



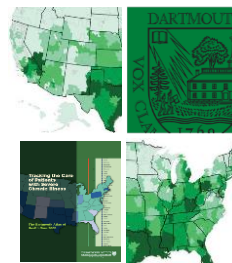
— THE —
Dartmouth
INSTITUTE FOR HEALTH POLICY
& CLINICAL PRACTICE

Patient Involvement and Variation in Treatment Patterns

David C. Goodman, MD MS
Professor of Pediatrics and of
The Dartmouth Institute



December 2014



Dartmouth College & Dartmouth-Hitchcock Medical Center



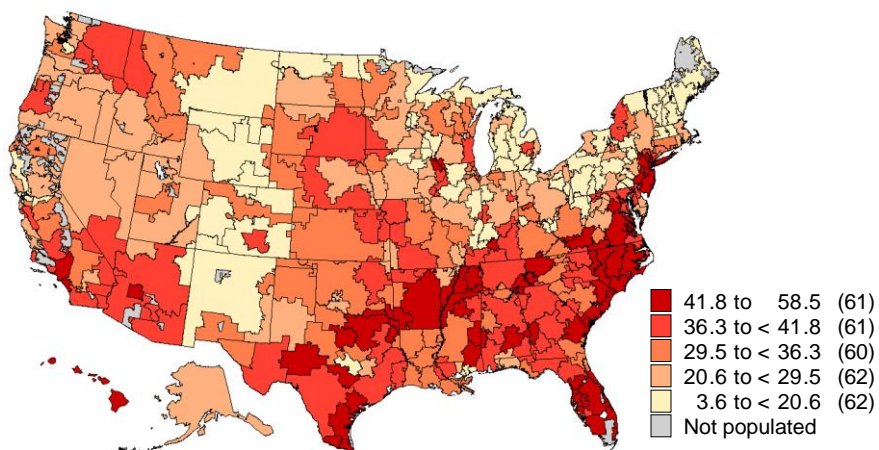


Susan Goodman Alkana (1946 – 2008)



Is Geography Destiny?

Percent of Male Medicare Beneficiaries Age 68-74 Receiving
PSA Testing among Hospital Referral Regions (2010)



Unwarranted variation is variation that cannot be explained by:

- Patient illness
- Patient preference

Unwarranted variation is the variation that is explained by health system performance.

Unwarranted variation represents opportunities for improvement.

1973 – Measuring Health Care in Vermont

Small Area Variations in Health Care Delivery

A population-based health information system can guide planning and regulatory decision-making.

John Wennberg and Alan Gittelsohn

Recent legislation has extended planning and regulatory authority in the health field to a number of important areas. The 1972 amendments to the Social Security Act provide authority for regulating the construction of facilities and establish Professional Standard Review Organizations (PSRO's), which are accountable for setting standards and evaluating professional performance. Phase 3 of the Wage and Stabilization Act of 1970 and state insurance commissions provide authority for regulating dollar flow by controlling

impact of regulatory decisions on the equality of distribution of resources and dollars and the effectiveness of medical care services.

For technical and organizational reasons, documentation of the health care experience of populations has been restricted to large judicial jurisdictions such as counties, states, or nations. Studies at this level of aggregation have used indicators that support direct comparisons among areas. Relationships between the supply of manpower, facilities, and expenditures and

twice as high in California as in Arkansas. The number of physicians per licensed person has been up to three times higher in some states than in others. International comparisons and studies of regions within states show that there are large differences in the rate of delivery of specific surgical procedures (7).

In 1969, there was implemented in the state of Vermont a data system that monitors aspects of health care delivery in each of the 251 towns of the state. When the population of the state is grouped into 13 geographically distinct hospital catchment, or service, areas, variations in health care are often more apparent than they are when the population is divided into larger areas. Population size can be used to make direct statistical comparisons between each of the 13 hospital service areas. Since the medical care in each area is delivered predominantly by local physicians, variations tend to reflect differences in the way particular individuals and groups practice medicine. The specificity of the information in Vermont's data system makes it possible to appraise the impact that decisions concerning facility construction, price of insurance, and

(Note: Darker lines show boundaries of hospital service areas. Circles represent hospitals. Areas without circles are served principally by hospitals in New Hampshire.

Wennberg J, Gittelsohn A. Small area variations in health care delivery. *Science* 1973;182:1102-8.

2014: The Dartmouth Atlas of Health Care

The Dartmouth Atlas of Health Care provides national public reporting of health system performance over time through the lens of variation in utilization, cost, quality, and patient experience.

The Atlas highlights variation, its causes, and its consequences in order to provide target audiences with compelling data to effect positive changes in the health care system.



www.dartmouthatlas.org

Current Funders

Robert Wood Johnson Foundation
California HealthCare Foundation
Charles H. Hood Foundation

The Scientific Foundations of the Atlas

Several hundred research papers.

Collaboration with many other research groups,
including critics of our studies.

Open and free access to as much Atlas data as possible.

Medical Practice Variation Studies

- The goal is to improve care and lower costs.
 - (The goal is not necessarily to reduce variation.)
- Variation is a tool to understand health care.
 - (Variation, itself, is not usually the topic of study.)
- Variation in health care utilization reflects population differences in health need, preferences, and in health system performance.
 - (Controlling for differences in health need is complex and often requires multi-level models or econometric methods.)
- Description is an important first step in identifying problems and questions in health care.
 - Sometimes it leads to improvement in care, by itself.
- Inference regarding the cause and consequences of variation usually requires complex analyses.
- Solutions need to be found within each country in partnership with clinicians, policy makers, and patients.

Systematic review of medical practice variation in OECD countries

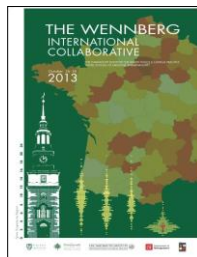
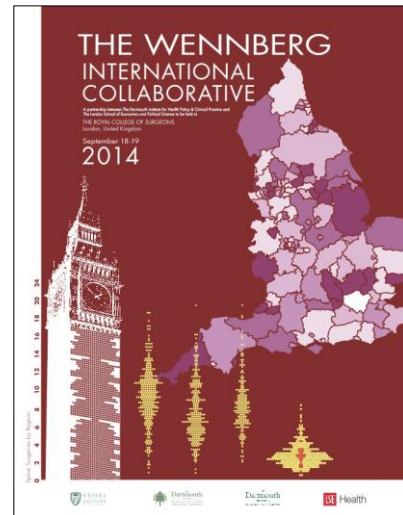
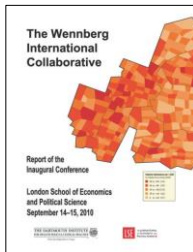
Corallo A, Coxford R, Goodman D, Bryan E, Srivatava D, Stukel T.
Health Policy 2013.

	Number of studies	Percent
United States	319	38
United Kingdom	123	15
Canada	111	13
Australia/N.Z.	53	6
Netherlands	22	3
Denmark	13	2
Germany	13	2
Sweden	12	1
Spain	11	1
Switzerland	11	1
Japan	10	1
France	10	1

	Number of studies	Percent
Norway	8	1
Ireland	8	1
Italy	7	
Finland	6	
Belgium	3	
Austria	2	
Estonia	1	
Greece	1	
Hungary	1	
Portugal	1	

Published during period 2000 – 2011.

The Wennberg International Collaborative



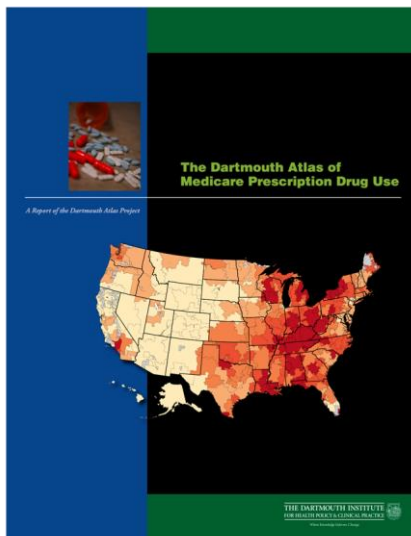
www.wennbergcollaborative.org



Causes of Variation Three Useful Categories:

- Variation in effective care
- Variation in supply sensitive care
- Variation in preference sensitive care

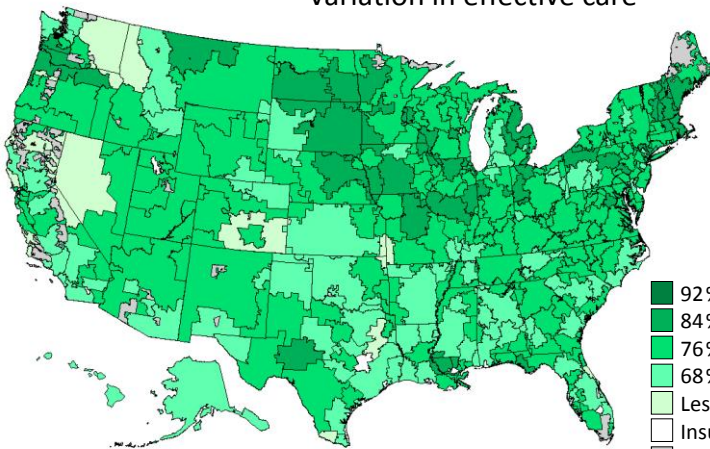
The Dartmouth Atlas of Medicare Prescription Drug Use



October 2013

Use of beta-blockers 7-12 months following discharge for AMI (2008-10)

Variation in effective care

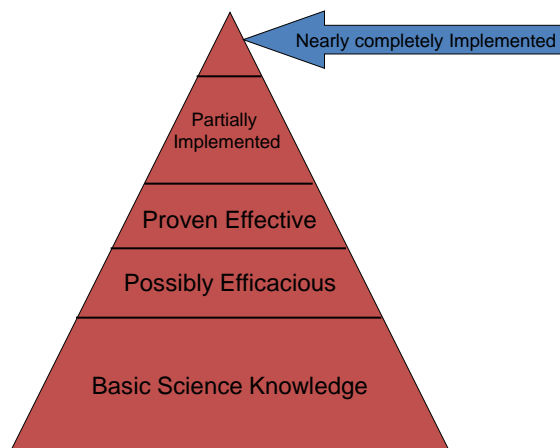


92% or More	(0)
84% to < 92%	(42)
76% to < 84%	(164)
68% to < 76%	(86)
Less than 68%	(13)
Insufficient data	(1)
Not populated	

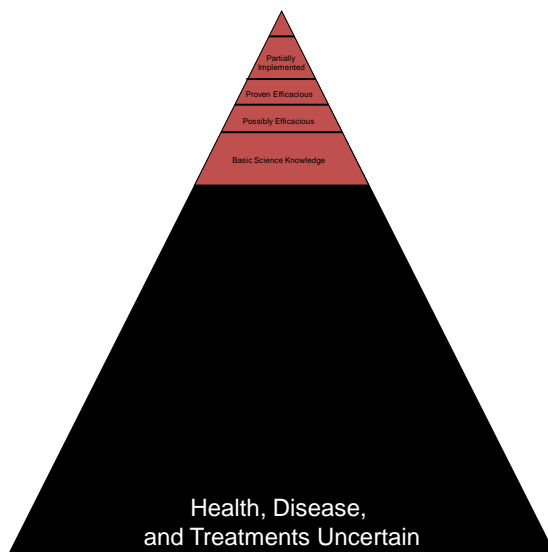
Variation in Effective Care

- The choice of service is dictated by strong evidence of effectiveness for almost all targeted patients.
- The benefits almost always outweigh any adverse effects.
- Risk adjustment is usually not necessary.
- The right rate is usually obvious.

Domains of Effective Care

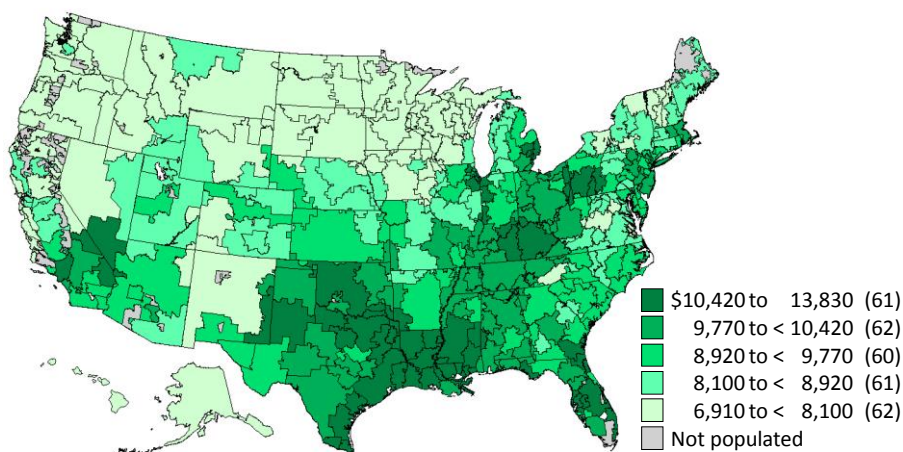


Domains of Effective Care

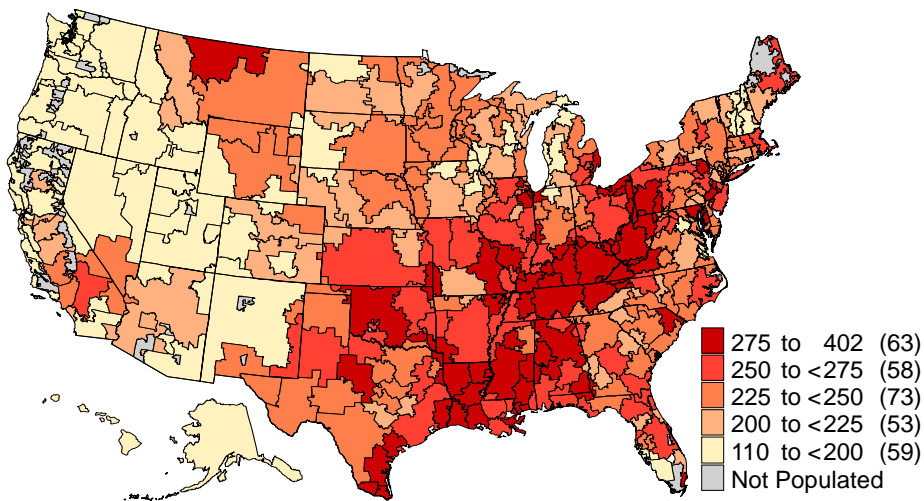


19

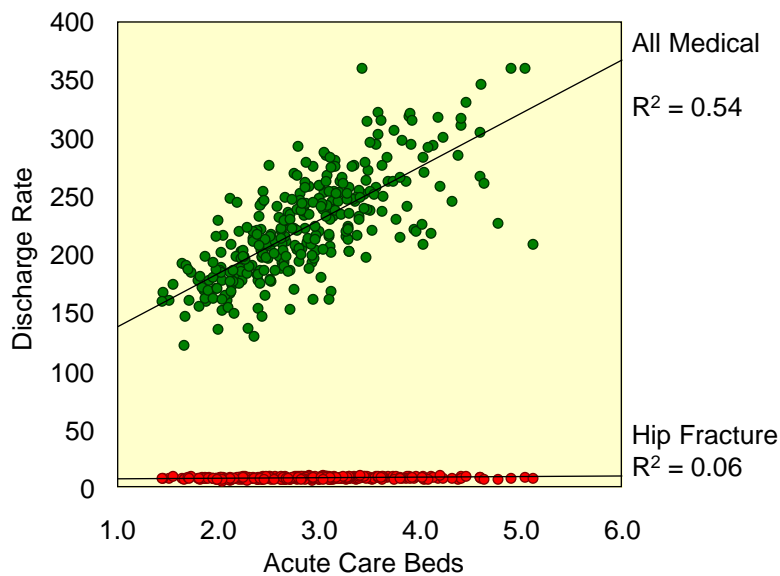
Price-adjusted Medicare spending per beneficiary among hospital referral regions (2010)



Medical Discharges per 1,000 Medicare Enrollees (2005)



Association between hospital beds per 1,000 and discharges per 1,000 among Medicare Enrollees: 306 Hospital Regions



Supply (or capacity) -Sensitive Care

- Greater capacity leads to higher utilization of certain types of care.
- Capacity is generally not located where needs are greater.
- Supply-sensitive tends to have:
 - Weak evidence-base about which rate is right.
 - Care that occurs after first contact with health care system.
- Often weakly associated with outcomes.
- Is responsible for the majority of variation in spending in the Medicare population.

Preference-Sensitive Care

Susan Goodman Alkana

Metastatic breast cancer develops 10 years after stage III diagnosis and treatment.

(1946 – 2008)



What the oncologist said in 2008:

"I can provide you with life-prolonging treatment."

What Susie heard:

"Just like when I was diagnosed 10 years ago, I will get treatment and most likely return to my usual life and to my home."

What the oncologist meant:

"I can provide you with treatment that may extend your life for weeks or maybe months."

What the oncologist didn't say:

"The treatment is likely to make you feel even sicker than you do now. You may not be able to live at home. The treatment may also shorten your life. Your outcome is uncertain."

What Happened to Susie

(1946 – 2008)



She received cytotoxic chemotherapy:

And, was hospitalized the next day with vomiting and dehydration.

She was sent next to a nursing facility:

And, received weekly chemotherapy that left her unable to live independently.

Her disease progressed and she developed a malignant pleural effusion:

After 8 weeks of treatment, she was readmitted to the hospital. Her oncologist did not initiate further discussions about care options.

She remained ill with poorly controlled pain.

Her brother initiated discussions about palliative care.

The night before she was transferred to a hospice center, she was short-of-breath from her effusion.

Her oncologist performed a thoracentesis to drain the effusion. She bled into her chest and died in the procedure room.

**THE DARTMOUTH INSTITUTE
FOR HEALTH POLICY & CLINICAL PRACTICE**

Where Knowledge Informs Change

A Report of the Dartmouth Atlas Project

Quality of End-of-Life Cancer Care for Medicare Beneficiaries

Regional and Hospital-Specific Analyses

November 16, 2010

Authors:

David C. Goodman, MD, MS¹
 Elliott S. Fisher, MD, MPH¹
 Chiang-Hua Chang, PhD¹
 Nancy E. Morden, MD¹
 Joseph O. Jacobson, MD²
 Kimberly Murray, MPP³
 Susan Miesfeldt, MD^{3,4}

Editor:

Kristen K. Bronner, MA¹

Introduction

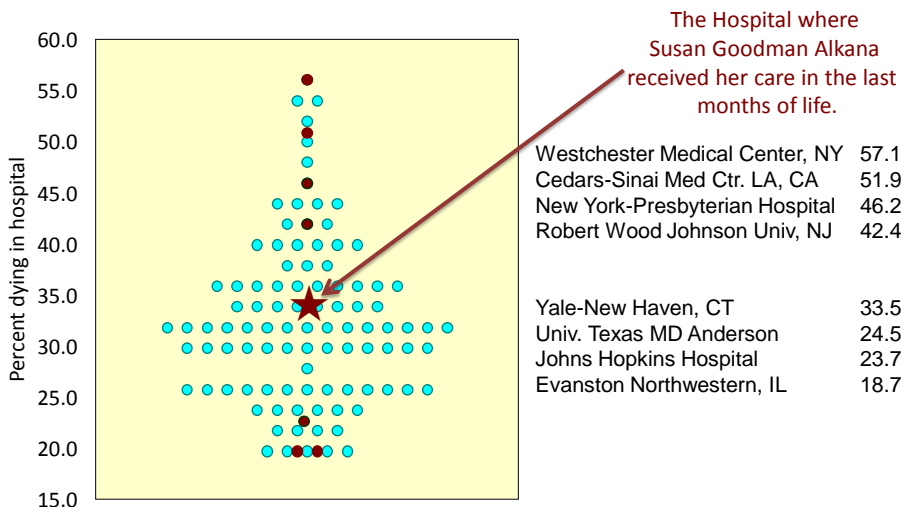
More than 1.5 million cancers are diagnosed each year in the United States.¹ This Dartmouth Atlas report examines how elderly patients with poor prognosis cancer are cared for across regions and hospitals and finds remarkable variation depending on where the patients live and receive care. Even among the nation's leading medical centers, there is no consistent pattern of care or evidence that treatment patterns follow patient preferences. Rather, the report demonstrates that many hospitals and physicians aggressively treat patients with curative attempts they may not want, at the expense of improving the quality of their last weeks and months.

For many cancer patients, medical and surgical care leads to long-term remission or cure. Other patients have aggressive or disseminated (metastatic) cancer at the time of diagnosis or experience a recurrence later in their illness. Despite achievements in cancer detection and treatment, half a million patients die of cancer annually in the United States. The majority of these deaths are in those over age 65.²

For patients with a poor prognosis because the cancer is advanced or disseminated, death is the likely short-term outcome. When a cure is unlikely, patients and families

Percent of patients (> age 65) with advanced cancer dying in the hospital, 2010

(Adj. for age, sex, race, cancer type, chronic diseases)
 NCI Cancer Centers and Academic Medical Centers (non-NCI)



Preference-Sensitive Care

- Involves options with tradeoffs of benefits v. harms.
- Scientific uncertainty is often substantial.
- Physicians differ in their recommendations.
- Patient and provider values (or utilities) are often different.
- These are decisions that should be based on the patient's own preferences. Usually the physician recommends the decision.
- Decision quality is improved through shared decision-making and decision aids.

PSA Screening Benefits

After a comprehensive review of the evidence, the U.S. Preventive Services Task Force found:

Possible benefit of screening

The reduction in prostate cancer deaths from prostate-specific antigen (PSA) screening is at most very small. A large U.S. study showed no benefit from screening. A large European study that found the highest reported benefit suggests:

- 1 man in 1,000 – at most – avoids death from prostate cancer because of screening

PSA Screening Harms

Expected harms of screening

Most prostate cancers found by PSA screening are slow growing, not life threatening, and will not cause a man any harm during his lifetime. However, there is currently no way to determine which cancers are likely to threaten a man's health and which will not. As a result, almost all men with PSA-detected prostate cancer opt to receive treatment. In addition to the frequent complications of biopsy that lead to a cancer diagnosis, there can be serious harms from treatment of screen-detected prostate cancer.

For every 1,000 men who are screened with the PSA test:

- 30 to 40 men will develop erectile dysfunction or urinary incontinence due to treatment
- 2 men will experience a serious cardiovascular event, such as a heart attack, due to treatment
- 1 man will develop a serious blood clot in his leg or lungs due to treatment

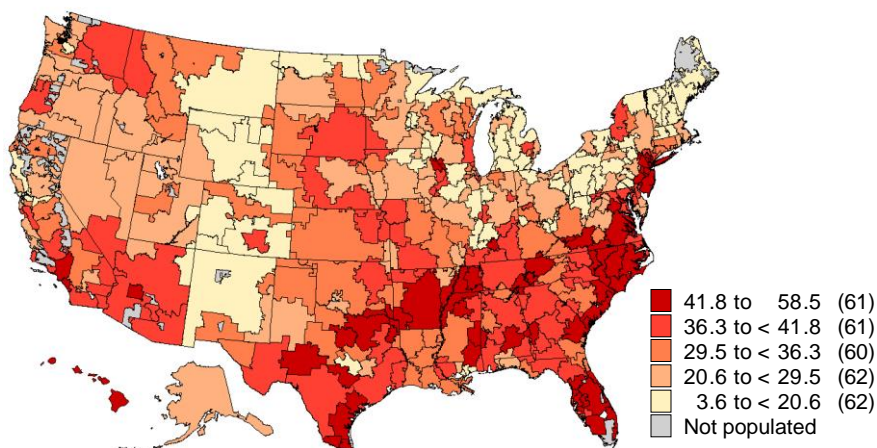
For every 3,000 men who are screened with the PSA test:

- 1 man will die due to complications from surgical treatment

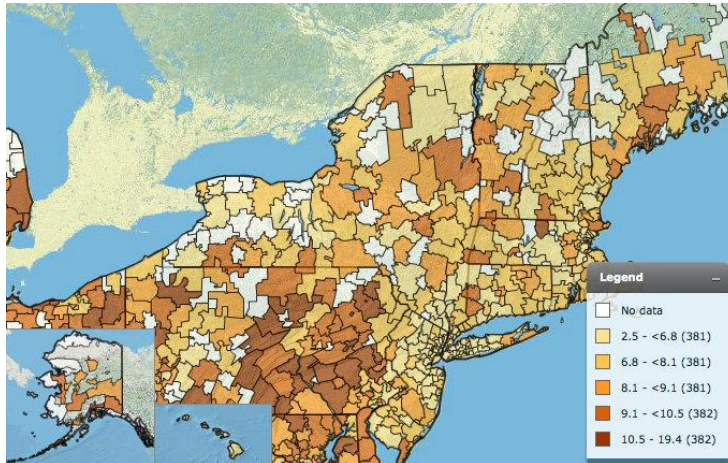
U.S. Preventive Services Task Force, 2014

31

Percent of Male Medicare Beneficiaries Age 68-74 Receiving PSA Testing among HRRs (2010)



Knee Arthroplasty per 1,000 Medicare Beneficiaries
Dartmouth Atlas Hospital Service Areas
(≥ age 65; 2007)



An orthopedic surgeon's perspective
(N=1)

“Joint arthroplasty has been shown to improve quality of life to a degree virtually unmatched by other medical interventions.”

A Dartmouth orthopedic surgeon, friend, and colleague of David Goodman.

Open Access Research

BMJ
open

What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients

Andrew David Beswick,¹ Vikki Wyde,¹ Rachael Gooberman-Hill,¹ Ashley Blom,¹ Paul Dieppe²

To cite: Beswick AD, Wyde V, Gooberman-Hill R, et al. What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients. *BMJ Open* 2012;2:e000435. doi:10.1136/bmjopen-2011-000435

► Publication history and additional references for this paper are available online. To view these files please visit

ABSTRACT

Background: Total hip or knee replacement is highly successful when judged by prosthesis-related outcomes. However, some people experience long-term pain.

Objectives: To review published studies in representative populations with total hip or knee replacement for the treatment of osteoarthritis reporting proportions of people by pain intensity.

Data sources: MEDLINE and EMBASE databases searched to January 2011 with no language restrictions. Citations of key articles in ISI Web of Science and reference lists were checked.

Study eligibility criteria, participants and interventions: Prospective studies of consecutive, unselected osteoarthritis patients representative of the

ARTICLE SUMMARY

Article focus

- Total hip and knee replacement have good clinical outcomes.
- There is a perception that some people experience long-term pain after their joint replacement.
- We aim to establish the proportion of patients experiencing long-term pain after joint replacement.

Key messages

- Well-conducted studies in representative populations of patients with total hip and knee joint replacement suggest that a significant proportion of people continue to have painful joints after surgery.

“In the best quality studies, an unfavourable pain outcome was reported in 9% or more of patients after hip and about 20% of patients after knee replacement.”

Source: Beswick AD, et al. *BMJ Open* 2012;2:e000435.doi:10.1136/bmjopen-2011-000435.



—THE—
Dartmouth
INSTITUTE

FOR HEALTH POLICY
& CLINICAL PRACTICE



GEISEL
SCHOOL OF
MEDICINE
AT DARTMOUTH

Patients Knowledge of Outcomes (poor)

- National survey of 2,575 adults > 40 yrs. who reported having discussed at least one of nine decisions in the past year.
- For discussions regarding knee/hip replacement, the percent of patients with accurate knowledge about:
 - Pain relief after surgery – 28%
 - Months until usual activities are resumed – 39%
 - The percent of patients with complications – 46%
 - The percent of artificial joints lasting 20 years – 15%

Source: Fagerlin A, et al. Patient's knowledge about 9 common conditions: The DECISIONS Survey. *Med Decis Making* 2010;30:355-525



—THE—
Dartmouth
INSTITUTE

FOR HEALTH POLICY
& CLINICAL PRACTICE



GEISEL
SCHOOL OF
MEDICINE
AT DARTMOUTH

(Mis)Understanding in Patient-Health Care Provider Communication About Total Knee Replacement

RICHARD L. STREET, JR.,¹ MARSHA N. RICHARDSON,² VANESSA COX,² AND MARIA E. SUAREZ-ALMAZOR²

Objective. To examine whether communication factors affect health care provider and patient agreement on the need for, risks of, and benefits of joint replacement, and also whether degree of agreement predicts patient satisfaction and intent to follow treatment recommendations.

Methods. Health care providers (n = 27) and patients (n = 74) with severe osteoarthritis (OA) were recruited from clinics in Houston, Texas. Patients completed a baseline survey prior to the consultation. After the visit, patients and providers completed measures of the severity of the patient's OA, the expected benefits of total knee replacement (TKR), and concern about surgical complications. Patients also completed satisfaction and intent to adhere measures. Provider communication and patient participation were measured by patient self-report and by observers' codings of audiorecordings of the consultations.

Results. Provider-patient agreement was modest to poor regarding severity of the patient's OA and the expected benefits and risks of TKR. Providers and patients were more aligned on the patient's OA severity when providers used more partnership building but spent less time simply giving information. Differences between providers' and patients' concerns

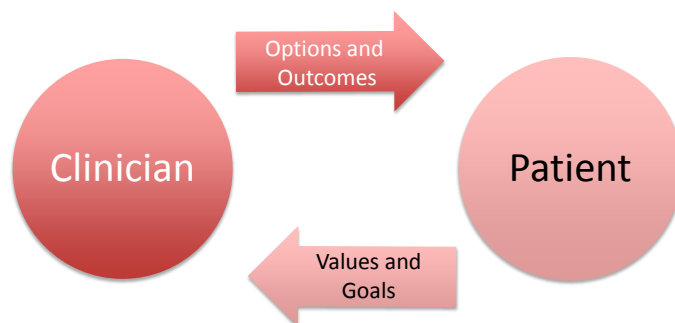
“Provider-patient agreement was modest to poor regarding severity of the patient's OA (osteoarthritis) and the expected benefits and risks of TKR (Total knee replacement).”

Source: Street RL, et al. Arthritis and Rheumatism 2009; 61:100-107.



Shared Decision Making

- Providing patients with unbiased information about care options, the chances of associated benefits and harms.
- Eliciting patients' values and goals.
- Legitimizing patients' participation in decision making.



What Does Shared Decision Making Look Like?

A Video Compilation

Causes, consequences, remedies of variation

Category	Cause	Consequence	Remedy
Unwarranted variation			
Evidence-based care	Clinician decisions \neq science	Lower probability of good outcomes	Clinical microsystem improvements
Preference sensitive care	Provider-driven decisions; patients uninformed and not involved in decisions	Pt. doesn't receive preferred care: the care with highest individual pt. utility	Shared decision making, decisions aids. Better outcomes research. Research in decision quality.
Supply sensitive care	Capacity that is idiosyncratically located and poorly related to outcomes	Higher resource use with marginal or no patient benefit	Wiser capital and labor investments in health care.
Desired State: Warranted variation			
Care in response to differences in patient needs and preferences	Application of evidence-based medicine and Shared Decision Making	Better outcomes, including higher decision quality, and often lower costs	

Dartmouth College

