improve the quality of health services, and prepare leaders to advance health and healthcare.

Our goals are to:

1. Improve health outcomes for people, including reduction of morbidity and premature mortality, restoration to normal or improvement in biological processes, and satisfaction with health services.
2. Improve the quality of public and personal health services so they are safe, timely, effective, patient-centered, equitable and efficient.
3. Discover, create and evaluate new content of healthcare delivery, including

SEARCH GO

Our Community

- Center for Asthma and Environmental Sciences Research
- Center for Biomedical Ethics and Society
- Center for Education and Research in Therapeutics
- Center of Excellence in Clinical Research Training
- Center for Health Promotion and Disease Management
- Center for Health Services Research
- Center for Improving Patient Safety
- Center for Interdisciplinary Health Workforce Studies
- Center for Medicine, Health and Society
- Center for Patient Healthcare Behavior
- Center for Perioperative Research in Quality
- Center for Professional Health
- Center for Quality Aging
- Center for Research and Innovation in Systems Safety
- Center for Surgical Quality and Outcomes Research

Population and Public Health: 2013

Associate Vice Chancellor for Public Health and Health Care
Senior Associate Dean for Population Health Sciences

>$175M/yr

>250 faculty

Institute for Medicine and Public Health

33
Department of Biostatistics

150
Center for Health Services Research

23;100
Institute for Global Health

12;50
Department of Health Policy

60
Epidemiology Center

9;60
Center for Biomedical Ethics and Society

Division of Epidemiology (Dept of Medicine)

Office for Education
MPH
PhD – Epidemiology
PhD - Biostatistics

Office for Community Engagement

VANDERBILT UNIVERSITY
MEDICAL CENTER

Center for Health Services Research

- Center for Quality and Implementation Research
  - Sunil Kripalani, MD, MSc
  - Growing portfolio of projects across medical center
- Center for Research and Innovation in Systems Safety
  - Matt Weinger, MD
  - Design of safe technology-human interfaces
- Center for Quality Aging
  - Jack Schnelle, PhD
  - CMS Innovation Award on Post-Acute Care

Center for Health Services Research

- **Center for Health Behavior and Health Education**
  - Tom Elasy, MD, MPH
- **Center for Effective Health Communication**
  - Russell Rothman, MD, MPP; Sunil Kripalani, MD, MSc
- **Center for Surgical Quality and Outcomes Research**
  - David Penson, MD, MPH
- **Quality Scholars Program**
  - Robert Dittus, MD, MPH

Health Services Research
Shared Core Resource

Qualitative Research Core (Schlundt)

Database Analysis Core (Penson, McPheeters)

Systems Safety/Human Factors Core Core (Weinger)

Effective Health Communication Core (Kripalani, Mulvaney)

Shared:
Administration
Finance
Informatics
Evaluation

Patient-Centered Measurement Core (Elasy)

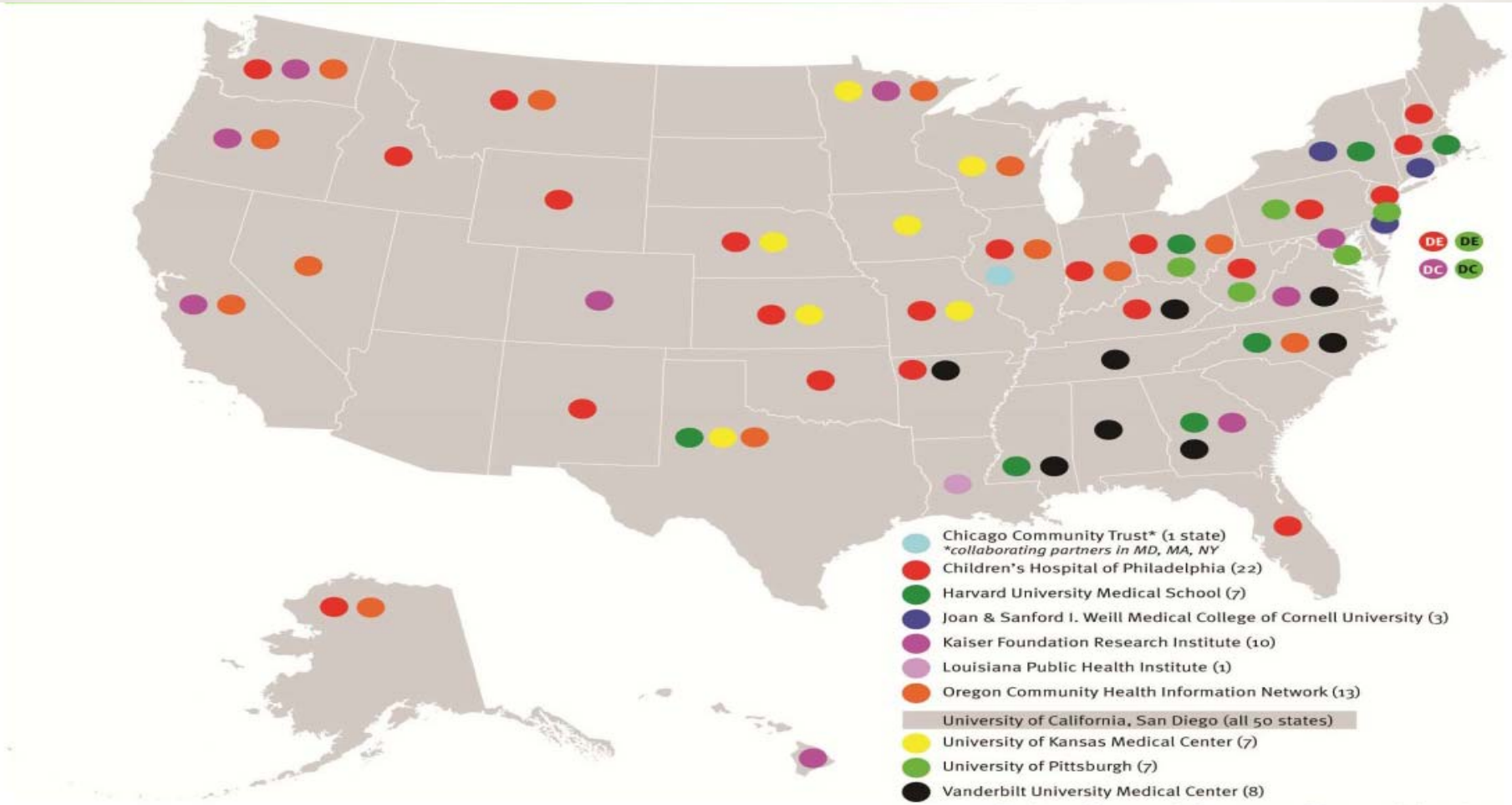
Decision Analysis Core (Speroff, Dittus)

Community Engaged Research Core (Rothman)

Implementation Science/QI Core (Speroff, Dittus)

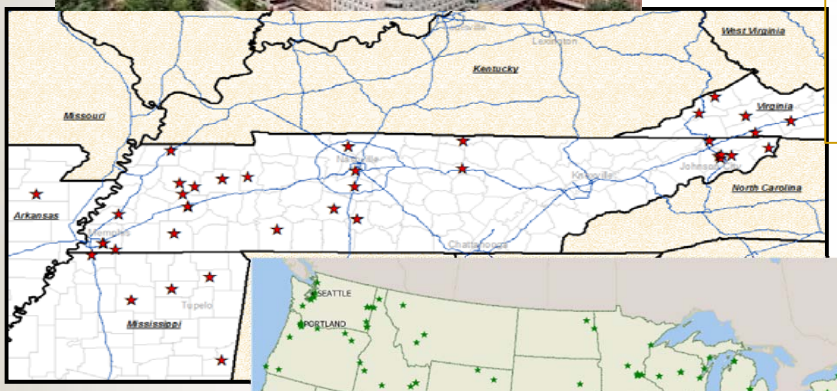
VANDERBILT UNIVERSITY
MEDICAL CENTER

PCORnet
110 million patients



Expanded Mid-South CDRN Clinical Reach

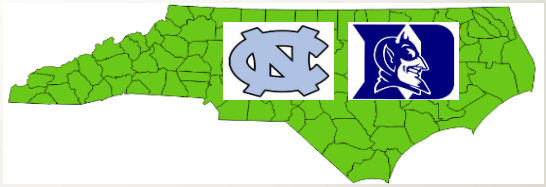
VUMC: hospitals, >100 clinics engaging 2 million patients. Meharry/Metro General Hospital: 100,000 pts



VHAN: 8 health systems, >30 hospitals, >300 clinics engaging >3 million pts

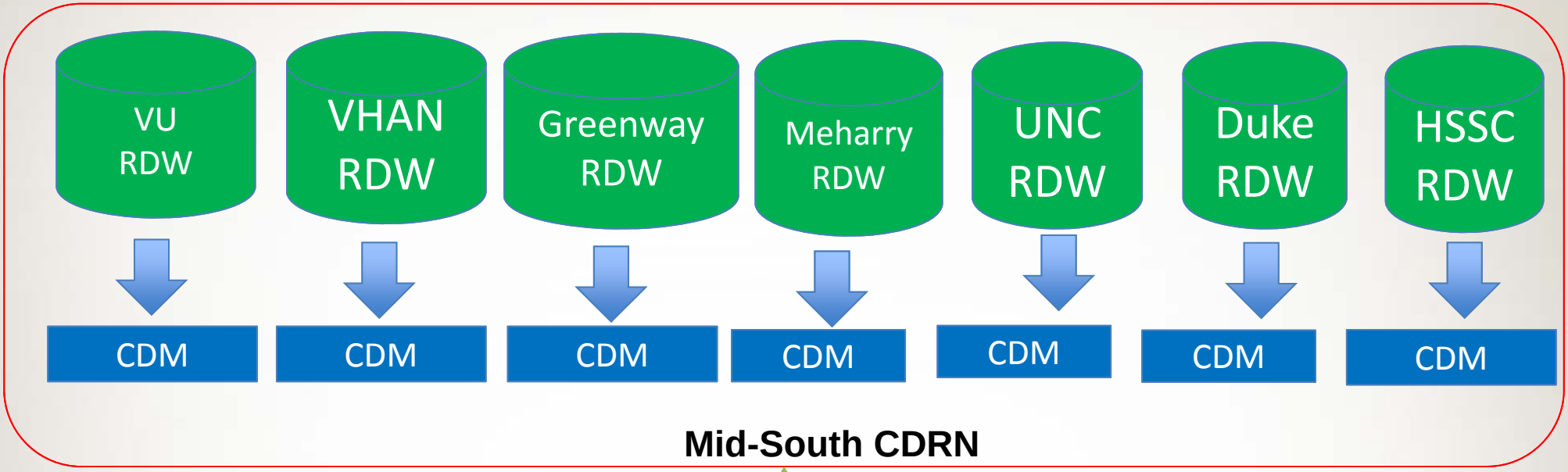
Greenway Health: 1600 clinics engaging 14 million pts

Carolinas Collaborative with > 6 million pts



VANDERBILT UNIVERSITY MEDICAL CENTER

Data Aggregation Across CDRN

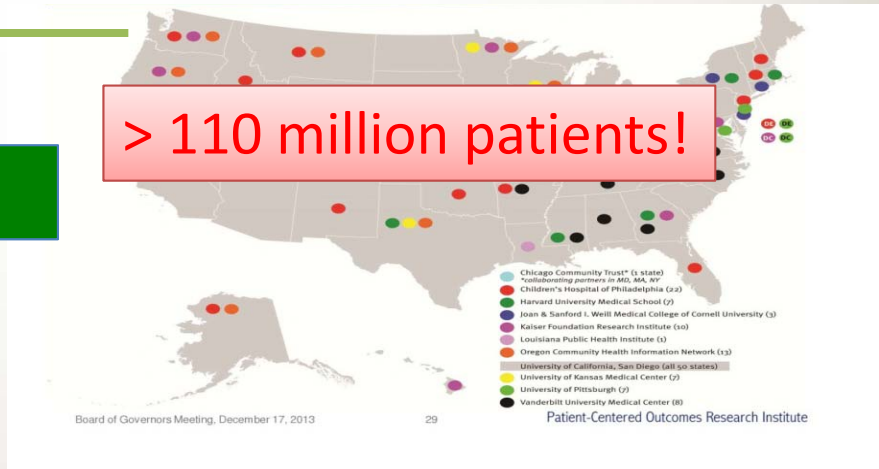


1. Queries and Analytic Software Packages from PCORI

2. CDRN returns Counts and Aggregate resulting data

PopMedNet

PCORNet



VANDERBILT UNIVERSITY MEDICAL CENTER

MidSouth PCORnet Common Data Model >20 million patients

Site	Sites in CDM	CDM Years	Patients in CDM	Encounters in CDM
Vanderbilt	Vanderbilt University Health System	2009-current	**1,458,542**	13,631,309
VHAN	Williamson Medical Center, Maury Regional Medical Center, West TN Health		**346,241**	968,254
Greenway	952 sites	2010-current	**10,000,000**	110,823,801
UNC	UNC Hospitals , Rex Hospitals, UNC Physicians Network (more sites to come in June and July)	2004-Present	**4,078,704**	15,270,648
Duke	Duke University	2005-2015	**2,062,439**	34,172,582
HSSC	Greenville Health System (GHS), MUSC Health (MUSC), Palmetto Health (PH), and Spartanburg Regional Healthcare System (SRHS)	GHS, MUSC, PH: 2007 - 2015 SRHS: 2011 - 2015	**2,879,835**	39,068,523
Meharry	Meharry Medical College, Nashville General Hospital, and the Matthew Walker Comprehensive Health Center	2011-current (Meharry Medical Group), 2004-2011 (limited to PATIENT DEMOGRAPHICS)	**18,874**	18,874

>60 Ongoing Studies

Pragmatic Research Examples

- What is the optimal dose of aspirin after a heart attack?
- What is the best second drug for treatment of diabetes after starting with metformin/
- What is the comparative effectiveness of different medications for ADD/ADHD/
- What are the risks vs benefits of testosterone therapy in men with low testosterone?

Pragmatic Research Examples

- What is the role of educational interventions to promote medication adherence?
- What is the role of educational programs that promote spacer use for Asthma?
- What is the role of education and electronic referral to State Quit lines on tobacco cessation
- What is the role of home health or tele-health approaches to prevent readmission
- What is the role of improved discharge processes to prevent readmission

VA Quality Scholars Program
Established 1998

- Dartmouth
- Case Western
- Iowa
- UAB
- Vanderbilt
- UCSF

UCLA (added 2012)

Emory (added 2012)

Coordinating Center at Houston

VA Quality Scholars Program

- Two tracks: (1) research & (2) leadership
- Two MDs and One Nurse per year
- Additional clinical professions considered
- Two-year training (3rd year possible)
- MPH; research; publications; QI projects
- Quality Improvement/Implementation Science Curriculum
- Weekly Work-in-Progress; seminars in HSR & Quality

VA Quality Scholars Program

- 20 QSP alumni on faculty at Vanderbilt
- Leadership Roles: Associate Chief of Staff; Chief Quality Officer; Chief Medical Officer; Director of Quality for ___; Director of QI Education for ___; Clinical Director for ___
- Scholarship Roles: Traditional tenure-track faculty
- National network of alumni
- Highly desired skills
- Extensive job opportunities

VA Quality Scholars Program

- Rolling admissions; sooner is better – 12-18 months ahead
- Full-time VA PG stipend; some travel provided
- MPH tuition paid
- Mentorship team
- 20% time for clinical work; at VA or can be at VUMC
- Contact me if interested (robert.dittus@vanderbilt.edu)


"We are what we repeatedly do.
Excellence, then, is not an act, but a habit."
Aristotle

Structure, Strategy, Culture

- **Culture eats strategy for breakfast (structure for lunch, technology for dinner and everything else throughout the day).**

Downtown Stockholm