

Epi 245: Translating Evidence into Practice, Policy & Public Health: *Theory & Design*

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UCSF Program in Implementation and Dissemination Science

Spring 2014	Fall 2014	Winter 2015
Epi 245: <i>Translating Evidence into Practice</i>	Epi 246: <i>Individual-Centered Strategies</i>	Epi 247: <i>Organization-Centered Strategies</i>
Epi 248: <i>Community-engaged Research</i>	Epi 242: <i>Program Evaluation</i>	
Epi 249: <i>Translating Evidence into Policy**</i>	**not offered 2014	

Other IDS-Oriented Courses in TICR

WINTER

- Epi 206: Medical Informatics
- Epi 213: Decision and Cost-Effectiveness Analysis

SPRING

- Epi 211: Clinical Performance and Outcomes Measurement
- Epi 214: Systematic Reviews and Meta-Analysis
- Epi 222: Health Disparities Research Methods
- Epi 255: Social Epidemiology

Case Studies

- Translation Successes
- Translation Failures
 - Evidence Failure
 - Cox-2 inhibitors
 - Evidence Inconclusive
 - Mammography age 40-49; PSA testing
 - Evidence Not Auto-Implementing
 - Practice Guidelines
 - Unintended Consequences of Translation
 - Cost-sharing/Co-payments

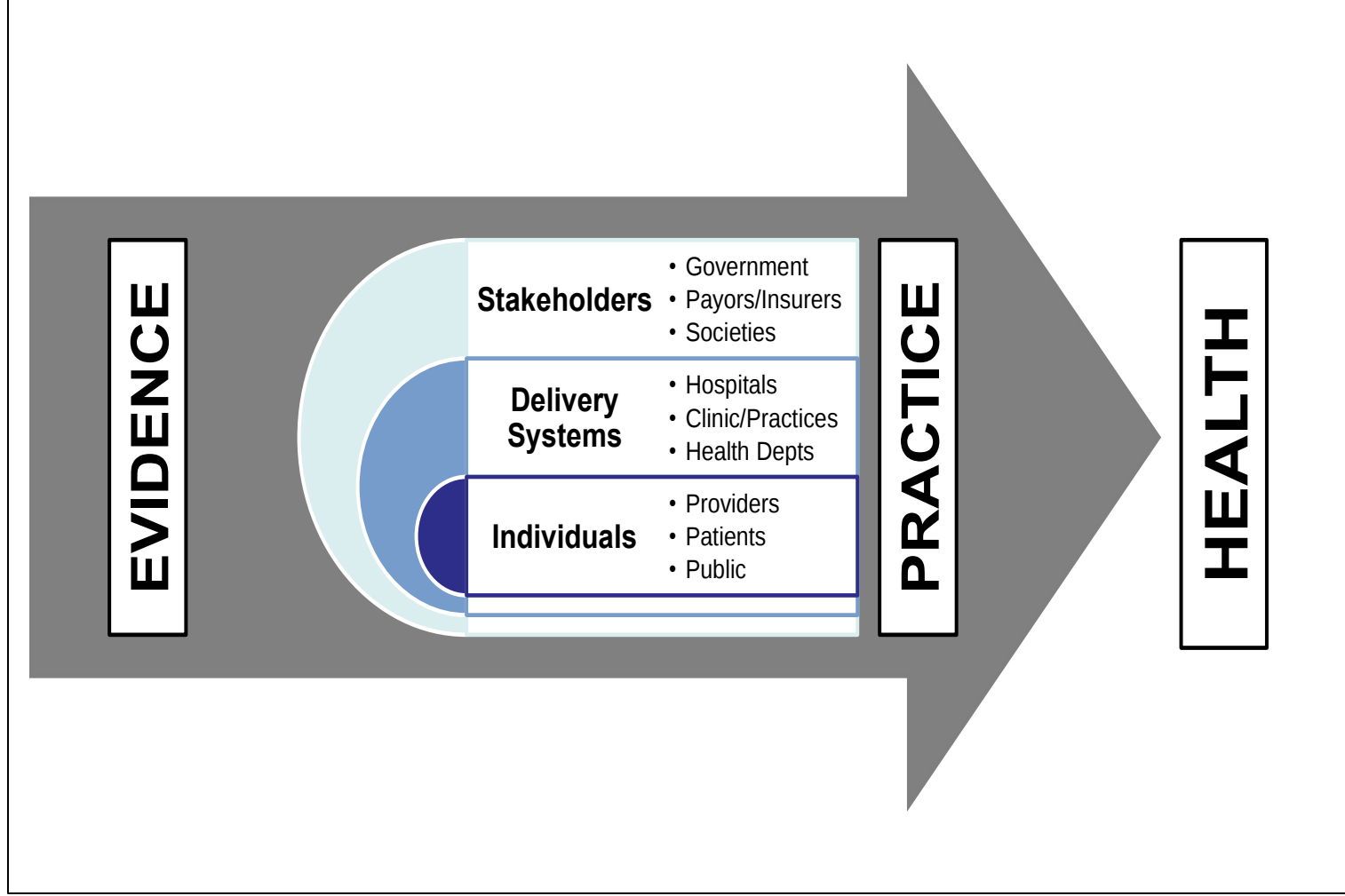
Epi 245 Course Goals

- **Course Goals**

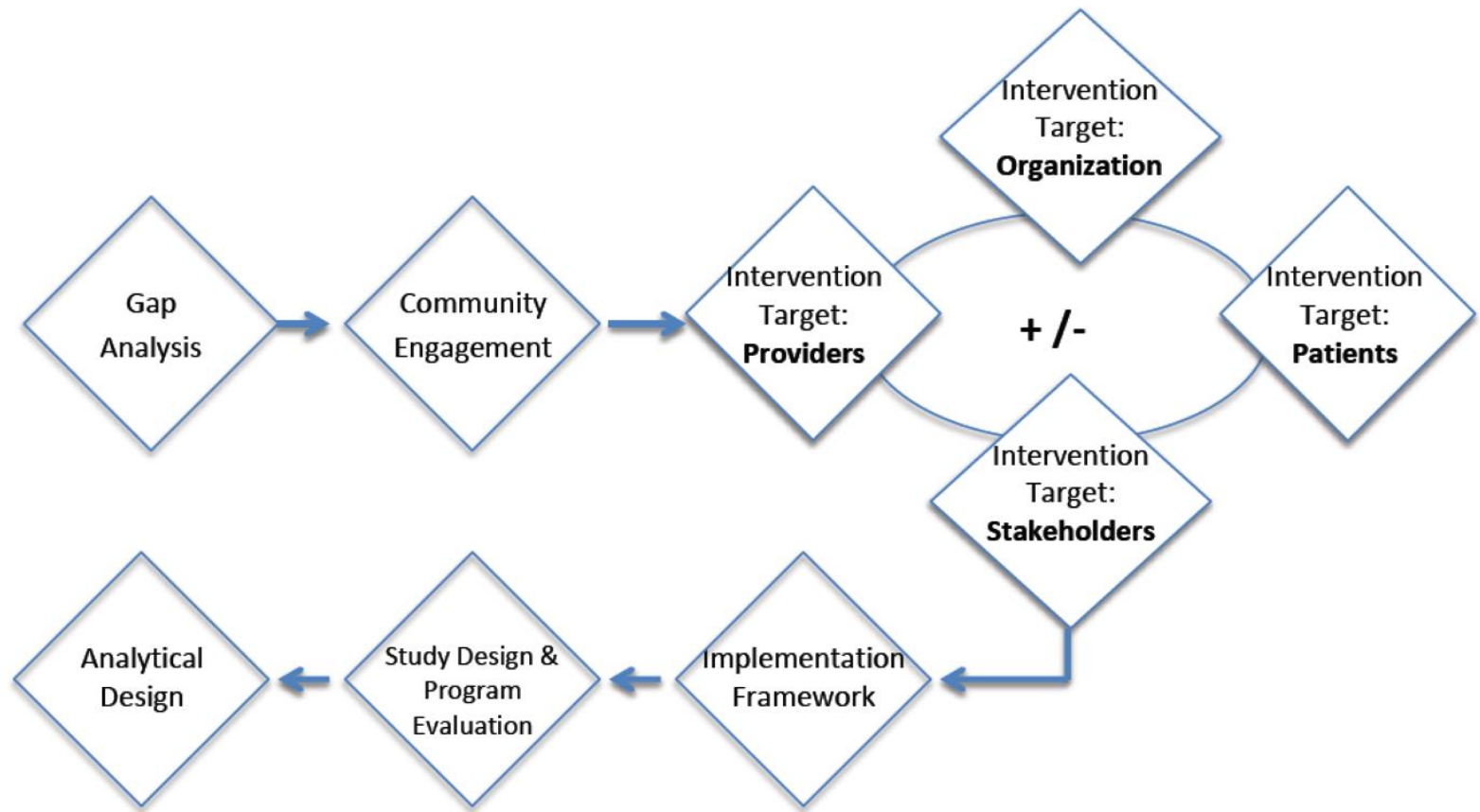
- Identify and justify medical evidence that is ready for translation;
 - Apply a conceptual framework for translating evidence into practice, policy and public health;
 - Apply theory and evidence to the design of more effective health care interventions; and
 - Evaluate and analyze healthcare interventions using a combination of techniques
- **** Develop and refine an intervention protocol

- **KEY Behavior Δ Targets for Interventions**

- Individuals (Population/Community/Public/Patients/Clinicians)
- Delivery Systems/Organizations
- Stakeholders/ Policymakers



Protocol Development Sequence



Where You Will Learn

- **BEFORE CLASS**

- Readings
- Video-taped full-length lecture + slides

- **DURING CLASS**

- Lecture material
- Small Group sessions for protocol development

- **AFTER CLASS**

Thurs	Fri	Sat	Sun	Mon	Tues	Wed
Class +/- Small Group			1. Complete Self Assessment 2. Upload Protocol Exercise	1. Provide Protocol Comments to Peers 2. Receive Feedback on Protocol 3. Complete Readings for next Class 4. Prepare for Small Group		

- **Grades**

- Based on self-assessments (25%); class and online participation (25%); final protocol (25%) OR final exam (25%);

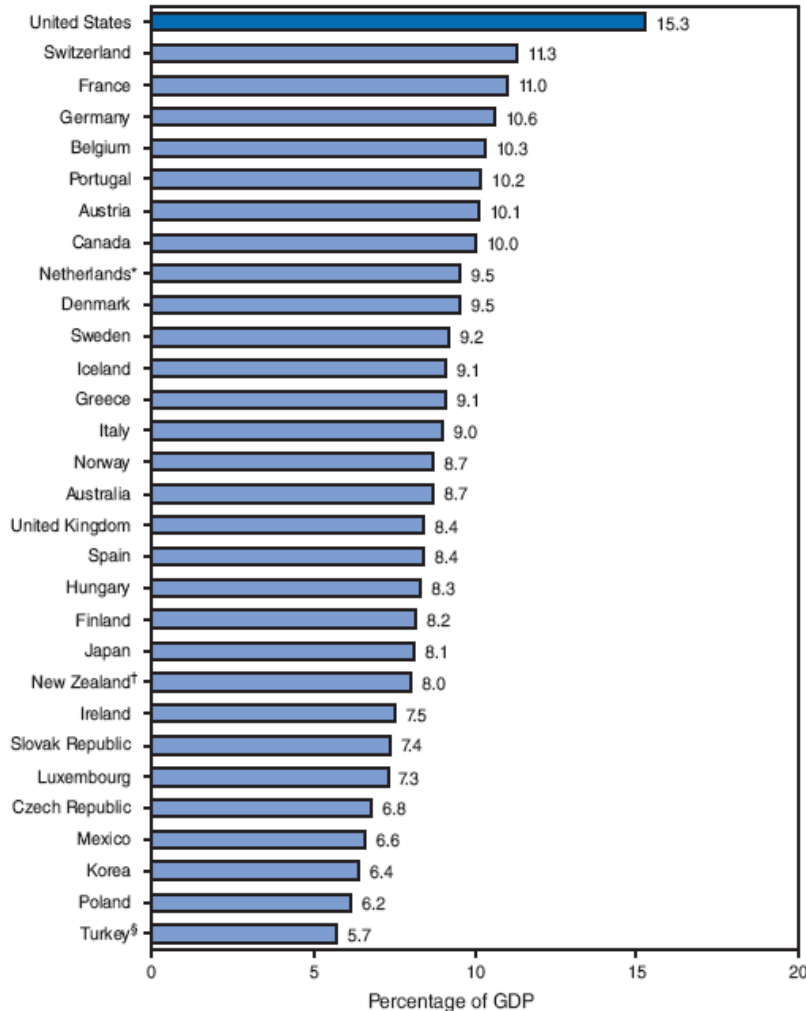
TICR Professional Conduct Statement

- I will maintain the highest standards of academic honesty
- I will neither give nor receive aid in examinations or assignments unless such cooperation is expressly permitted by the instructor
- I will conduct research in an unbiased manner, report results truthfully, and credit ideas developed and work done by others
- I will write answers in my own words, and, when collaboration is permitted, acknowledge collaborators when answers are jointly formulated

Background for Translating Evidence into Practice

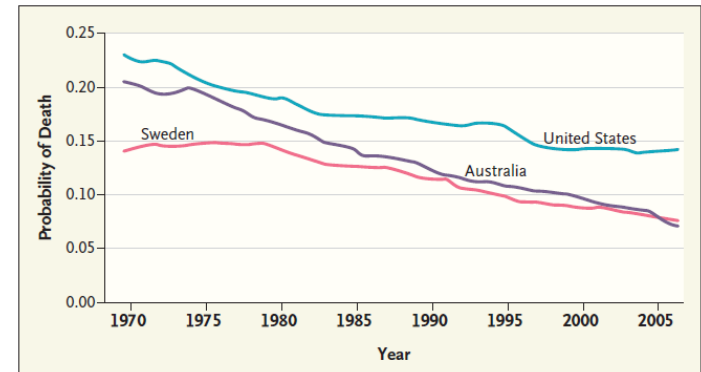
Spend so much...

Get so little...



World Health Rankings

- infant mortality 39th
- female mortality 43rd
- male mortality 42nd
- life expectancy 36th



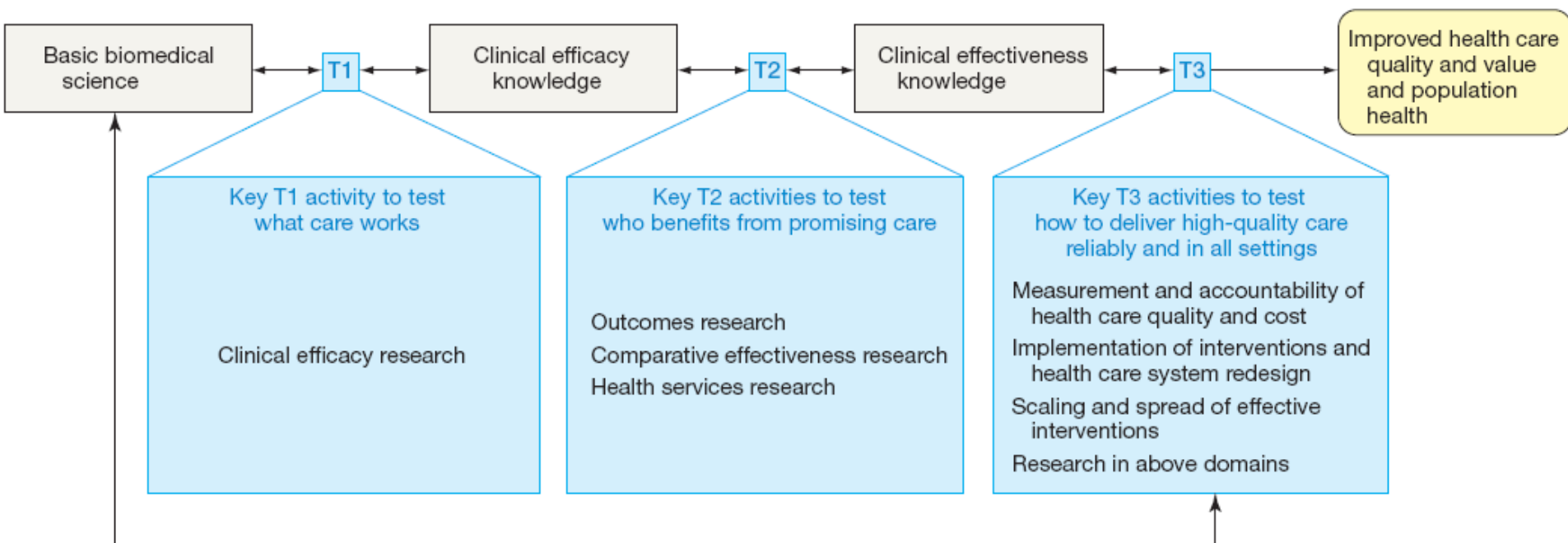
Probability of Death for Boys and Men 15 to 60 Years of Age in Sweden, Australia, and the United States, 1970–2007.

Data are from the Australian Bureau of Statistics, the U.S. National Center for Health Statistics, and the World Health Organization.

Murray C, Frenk J, NEJM
2010;362:99

Translational Pathways

Figure. The 3T's Road Map



T indicates translation. T1, T2, and T3 represent the 3 major translational steps in the proposed framework to transform the health care system. The activities in each translational step test the discoveries of prior research activities in progressively broader settings to advance discoveries originating in basic science research through clinical research and eventually to widespread implementation through transformation of health care delivery. Double-headed arrows represent the essential need for feedback loops between and across the parts of the transformation framework.

Translating Evidence Into Practice --evolving language

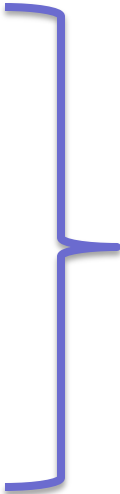
- T3 (practice)
- T4 (public sector)
- T5 (global health)
- Knowledge Translation

NIH Definitions

- Implementation =
 - “the use of strategies to **adopt** and **integrate** evidence-based health interventions and change practice patterns within specific settings”
- Dissemination =
 - “the targeted distribution of information and intervention materials to a specific public health or clinical practice audience”

Examples of Implementation Science Research

- Identification of strategies to encourage provision and use of effective health services
- Identification of strategies to promote the integration of evidence into policy and program decisions.
- Appropriate adaptation of interventions according to population and setting
- Development of innovative approaches to improve healthcare delivery
- Setting up an impact evaluation for a population-based intervention

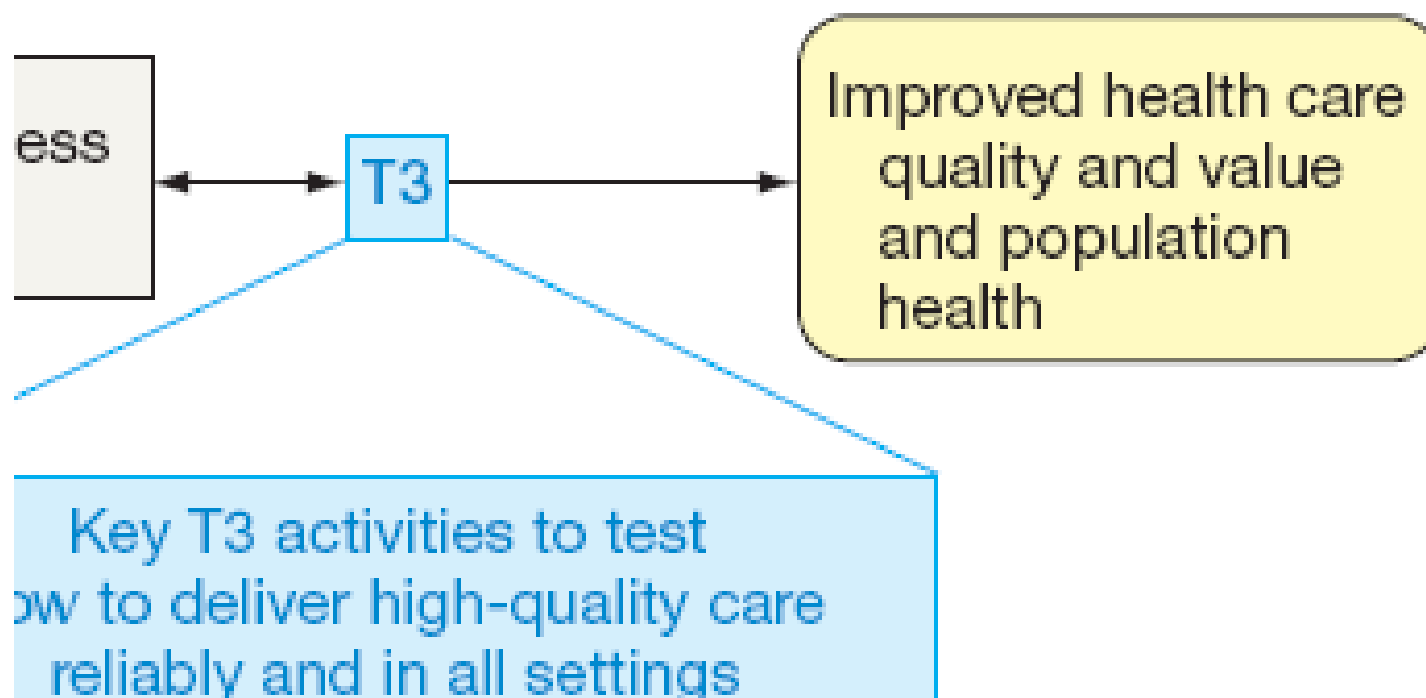


Epi 245

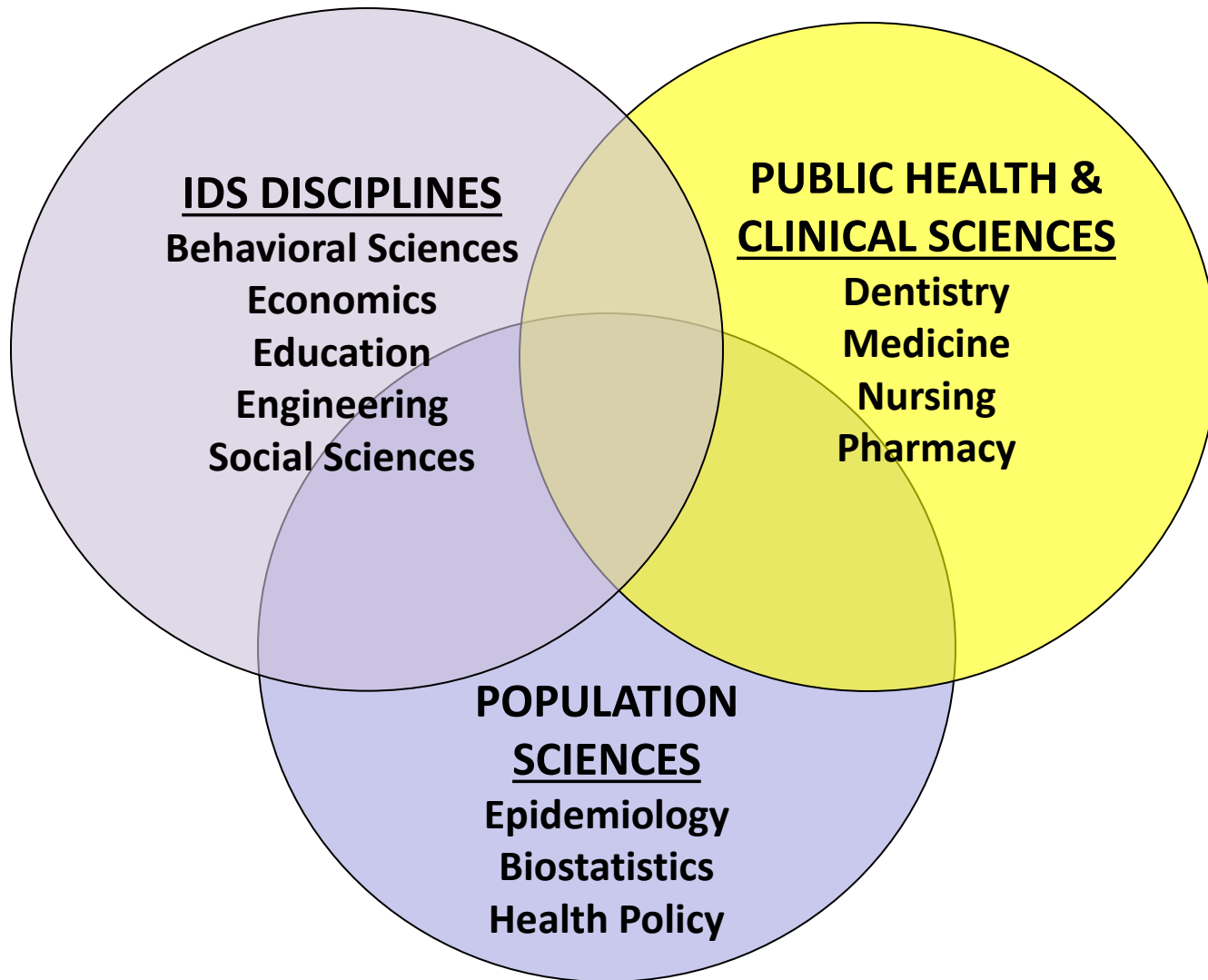
Challenges Facing Implementation Science Research

- **New and developing field**
 - Little consensus on optimal methodologies
- **Interdisciplinary and multidisciplinary approach**
 - Few established communication channels for coordination between researchers, implementers, policymakers, and communities/populations
 - Gap between implementation researchers and implementers
- **Causal inference and generalizability**
 - Efficacy vs. effectiveness in real-world settings
 - Need for qualitative and quantitative methods...

How Do We Get There?



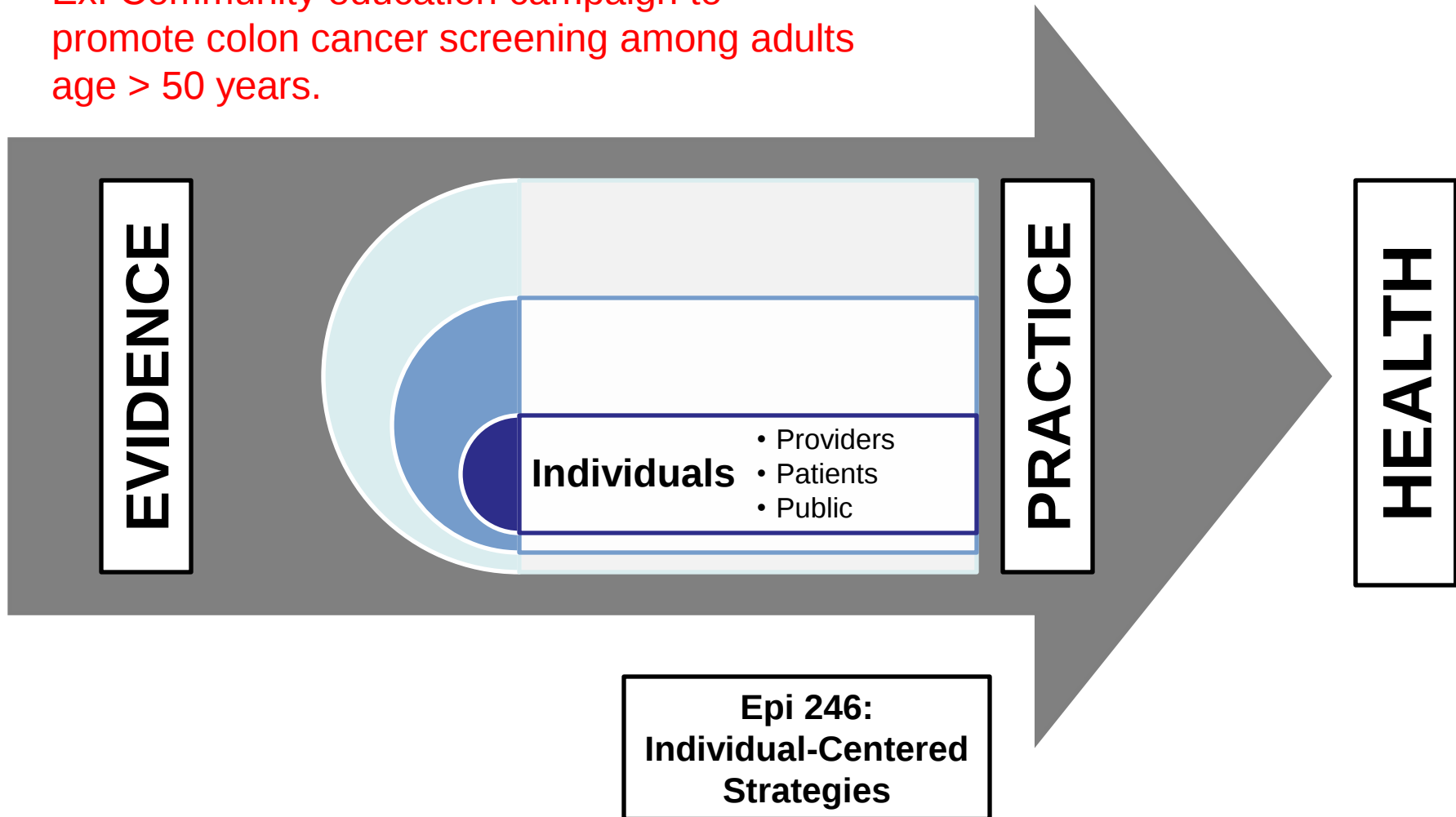
ImS: The Next Wave of Clinical and Translational Researchers at UCSF



Conceptual Framework for How “New Evidence” is Translated into Improve Health

An Ecological View of Improving Practice (think: *Behavior*)

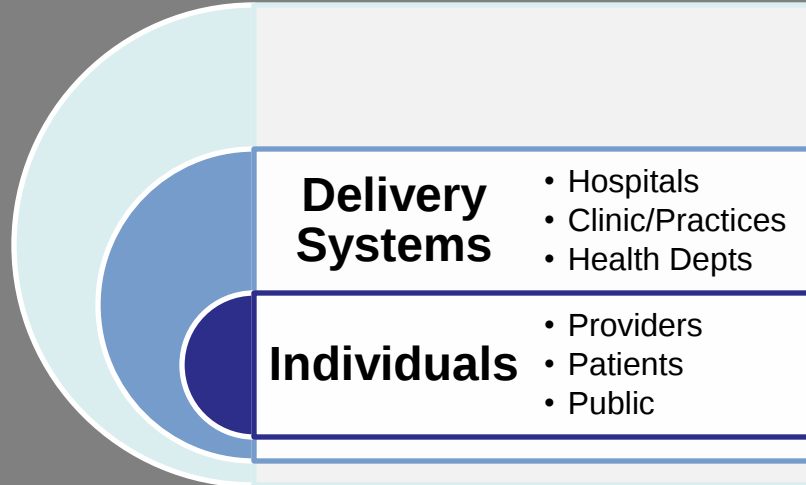
Ex. Community education campaign to promote colon cancer screening among adults age > 50 years.



An Ecological View of Improving Practice (think: *Behavior*)

Epi 247:
Delivery System –
Centered Strategies

EVIDENCE



PRACTICE

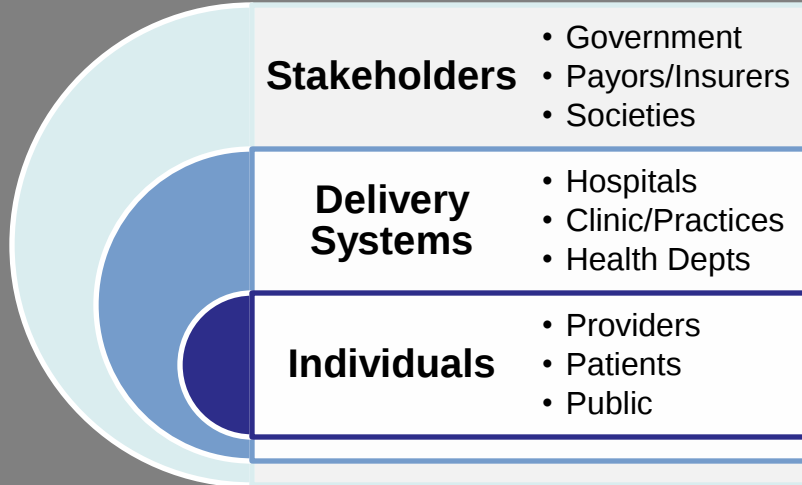
HEALTH

Ex. Public report cards of health plans
for cancer screening rates

An Ecological View of Improving Practice (think: *Behavior*)

Epi 249:
Advocacy &
Policy Strategies

EVIDENCE



PRACTICE

HEALTH

Epi 248:
Community-Engaged
Strategies

Ex. Create legislation to make cancer screening free for Medicare beneficiaries
Ex. Including community reps on research team

Translational Tools:

Whose Behavior Do They Target?

- Clinical Practice Guidelines
- Mass Media Campaign
- Exam Room Posters
- Hospital Report Cards

Individual	Organization	Stakeholder

Principles Guiding Implementation Strategy

1. Behavior change is inherent in the translation of evidence into practice, policy and public health.
2. Key components of behavior change strategies include the intervention (stimulus), a response, and feedback to intervention stakeholder.
3. Successful implementation of behavior change strategies are iterative, favoring cycles and bidirectional relationships.
4. Community engagement is imperative to achieving meaningful and sustained behavior change.

Course Schedule

- Week 1: Making Your Case; **Small Group**
- Week 2: Quality Improvement; Community Engagement
- Week 3: Changing Individual/Public Behavior; **Small Group**
- Week 4: Organizational Behavior; LEAN/Toyota Management
- Week 5: Tools and Implementation Frameworks; **Small Group**
- Week 6: Translating Evidence into Policy; Panel Discussion
- Week 7: Study Design & Program Evaluation; **Small Group**
- Week 8: Analytical Design Issues; **Small Group**
- Week 9: Protocol Presentations
- Week 10: Final Exam

Learning Objectives

Lecture #1

- Provide a conceptual framework for translating evidence into practice, policy and public health.
 - ...that identifies key behavior(s) → health outcome
 - ...patient, provider and system factors → influence the target behavior of interest

Selecting Evidence to Translate

- Measure quality, its determinants, and the quality gap
 - Distinguish processes and outcomes of care as quality indicators
- Appreciate the relationship between the quality gap and the outcome gap.

Case Study

- A medicine resident is frustrated by patients' antibiotic prescription requests when he moonlights at Kaiser urgent care.
- Inspired by CDC Clinical Practice Guidelines, he wants to develop a practice guideline to guide antibiotic treatment decisions for acute bronchitis.

Identifying and Rating the Evidence

What Evidence Do you Want to Translate?

Processes of Care

Examples

What Evidence Do you Want to Translate?

Processes of Care

Examples

- Health Related Behaviors
- Tests
- Treatments
- Procedures
- Interventions
- Programs

Is the Evidence Ready for Translation?

Examples

- Efficacy
- Effectiveness
- Systematic Reviews
- Meta-analysis
- Consensus Statements
- Practice Guidelines

Evidence Synthesis

Rating the Evidence: Systematic Reviews

- The Cochrane Collaboration (www.cochrane.org)
- Cochrane Effective Practice and Organisation of Care (EPOC) Group (www.epoc.cochrane.org)
 - Systematic reviews of health care interventions
- National Cancer Institute (www.cancer.gov)

Making Recommendations: Guidelines

- USPSTF (www.ahrq.gov/CLINIC/uspstfix.htm)
- CDC (www.cdc.gov)
- Professional Societies

Practice Guidelines

- National Guidelines Clearinghouse (US)
 - www.guideline.gov
- National Institute for Health and Clinical Excellence (UK)
 - <http://www.nice.org.uk>
- The Guidelines International Network
 - <http://www.g-i-n.net>

Is the Evidence Ready for Translation?

Efficacy < Effectiveness <

Systematic Reviews < Guidelines

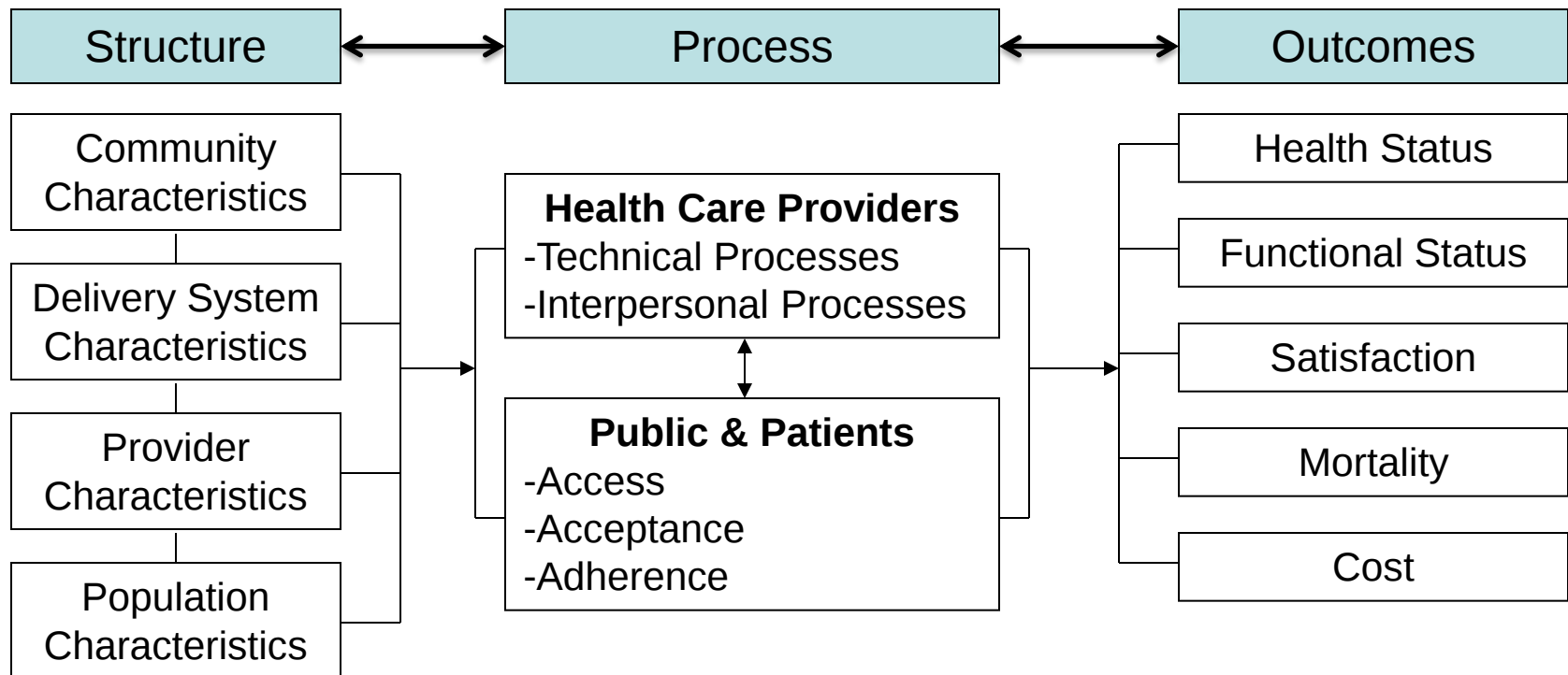
*subtext: evidence that is ready for translation
inevitably reflects quality of care*

Measuring Quality and Determining the Quality Gap

Quality of Health Care

-c. 1980s

- Donabedian A. *JAMA* 1988;260:1743-8



Finding Quality Measures in the Field

THE STATE OF HEALTH CARE QUALITY **2007**

NATIONAL COMMITTEE FOR QUALITY ASSURANCE
WASHINGTON, D.C.

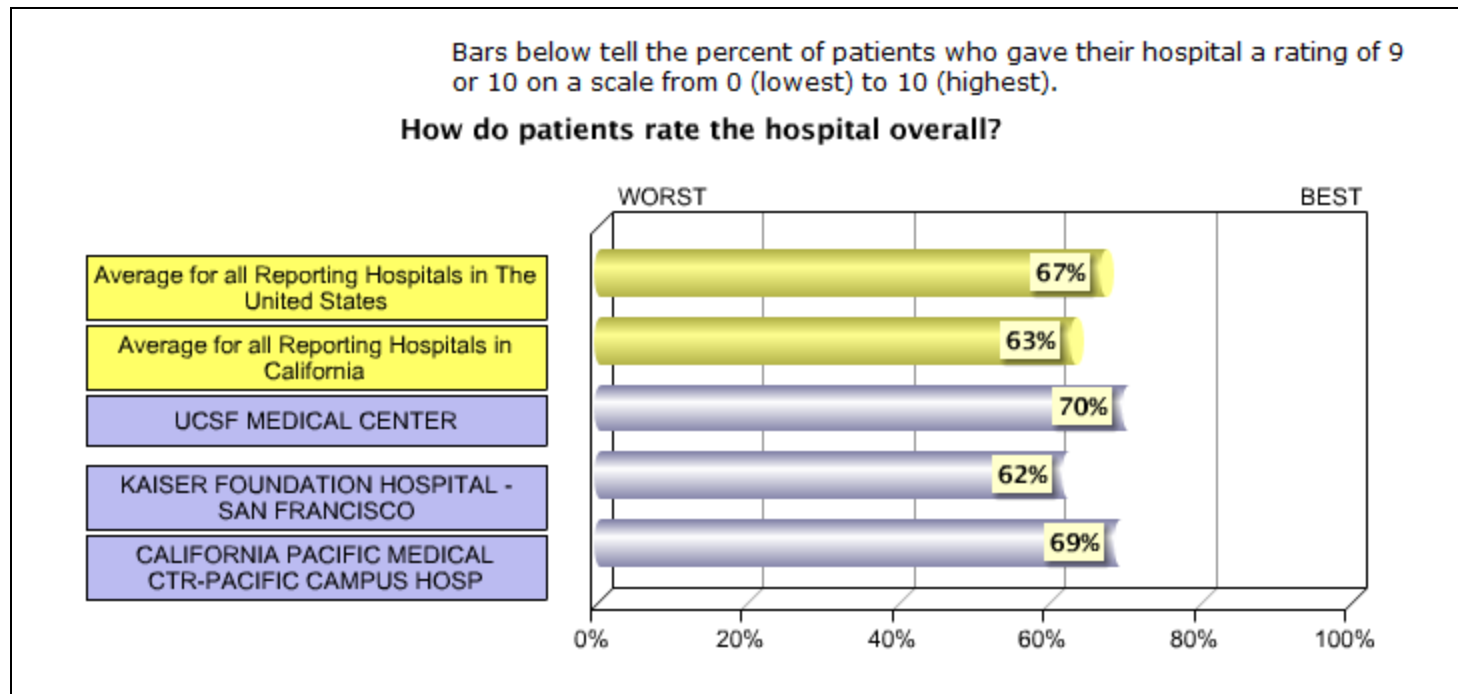
HEDIS MEASURES OF CARE17

Adolescent Immunization Status	18
Annual Monitoring for Patients on Persistent Medications	19
Antidepressant Medication Management	20
Appropriate Testing for Children with Pharyngitis	22
Appropriate Treatment for Children with an Upper Respiratory Infection	23
Avoidance of Antibiotic Treatment in Adults with Acute Bronchitis	24
Beta-Blocker Treatment and Persistence of Beta-Blocker Treatment After a Heart Attack	25
Breast Cancer Screening	27
Cervical Cancer Screening	28
Childhood Immunization Status	29
Chlamydia Screening	31
Cholesterol Management for Patients with Cardiovascular Conditions	32
Colorectal Cancer Screening	34
Comprehensive Diabetes Care	35
Controlling High Blood Pressure	38
Disease Modifying Anti-Rheumatic Therapy in Rheumatoid Arthritis	39
Flu Shots for Adults	40
Follow-up After Hospitalization for Mental Illness	41
Follow-up Care for Children Prescribed ADHD Medication	43
Glaucoma Screening in Older Adults	44
Imaging Studies for Low Back Pain	45
Initiation and Engagement of Alcohol and Other Drug Dependence Treatment	46
Medical Assistance with Smoking Cessation	48
Medication Management in the Elderly	50
Osteoporosis Management in Women Who Had a Fracture	52
Prenatal and Postpartum Care	53
Use of Appropriate Medications for People with Asthma	55
Use of Spirometry in the Assessment and Diagnosis of COPD	56

CAHPS MEASURES OF CONSUMER EXPERIENCE57

Hospital Compare

www.hospitalcompare.hhs.gov



CMS/JCAHO & Hospital Compare -Hospital Quality Measures

Patient Hospital Experiences

- Communication
- Pain Control
- Explanation of Treatments and Recovery
- Cleanliness & Quietness
- Overall Rating and Recommendation to Others

Process of Care Measures

- Surgical Care Improvement Project Measures
- Heart Attack & Chest Pain
- Pneumonia
- Heart Failure
- Childhood Asthma

Outcome Measures

- Risk-Adjusted Condition-Specific 30-day Mortality; Readmissions

Use of Medical Imaging

Measure Quality Yourself

-National Surveys/Reports

Behavior

–Public/Patient

–Provider

–Delivery System

Data Sources

BRFSS; NHIS; NHANES; MEPS

NAMCS; NHAMCS

NHDS

Measure Quality Yourself

-Administrative Claims Data

Administrative data collected as a result of “claims” submitted by physicians/practices for reimbursement.

- Medicare (UB-92)
 - No pharmacy data
- Medicaid (Drug Utilization Review; OSHPD)
 - Enrollment rollercoaster
- Integrated Delivery Systems (Kaiser; Geisinger; etc)
 - Generalizability
- Hospital Networks (Premier)
- Managed Care Organizations
- UCSF
 - Challenges with EMR data

Case Study (cont)

Table 1.—Leading Ambulatory Care Diagnoses Accounting for Antibiotic Prescriptions for Adults in the United States*

Diagnosis (ICD-9-CM Code)†	Office Visits (in 1000s)	Antibiotic Prescriptions (in 1000s)	Proportion of Total Antibiotic Prescriptions, %
Sinusitis (461, 473)	13 369	7494	12
Bronchitis (466, 490)	10 235	6762	11
Upper respiratory tract infection (460, 465)‡	11 033	5842	10
Pharyngitis (462)	7412	5634	9
Urinary tract infection (590, 595, 599)	4858	2798	5
Otitis media (381.0, 381.3, 381.4, 382.0, 382.9)	4226	2003	3

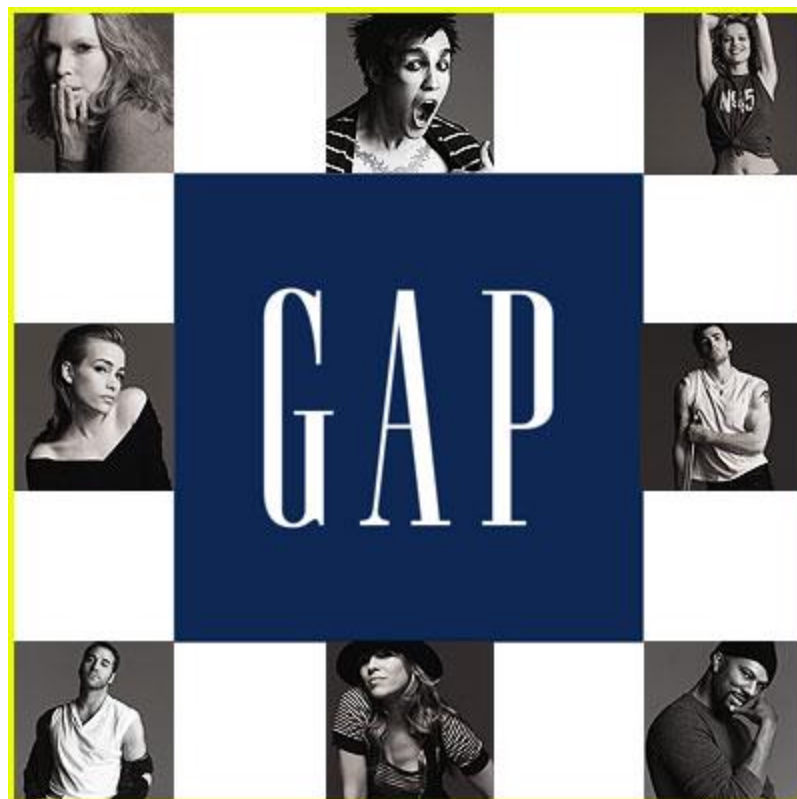
*Data from the National Ambulatory Medical Care Survey, 1992.

†Codes from *International Classification of Diseases, Ninth Revision, Clinical Modification*²⁶ (ICD-9-CM).

‡Nasopharyngitis (ICD-9-CM code 460) is included with upper respiratory tract infection.

Antibiotic Prescription Rates

- Sinusitis 56%
- Bronchitis 66%
- URI 53%



Care Gaps and Quality Gaps

ACTUAL *minus* BENCHMARK*

OBSERVED *minus* EXPECTED*

*behavior, performance, screening,
prescribing, testing, communicating, office
visits, physical activity, etc.

Quality Indicators → “Benchmarks”

- When guidelines exist... external benchmarks
 - HEDIS
- When guidelines don't exist... analysis of variation
 - Dartmouth Atlas

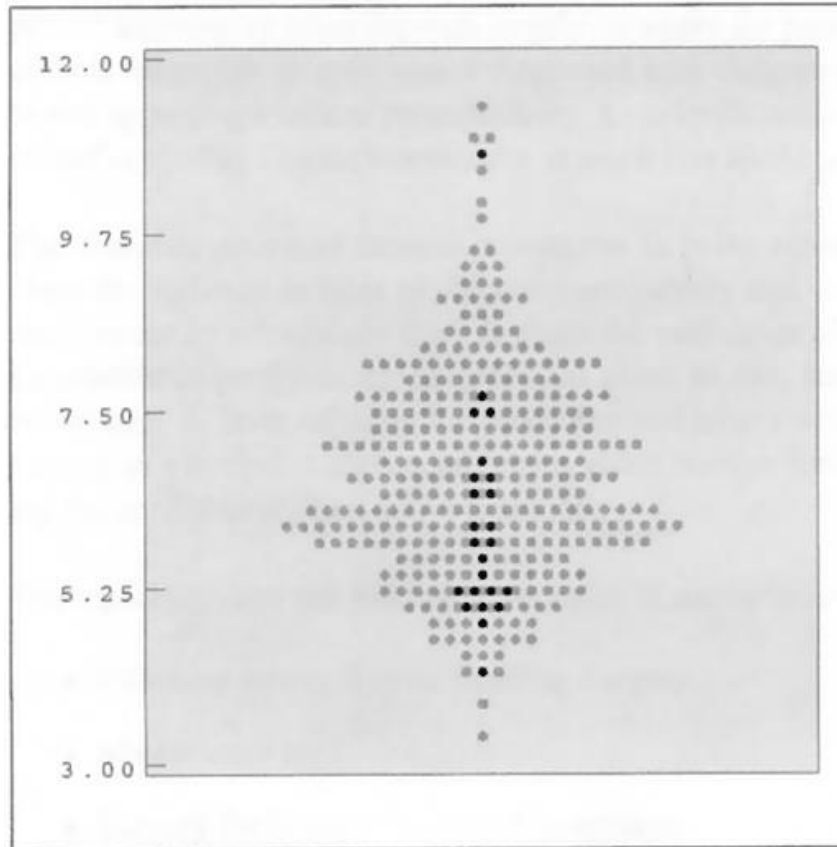
National Committee for Quality Assurance

www.ncqa.org

HEDIS Effectiveness of Care Measures	<u>2003, comm</u>
• Beta-blocker post MI	94%
• Cancer screening	
– Breast	75%
– Cervical	82%
– Colorectal	47%
• Chlamydia screening	30%
• Cholesterol screening	79%
• HbA1c testing	85%
• Eye exams in diabetes	49%
• Controlling hypertension (<140/90)	62%
• LDL < 100 after 60 days of MI	48%

When Guidelines Don't Exist

CABG Rates per 1000 Medicare enrollees, 1999



Redding, CA	10.8
Bakersfield, CA	7.5
Salinas, CA	7.4
San Bernardino, CA	7.3
Napa, CA	6.7
Contra Costa County, CA	6.6
Fresno, CA	6.5
Ventura, CA	6.4
Stockton, CA	6.3
Los Angeles, CA	5.9
Chico, CA	5.9
Sacramento, CA	5.8
San Mateo County, CA	5.7
Modesto, CA	5.5
Orange County, CA	5.4
Santa Cruz, CA	5.2
Santa Barbara, CA	5.1
San Luis Obispo, CA	5.1
San Diego, CA	5.0
Alameda County, CA	5.0
Santa Rosa, CA	4.9
San Jose, CA	4.8
San Francisco, CA	4.6
Palm Springs/Rancho Mira, CA	4.1

-from Dartmouth Atlas Quick Report for California, 2002

Dartmouth Atlas Areas

Medical Discharges

- Discharges for COPD
- Bacterial Pneumonia Discharges
- Discharges for CHF
- Kidney/Urinary Infection Discharges
- Dehydration Discharges
- Non-ACS Medical Discharges
- Discharges for ACS Conditions
- All Medical Discharges
- High Variation Medical Discharges
- Low/Mod. Variation Medical Discharges
- Discharges for Respiratory Infections
- Acute Myocardial Infarction Discharges
- Cerebrovascular Discharges (except TIA)
- Cardiac Arrhythmia Discharges
- Syncope and Collapse Discharges
- Chest Pain Discharges
- Gastro-Intestinal Hemorrhage Discharges
- Nutritional and Metabolic Disorders
- Septicemia Discharges

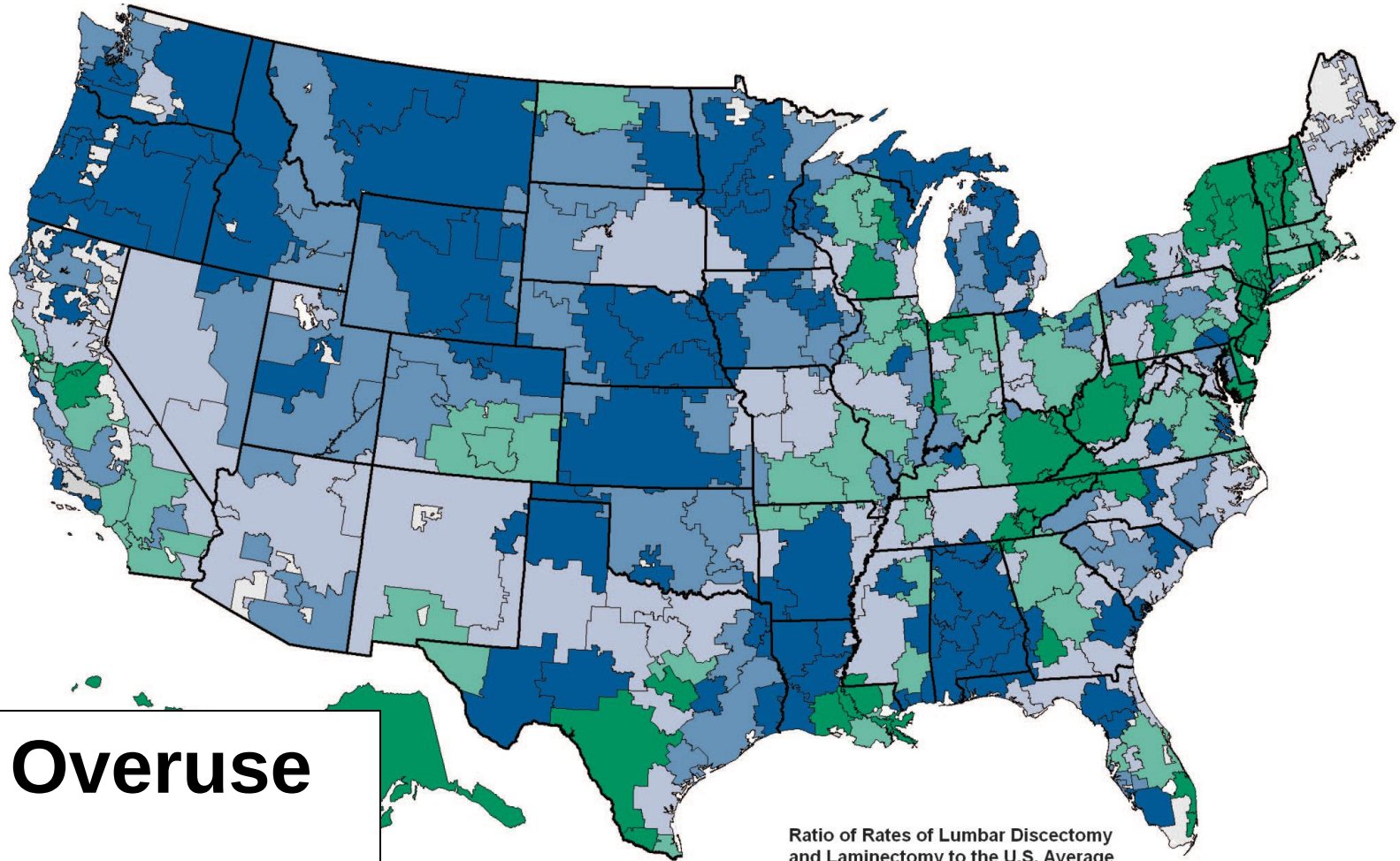
Surgical Discharges

- Coronary Angiography
- All Surgical Discharges
- Back Surgery
- CABG
- Cholecystectomy
- Hospitalization for Hip Fracture
- Knee Replacement
- Percutaneous Coronary Interventions

End-of-Life Care (last 6 mo)

ICU Care

<http://www.dartmouthatlas.org/>



Overuse
Underuse
Misuse

Ratio of Rates of Lumbar Discectomy
and Laminectomy to the U.S. Average
by Hospital Referral Region (2002-03)

- 1.30 to 2.28 (79)
- 1.10 to < 1.30 (52)
- 0.90 to < 1.10 (65)
- 0.75 to < 0.90 (55)
- 0.28 to < 0.75 (55)
- Not Populated

Case Study (cont.)

Measuring the Quality Gap

Condition	Visits	Rx Rate	Bact. Prev	Abx Excess
Otitis Media	13 x 10 ⁶	76%	65%	1.1 million
Sinusitis	11 x 10 ⁶	70%	40%	3.5 million
Pharyngitis	14 x 10 ⁶	62%	25%	5.2 million
Bronchitis	13 x 10 ⁶	59%	10%	6.5 million
<u>URI/cold</u>	<u>25 x 10⁶</u>	<u>30%</u>	<u>5%</u>	<u>6.2 million</u>
TOTAL	76 x 10⁶	54%	25%	22.5 million

Gonzales R, et al. *JAMA*, 1997;278:901-904

Gonzales R, et al. *Clinical Infectious Diseases*, 2001, 33:757-62

Calculating the Outcome Gap

Breast cancer screening rates

SBP < 140 mmHg among hypertensives

Smoking Cessation

What Outcomes Matter?

IOM Pillars of Quality

Examples

- | | |
|-------------------|----------------------|
| -Safe | -error rates |
| -Effective | -mortality/morbidity |
| -Efficient | -cost per QALY |
| -Equitable | -subgroup analyses |
| -Patient-Centered | -informed decisions |
| -Timely | -access |

MATH REQUIRED

--calculate current and ideal outcome rates

The Public Health and Business Case

**FIGURE 10. AVOIDABLE DEATHS AND MEDICAL COSTS DUE TO UNEXPLAINED VARIATIONS IN CARE:
SELECT MEASURES AND CONDITIONS, U.S. POPULATION, 2006**

MEASURE	AVOIDABLE DEATHS	AVOIDABLE HOSPITAL COSTS
Beta-Blocker Treatment After a Heart Attack	500 - 1,200	\$6.1 million - \$10.8 million
Breast Cancer Screening	200 - 700	\$89 million
Cervical Cancer Screening	600 - 800	N/A
Cholesterol Management	4,400 - 9,400	\$20.1 million - \$60.9 million
Colorectal Cancer Screening	6,000 - 12,600	\$284 million - \$411 million
Controlling High Blood Pressure	9,200 - 22,800	\$292 million - \$708 million
Diabetes Care - HbA1c Control	7,100 - 15,900	\$1.3 billion - \$1.7 billion
Osteoporosis Management	N/A	\$9.9 million - \$10.4 million
Prenatal Care	1,000 - 1,600	N/A
Smoking Cessation	7,000 - 10,700	\$673 million - \$725 million
TOTAL	35,000 - 75,000	\$2.7 billion - \$3.7 billion

CASE STUDY (cont)

Antibiotic Utilization = Antibiotic Resistance

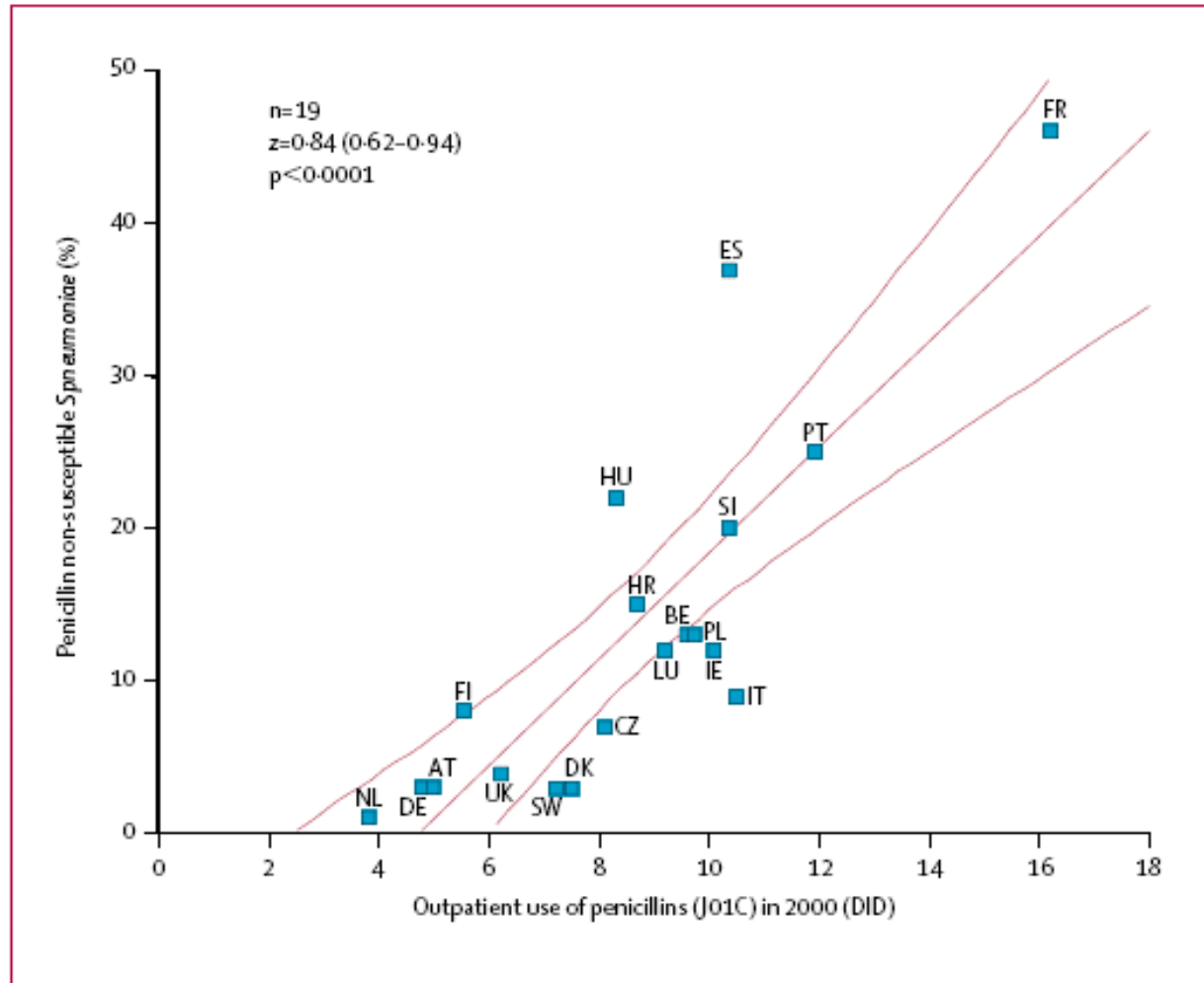


Figure 6: Correlation between penicillin use and prevalence of penicillin non-susceptible *S pneumoniae*
AT, Austria; BE, Belgium; HR, Croatia; CZ, Czech Republic; DK, Denmark; FI, Finland; FR, France; DE, Germany;
HU, Hungary; IE, Ireland; IT, Italy; LU, Luxembourg; NL, The Netherlands; PL, Poland; PT, Portugal; SI, Slovenia;
ES, Spain; UK, England only.

Helping Change Happen...

Epidemiological Approach to Understanding Behavior/Quality

- What critical behavior will increase evidence translation?
- Rates of critical behavior?
 - Are there trends over time?
- Variation in critical behavior?
 - Influence of patient, physician or system factors?
 - Use theory or conceptual framework...
- Quality? ... is the rate where it should be?
 - Case-mix and risk adjustment?
 - Do you conclude underuse, overuse or misuse?

Summary (1)

- Translating evidence into practice, policy and public health depends on aligning attitudes and behaviors of stakeholders, delivery systems, providers, patients and the public.
- Stakeholders, health care providers and the public need to monitor health care quality, and inform the development of new evidence and translational activities.

Summary (2)

- Select your evidence for translation **carefully**
 - Ensure evidence is ready to translate
 - Confirm/communicate with key stakeholders
- Frame evidence as a quality of care measure

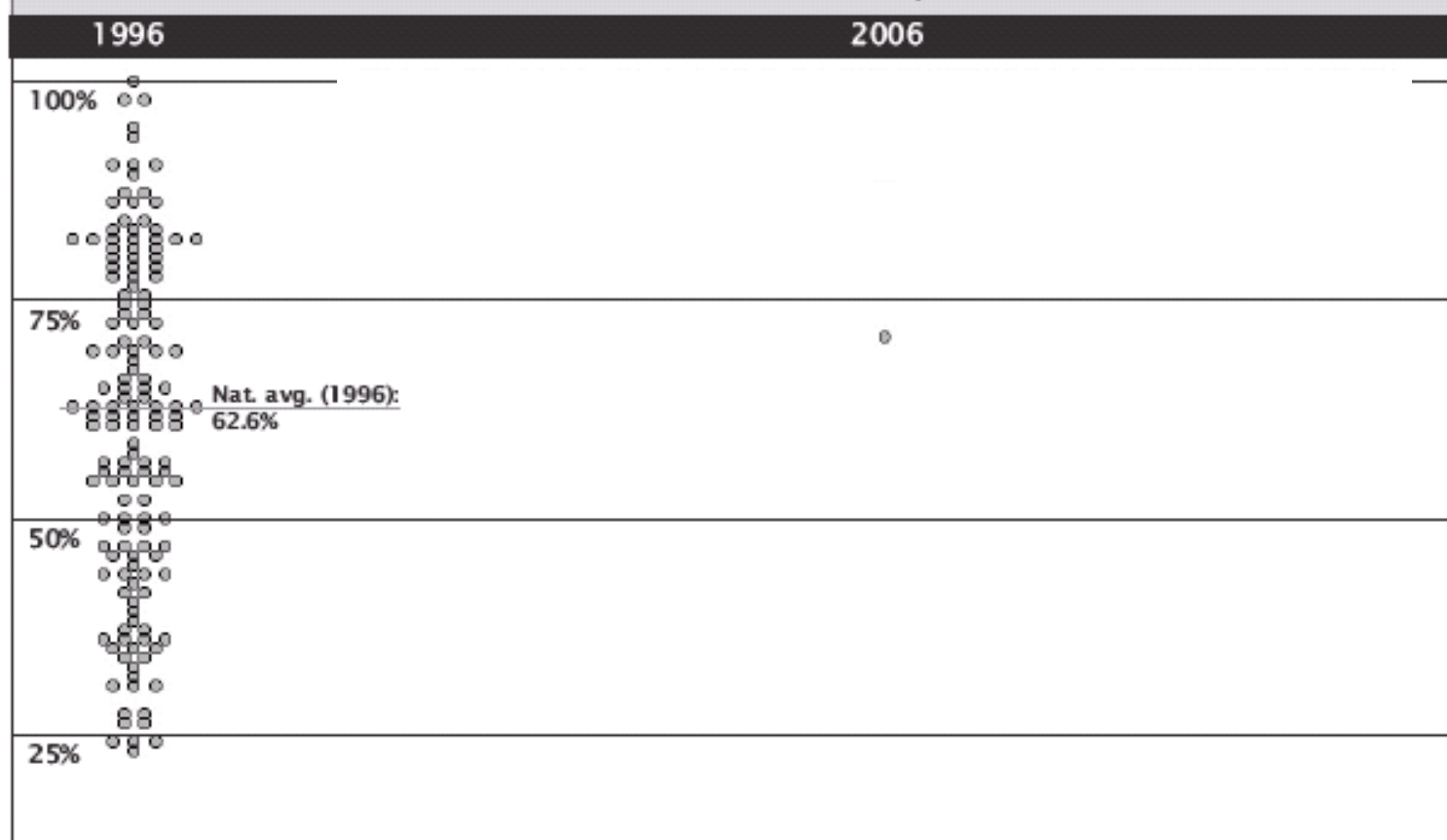
Summary (3)

- Quality of care is a function of the structure, processes and outcomes of care
- Improving the quality of health care (or the translation of your evidence) should maximize
 - safety, effectiveness, efficiency, patient-centeredness, and timeliness and eliminate disparities in care.

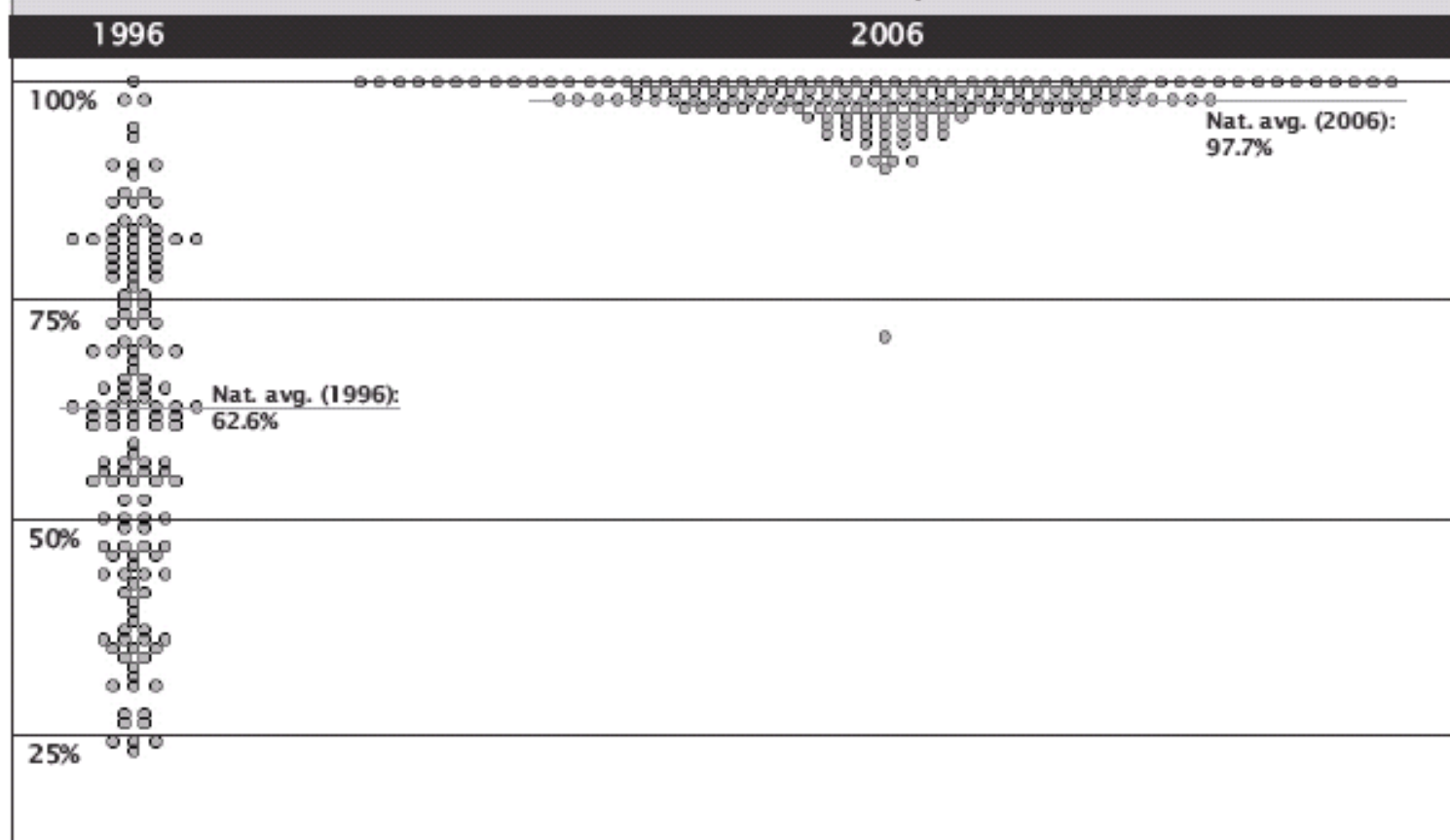
Summary (4)

- To make your case for *investing in* translating your evidence into practice
 - Measure its quality, determine the quality gap, and link the quality gap to an outcome gap
- To “Help Change Happen”, understand the behaviors that are critical to translating evidence into practice

FIGURE 6: BETA-BLOCKER TREATMENT AFTER A HEART ATTACK
INDIVIDUAL HEALTH PLAN PERFORMANCE, 1996 AND 2006



**FIGURE 6: BETA-BLOCKER TREATMENT AFTER A HEART ATTACK
INDIVIDUAL HEALTH PLAN PERFORMANCE, 1996 AND 2006**



In Search of Protocol Topic

- Caring Wisely 2.0 Hot Spots

<https://open-proposals.ucsf.edu/chv-cw-2/proposals>

CHV Caring Wisely™ 2.0 Idea Contest Winners Contact Information

Idea System	Name	Email
Cost-effective Telemetry Monitoring	Nader Najafi	nnajafi@r
Turnover Times in the Operating Room	Lindsay Hampson	HampsonL
No-Show rates through texting	Sarah Colvario	ColvarioS@
Use of Blood Bank Tests in the Newborn Nursery	Michael Cabana	CabanaM@
Attending Surgeon Operating Room Preference Lists	Lindsay Hampson	HampsonL
Reducing medication cost resulting from transfers	Elena Trimoy	edtrimoy@
Reference List Optimization	Kent Soo Hoo	Kent.SooH
Electrolytes	David Margolius	David.Mar
Reduction of low-value laboratory Testing for Inpatients	Alvin Rajkumar	Alvin.Rajk
Eliminating unnecessary radiology tests	Ellen Weber	Ellen.Weber

Idea System	Name	Email
Unnecessary Respiratory Isolation	John Davis	jdavis@uc
Minimizing length of stay in the ICU and reducing length of stay	Bryanna Lamberjack	BryannaLa
Electrolytes	David Margolius	david.mar
Eliminating unnecessary blood cultures	Lisa Winston	Lisa.Winst
Reducing Overuse of Continuous Pulse Oximetry	Lawrence Haber	LawrenceL
Reducing medications with floor/unit transfers	Erika Gray	Erika.Gray
Unnecessary Electrolyte testing and supplements	Lindsey Wu	Lindsey.Wu
Reducing low cost test and treatment alternatives	Jordan Chase	chaseja@f
Reducing the requirement for non scrubbed staff in the OR to wear masks	Paul Pratt	Paul.pratt
Reducing Albuterol Nebulizers in PUC & Asthma Clinic	Kimberlee Honda and Shannon Thyne	Kimberlee
Reducing medical waste disposal	Winnie Tan	WinnieTan