

Hospital Readmission: A Measure of Hospital Quality?

Peter J. Kaboli, MD, MS
CADRE Investigator and Hospitalist,
Iowa City VA Healthcare System
Professor, Department of Internal Medicine,
University of Iowa Carver College of Medicine
Iowa City, IA

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Objectives

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1. Describe rates of hospital readmissions, association with LOS, and factors associated with higher rates.
2. Discuss role of readmissions as a “quality” metric.
3. Outline proven strategies for improvement.
4. Implications of “bundled” payments and future of readmissions in VA.
5. Research opportunities.

Audience Response Question

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- In the past 14 years, hospital LOS has steadily declined in VA. Over the same time, what happened to 30-day hospital readmission rates?
 1. Increased
 2. Decreased
 3. Remained unchanged

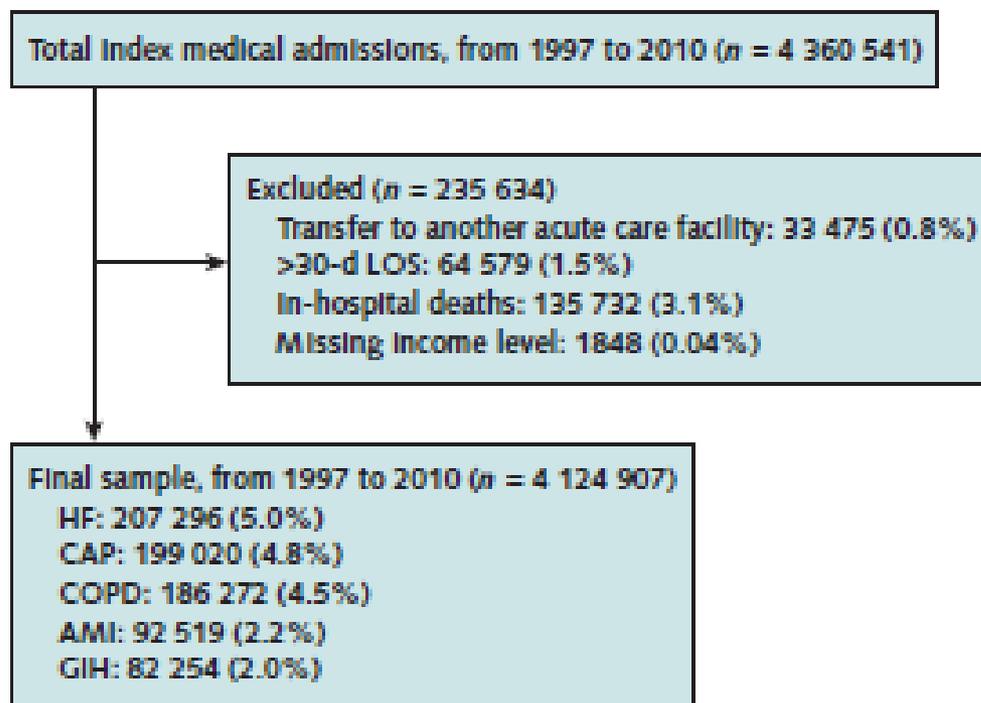
Associations Between Reduced Hospital Length of Stay and 30-Day Readmission Rate and Mortality: 14-Year Experience in 129 Veterans Affairs Hospitals

Annals of Int Med,
Dec 18, 2012

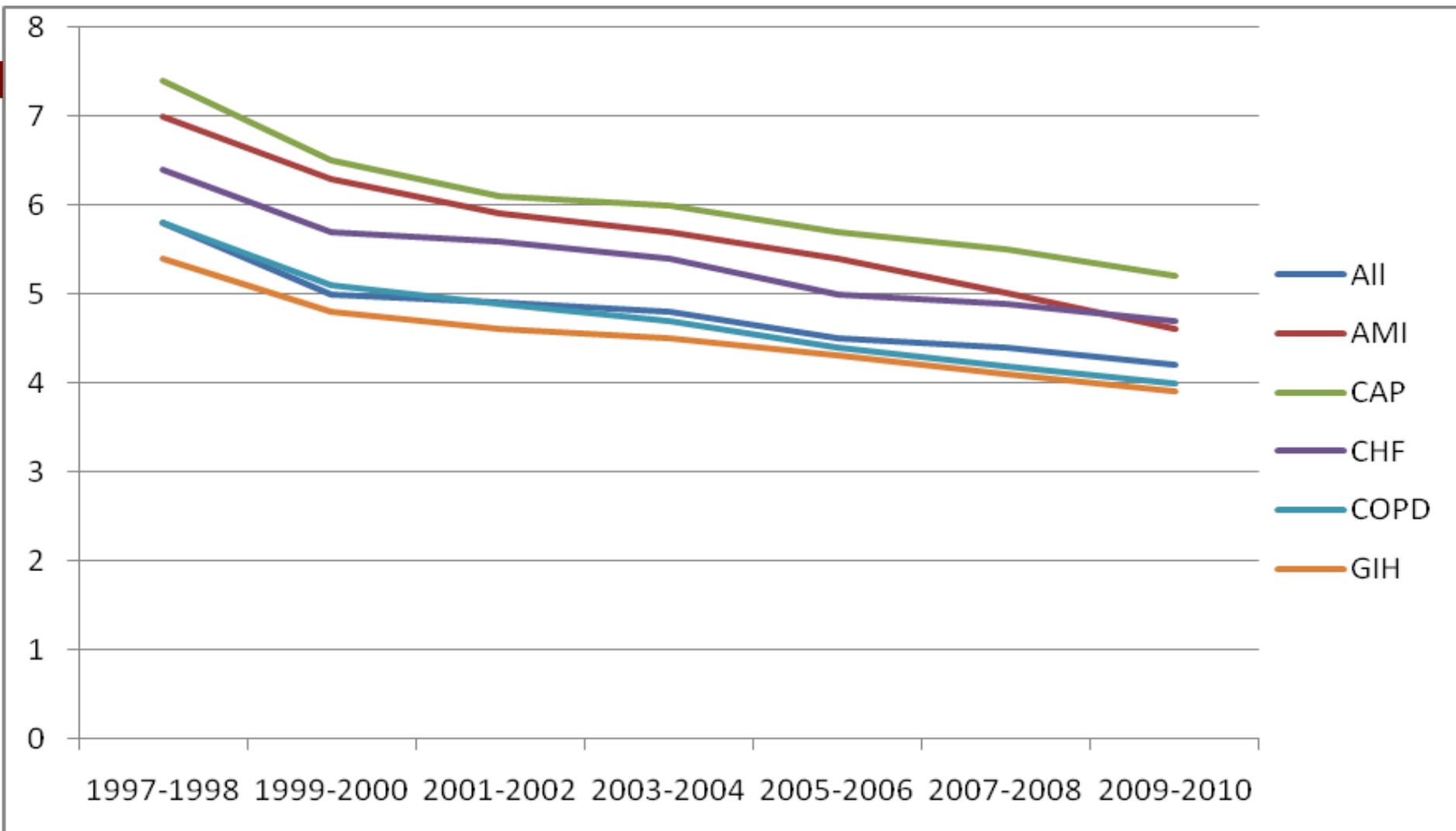
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Peter J. Kaboli, MD, MS; Jorge T. Go, MD, MS; Jason Hockenberry, PhD; Justin M. Glasgow, BS, MS; Skyler R. Johnson, BS, MS; Gary E. Rosenthal, MD; Michael P. Jones, PhD; and Mary Vaughan-Sarrazin, PhD

Figure. Study flow diagram.



Reduction of LOS Significant for All Conditions



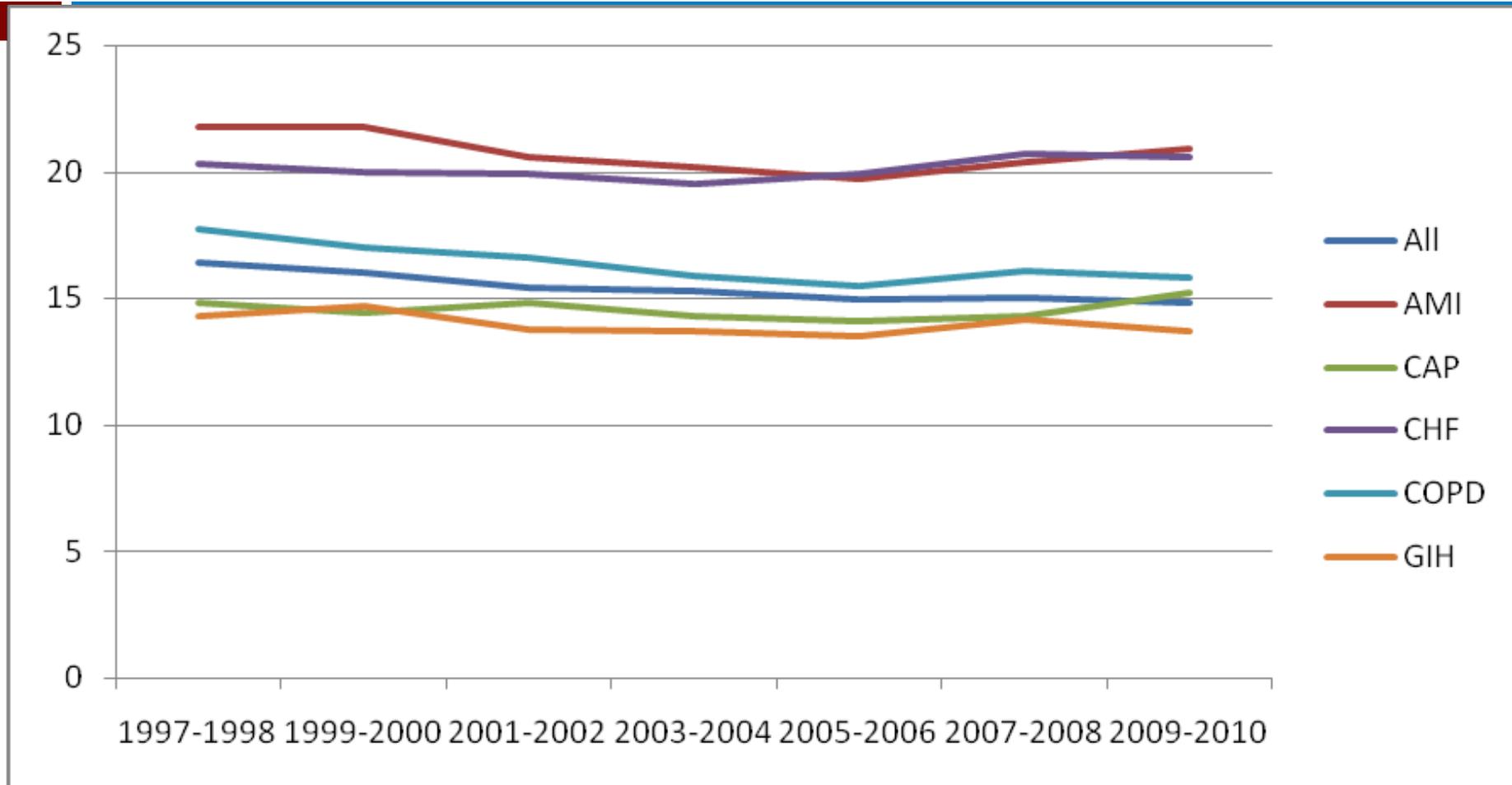
Reduction of LOS Significant for All Conditions

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Adjusted LOS (Mean, days)

Fiscal Year	All Med Dx	CHF	COPD	AMI	CAP	GIH
97-98	5.44	6.33	5.68	6.63	7.18	5.08
03-04	4.54	5.31	4.53	4.90	5.74	4.17
09-10	3.98	4.40	3.89	3.78	4.96	3.68
Change	-1.46	-1.93	-1.79	-2.85	-2.22	-1.40

Reduction in 30-Day Readmission Rates



Significant Reductions in 30-Day Readmissions

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Adjusted Readmission Rates

Fiscal Year	All Med Dx	CHF	COPD	AMI	CAP	GIH
97-98	16.5%	20.4%	17.9%	22.6%	14.7%	14.1%
03-04	15.0%	19.3%	15.5%	20.2%	13.7%	13.1%
09-10	13.8%	19.0%	14.6%	19.8%	13.8%	12.2%
Change	-2.7%	-1.4%	-3.3%	-2.8%	-0.9%	-1.9%

Advanced statistics

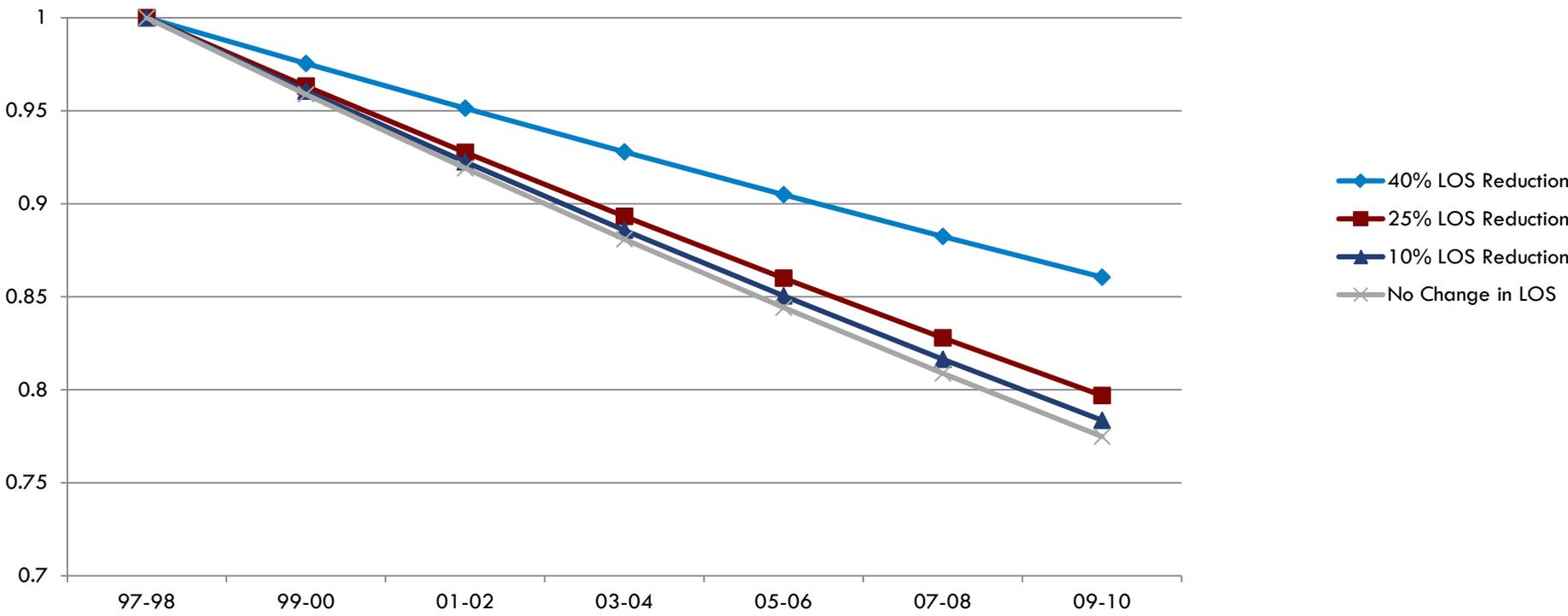
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CAN BEER
1 – \$2.50
or
2- \$5.00
ALL BOTTLE

Association between LOS reduction and Readmissions

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Risk adjusted decrease in readmission rates for hospital with 0%, 10%, 25% and 40% reduction in LOS



Expected LOS and Readmission Rate

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- A patient discharged from a hospital with LOS that was 1 full day lower than expected:
 - ▣ given the year and patient characteristics
 - ▣ **was 6% more likely to be readmitted** (OR=0.94; 95% CI, 0.93-0.95; $p < .001$), compared to a patient discharged from a hospital with mean LOS equal to the expected LOS for the year

- Within hospitals, each additional day of stay was associated with a 3% relative increase in the likelihood of readmission.

Stated another way...

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- Reducing LOS to much below expected will result in a small trade off for higher readmission rate.
- Patients with longer LOS have higher readmission rates.
 - Duh, these people are sicker and need to return to hospital more frequently

Audience Response Question

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- Okay, so VA shortened LOS (has become more efficient) AND at the same time reduced hospital readmissions. However, we have improved palliative care services (i.e., the dead don't get readmitted), thus 30 day mortality has:
 1. Increased
 2. Decreased
 3. Remained unchanged

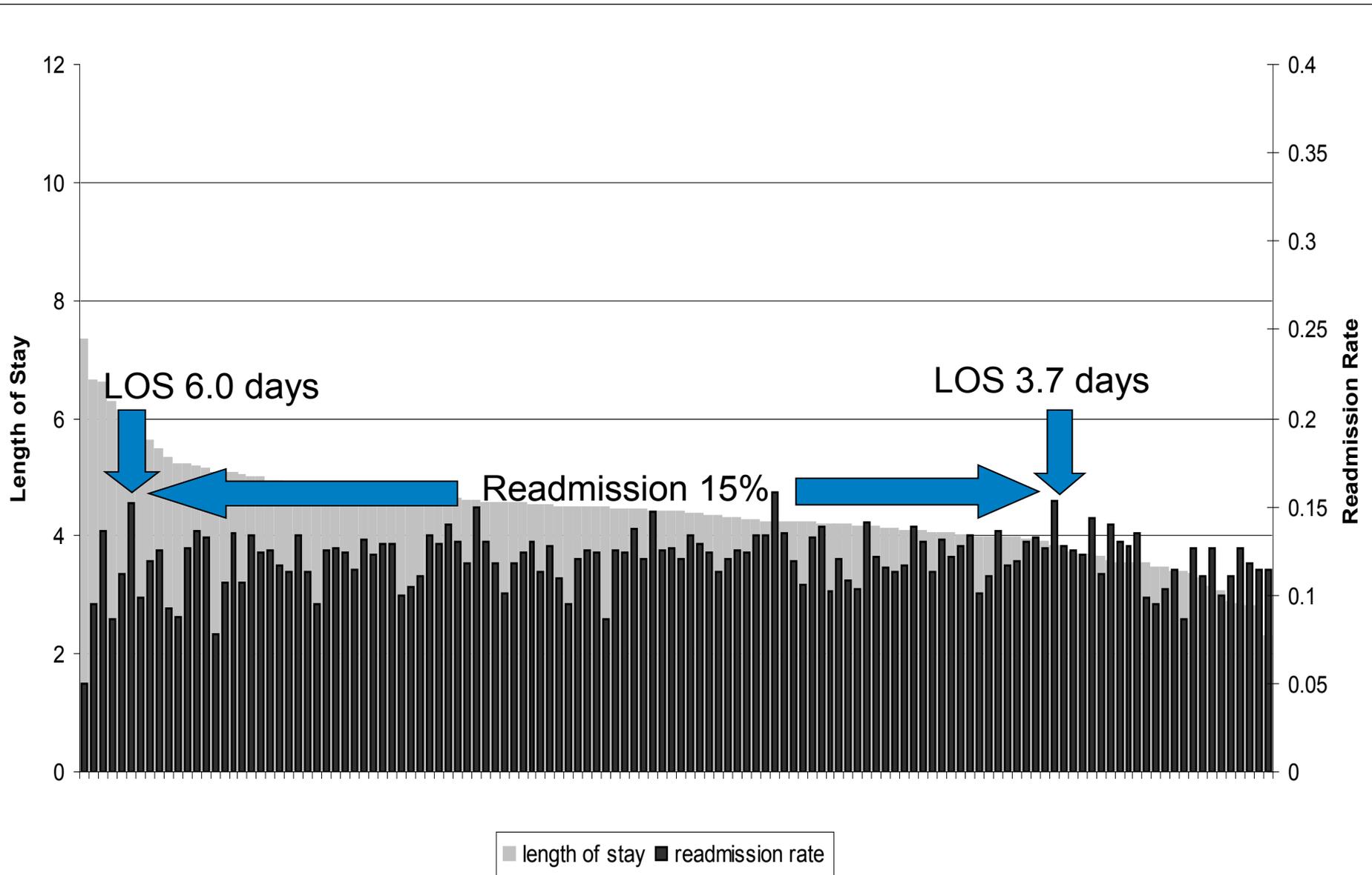
Mortality Trends over 14 years

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- 30-day mortality decreased by 25%
 - (6.4% to 4.8%)
- 90-day mortality decreased by 18%
 - (11.46% to 9.4%)

- Logistic regression analyses, adjusting for patient demographics and comorbidity and hospital random effects, found similar reductions ($P < 0.0001$).

Variation in LOS and Readmission Rates: 129 VAs



SUMMARY

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- Unadjusted LOS decreased from 1997 to 2010 with concomitant decrease in unadjusted readmissions
- In multivariable analyses: similar results
 - ▣ Greater reductions in LOS resulted in less reduction in 30-day readmissions
- Considerable variation suggests fixable solutions
- Reassuring to show increased inpatient efficiency has not resulted in increased hospital readmission

Hospital Readmission Rates: Are We Measuring the Right Thing?

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- Eugene Oddone and Morris Weinberger, Durham VAMC
- “The authors acknowledge that a limitation of the study is that it was conducted in a single health care system (VA). That statement is included in all articles from VA investigators. Perhaps it is time to embrace the VA as the largest US ACO. Let the VA serve as an example of how to enhance both efficiency (reduced LOS) and quality (reduced readmissions and mortality).”

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Break #1 for Questions

Your host, Dr. Todd Wagner

Palo Alto VAMC

Audience Response Question

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- Do you believe 30-day hospital readmission rate is a measure of healthcare quality?
 1. Yes
 2. No
 3. I'm not sure, but I will have a more informed opinion at the end of the hour.

Is 30-day Readmission a Quality Metric?

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- Quality: a degree of excellence; superiority in kind
- Metric: a standard of measurement to capture performance
 - ▣ *Readmits: Easy to measure, but not necessarily quality*
- Donabedian Model of Quality
 - ▣ Structure: presence of hospitalists/intensivists
 - ▣ Process: ASA for AMI
 - ▣ Outcomes: a health state like death
 - No external validity for readmission rates

Is Readmission an Error or Adverse Event?

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- Error: includes terms such as mistakes, close calls, near misses, active errors, and latent errors
- Adverse event: includes terms that usually imply patient harm (i.e., medical and iatrogenic injury)
 - ▣ Readmission may result from an error or adverse event
 - e.g., wrong dose of diuretic for HF patient
 - e.g., fall resulting from re-conditioning
 - ▣ More frequently from the disease process or uncontrollable factors.
 - e.g., homeless man with O2 dependent COPD

Audience Response Question

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- So, if readmissions are not an Adverse Event or great Quality Metric, are they preventable? Assuming yes, what % are preventable?
 1. 10%
 2. 25%
 3. 50%
 4. 60%
 5. 90%

Preventability of Readmissions

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- **AJM, Frankl, Breeling, Goldman, 1991**
 - N=2,626 medicine admits over 4 months; 12% 30-day readmissions
 - 9% (or 1% of total) were “preventable”; 89% occur within 10 days
 - 1/3 system failure, 1/3 hope patient would improve, 1/3 sub-optimal judgment in evaluation or treatment

- **Health Care Fin Rev, Goldfield, et al, 2008**
 - N=4,311,652 medicine and surgery admissions; 234 Florida hospitals
 - Medical readmission with: 1) same diagnosis, 2) de-compensation of a chronic condition, or 3) medical complication (3M PPR Software)
 - ~13% overall readmission rate
 - ~60% (or 7.9% of total) met criteria for “potentially preventable”

Proportion of Hospital Readmissions Deemed Avoidable: A Systematic Review

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- van Walraven, *et al*, *CMAJ*, 2011
 - Systematic review of 34 studies
- Median proportion of readmissions deemed avoidable: 27.1% [Range 5-79%]

- Answer: ~25% are potentially preventable based on the literature
 - However, likely you can't prevent all of them

Audience Response Question

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- So, readmissions are a poor quality metric, rarely represent an error, and only $\sim 25\%$ are preventable. Can we at least predict who will be readmitted?
 1. No, models are no better than coin flip (auc=.500)
 2. Yes, but prediction models aren't great (auc=.625)
 3. Yes, and prediction models are great (auc=.950)

Readmission Prediction Models Stink

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Render IPEC Model: auc = 0.625

- 1 point each
- Age > 70
- Dx: anemia, DM, RF, HF, COPD
- Lab: Cr > 2, Alb > 3.3, Hct > 55 or < 25, glu > 180 or < 60
- LOS \geq 7 days
- Cancer (2pts)
- Prior admit < 6 mo
- 1-5 medications (3pts)
- > 6 medications (4pts)

Hasan Univ Model auc = 0.650

- Medicare (5pts)
- Medicaid (4pts)
- Self-pay (4pts)
- Charlson Index
- LOS > 2 days (3pts)
- Admits in last year
 - 1-3 (4pts)
 - 4 (9pts)
 - \geq 5 (11pts)
- Have PCP (3pts)
- Married (2pts) and SF-12

Further Proof of Model Stink Factor

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- Kansagara, *et al*, Risk Prediction Models for Hospital Readmission: Systematic Review. *JAMA*, 2011 (306)15.
- 30 studies (26 unique models)
 - 14 used retrospective admin data for hospital comparisons
 - Auc=.55-.65
 - 7 could identify high-risk patients during hospital stay
 - Auc=.56-.83
 - 5 used at hospital discharge
 - .68-.83
 - 2 models found functional and social variables improved discrimination, but rarely available

Audience Response Question

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- Now do you believe 30-day hospital readmission rate is a measure of healthcare quality?
 1. Yes
 2. No
 3. I'm still not sure, will have to listen until the end.

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Break #2 for Questions

Your host, Dr. Todd Wagner

Palo Alto VAMC

Audience Response Question

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- This presentation is a buzz-kill. Is there hope that interventions can improve readmission rates?
 1. Yes, studies consistently show readmission rates can be improved.
 2. No, evidence is mixed (interventions both increase and decrease readmits)
 3. Doesn't matter, floggings will continue until readmission rates improve.

SPECIAL ARTICLE

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DOES INCREASED ACCESS TO PRIMARY CARE REDUCE HOSPITAL READMISSIONS?

MORRIS WEINBERGER, PH.D., EUGENE Z. ODDONE, M.D., M.H.Sc., AND WILLIAM G. HENDERSON, PH.D.,
FOR THE VETERANS AFFAIRS COOPERATIVE STUDY GROUP ON PRIMARY CARE AND HOSPITAL READMISSION*

□ *NEJM*, 1996

- N=1,396 randomized to usual care or an intensive MD/RN intervention before discharge and continuing for 6 months.
 - Intervention: higher readmission rates (19% vs. 14%; p=.005)
 - More days of re-hospitalization (10.2 vs. 8.8; p=.04)
 - Intervention patients were more satisfied with care

□ In 2013: Primary Care Medical Home?

- No data to suggest it reduces readmission

Frequently Cited Positive Studies

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- Interventions at the time of discharge:
 - Project BOOST. Society of Hospital Medicine
 - The Care Transitions Intervention. Coleman, et al, *Arch Int Med*, 2006
 - Transitional Care of Older Adults Hospitalized with Heart Failure. Naylor et al, *JAGS*, 2004
 - A Re-engineered Hospital Discharge Program to Decrease Re-hospitalization. Jack, et al, *Ann Int Med*, 2009 (aka Project RED)
 - N=749; mean age 49.9 yrs
 - Readmissions: 0.21 vs. 0.15 visits/pt/mo (p=.09)
 - ED Visits: 0.25 vs. 0.17 visits/pt/mo (p=.014)
 - Readmissions + ED Visits: 0.45 vs. 0.31 visits/pt/mo (p=.009)

Interventions to Reduce 30-Day Rehospitalization: A Systematic Review

Ann Int Med. 155 (8). Oct 18, 2011

Luke O. Hansen, MD, MHS; Robert S. Young, MD, MS; Keiki Hinami, MD, MS; Alicia Leung, MD; and Mark V. Williams, MD

Conclusion: No single intervention implemented alone was regularly associated with reduced risk for 30-day rehospitalization.

Taxonomy of interventions:

Pre-Discharge

- Patient Education
- Medication Reconciliation
- Discharge Planning and Schedule Appointment

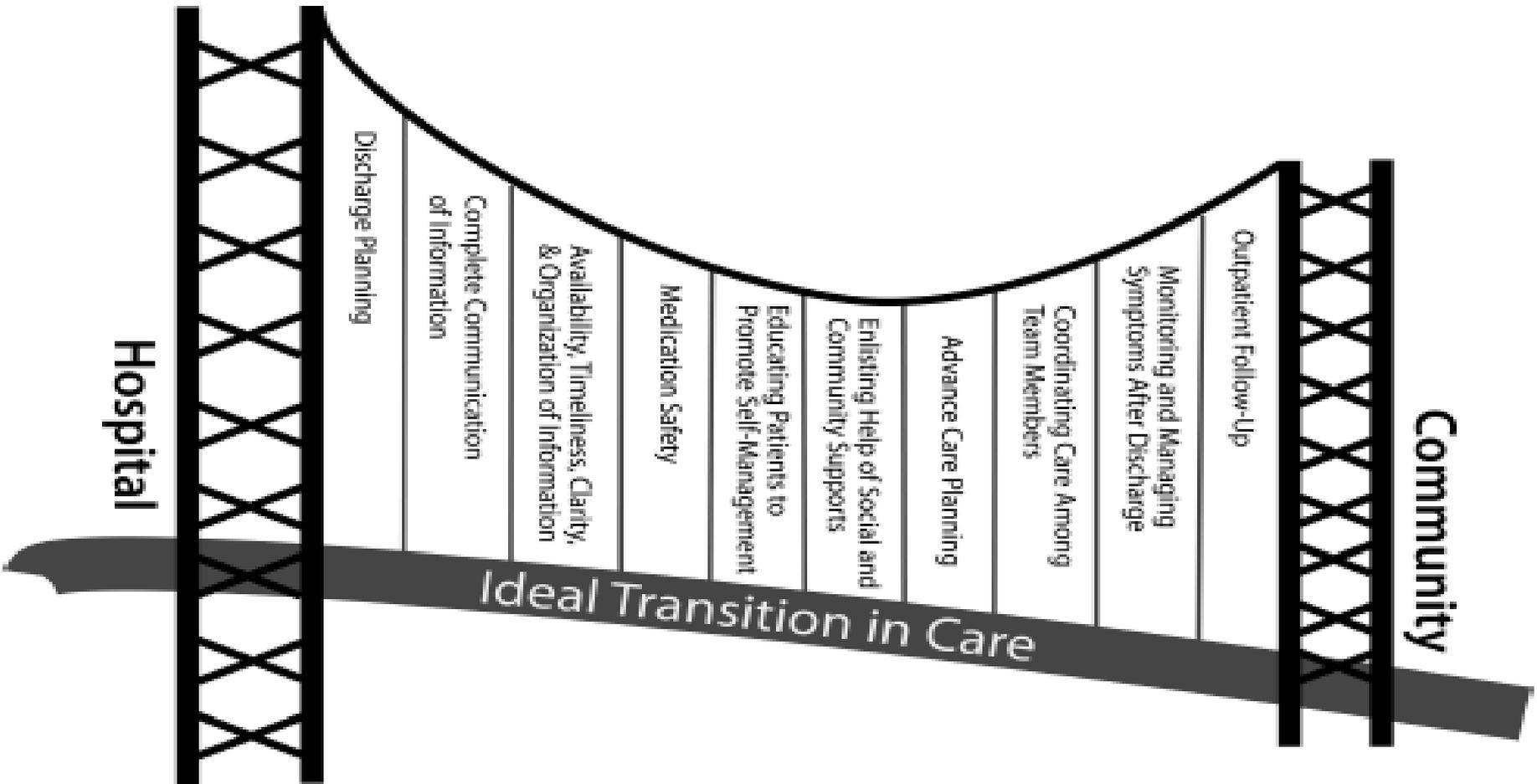
Post-Discharge

- Timely Follow-up and PCP Communication
- Follow-up Telephone Call
- Patient Hotline and Home Visit

Bridging the Transition

- Transition Coach
- Patient Centered Discharge Instructions
- Provider Continuity

□ Key Components



Interventions: Take Home Points

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- Represent a “bundle” of interventions
- Likely represent “good” things that we should be doing anyway; some things for everyone
- Determine local rates, then determine goals for any intervention

Audience Response Question

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- CMS is reducing payments for hospitals with higher than expected readmissions rates. This is going to:
 1. Decrease readmissions and save money
 2. Increase readmissions and cost money
 3. Will have no net effect, but will result in gaming the system

Incentives to Reduce Readmissions

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- Who wants patients readmitted?
 - ▣ Hospitals *may* have an “incentive” to readmit.
 - DRG-based payment for re-hospitalization are only 4% lower
 - ▣ NOT patients, physicians, or payors of health care.
- If nobody is incentivized to readmit, can we be incentivized to NOT readmit them?
 - ▣ Medicare Payment Advisory Commission (MedPac) Report, June 2008
 - 2 yrs confidential readmission rate reporting to hospitals/providers
 - Reduce payment for readmission (readmissions cost less)
 - “Bundle” payment for hospitalization and subsequent care
 - Requires hospital and clinic coordination with payment sharing

CMS Hospital Readmission Reduction Program (HRRP)

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- “Beginning October 1, 2012, the HRRP will lower payment rates for all Medicare discharges if acute care hospitals experience higher-than-average readmission rates for certain “applicable conditions.”:
 - ▣ AMI, CHF, CAP
- “For the first year of the program, payment reductions will be capped at a maximum of **1%** of inpatient payments. The payment reduction rates will subsequently increase by **1%** each year before being capped at **3%** for fiscal year 2015 and beyond.”

Cost of Implementation and Reducing Readmissions

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- Estimate for Project BOOST: \$170,000
- Hospital payments may go down if reduce readmissions [\$5,000 pneumonia DRG payment]:
 - 400 admits + 25% readmits=500 admits
 - @\$5,000 each = \$2.5M
 - 400 admits + 20% readmits=480 admits
 - @\$5,000 each = \$2.4M
 - Hospital loss of \$100,000 plus \$170,000 to implement

W. Witcomb. Readmission penalties start now. *The Hospitalist*, Oct 2012.



Future for Research

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- Prediction Rules: only if it can change practice
 - ▣ Kansagara, Systematic Review. *JAMA*, 2011 (306)15.
- Interventions: enough already; implement them
 - ▣ Hansen, Systematic Review, *Ann Int Med*. 155 (8). Oct 18, 2011
 - ▣ Burke, *et al*. Ideal Process to Improve Transitional Care. *JHM*. 8(2) Feb 2013
- Preventability: potential for real-time learning
 - ▣ van Walraven, *et al*, *CMAJ*, 2011
- Rates and Associations for Medicine and Surgery:
 - ▣ Not if it tells us something we already know

5 Summary Bullets: Readmissions

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- Not a good **quality metric**, but has gotten attention for care transitions
- Identifying **preventable readmissions** is difficult, but good to try to prevent them
- **Preventability** limited, but may result from an error/adverse event or system failures
- **Prediction models** stink, but opportunity to figure out how to use them
- **Intervention “bundles”** are out there, but we need wide-spread implementation.

And a final point...

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- Floggings will continue until readmission rates improve (or people lose interest)



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Final Break for Questions

Your host, Dr. Todd Wagner

Palo Alto VAMC