

A LEAN Look at Hospital Readmissions

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Outline

- Case presentation
- The Current System
- Literature Review
- Lean
- Readmissions Project
- Conclusion and Discussion



Case Presentation

- 76 yo Hispanic female
 - COPD
 - Diet controlled diabetes
- No PCP x several years
- Admitted for COPD exacerbation
- Treated with steroids, albuterol, ipratropium
- HbA1c noted to be 10
- Sugars poorly controlled during hospital stay and patient started on lantus



Case Presentation

- HD # 4
 - Patient's sugars better controlled with Lantus
 - Nutritionist consultation
 - Diabetic teaching before discharge
 - F/U with PCP in 1 week



The Following Day - At Home

- Unaware how to check her FSBS and cannot get glucometer to work
- Patient did not give herself her insulin as she did not know how
- No available PCP appointment
- Wait listed
- Returns to WIC
- Readmitted for poorly controlled blood sugars



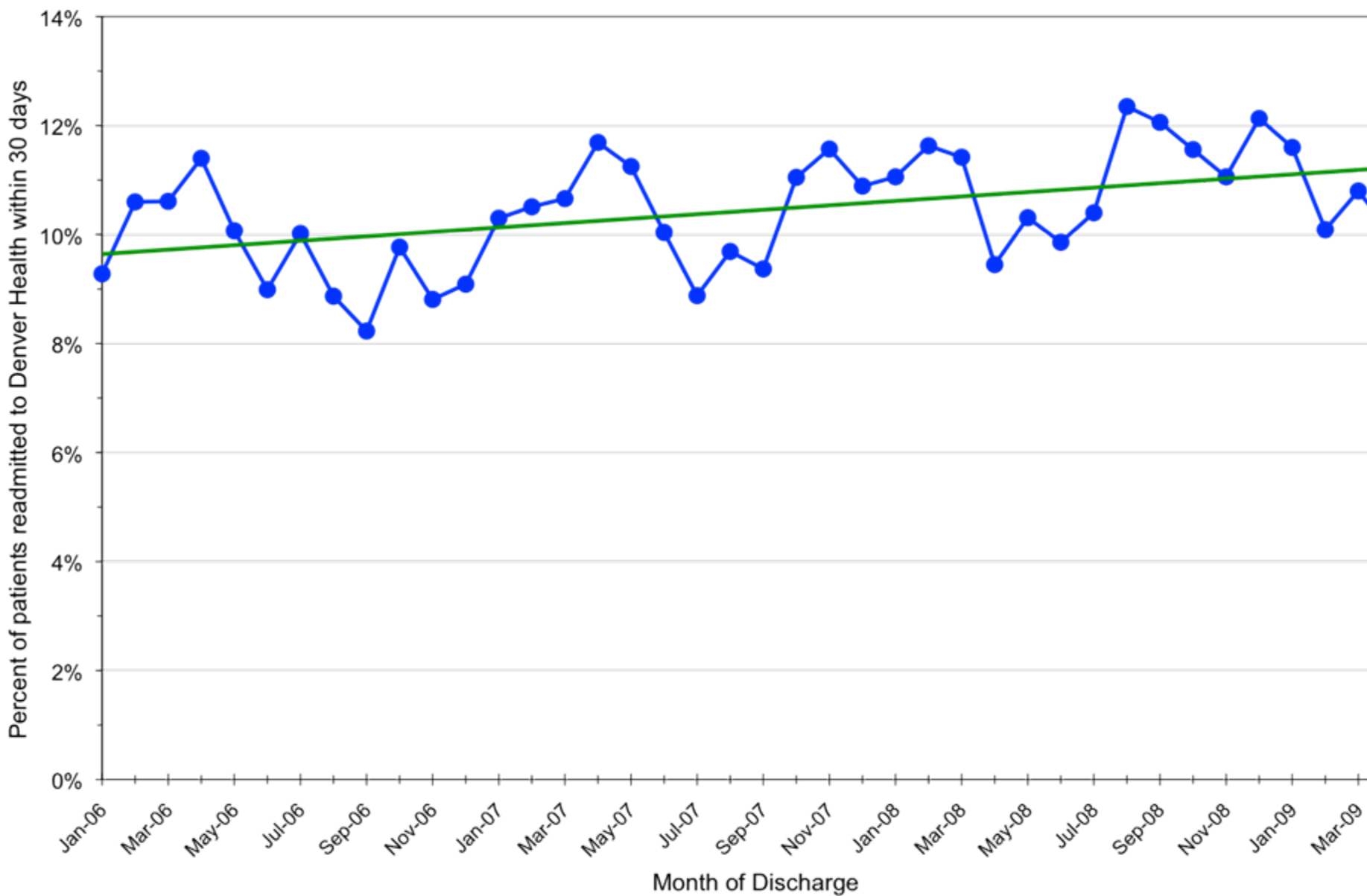
Where did we fail?

- Limited formal disease specific education
- Limited pharmacist to patient counseling
- Often inaccurate medication reconciliation
- Poor transition of care from inpatient to outpatient setting
- No standardized approach
- Little communication between providers
- Rapid follow up visits difficult to obtain



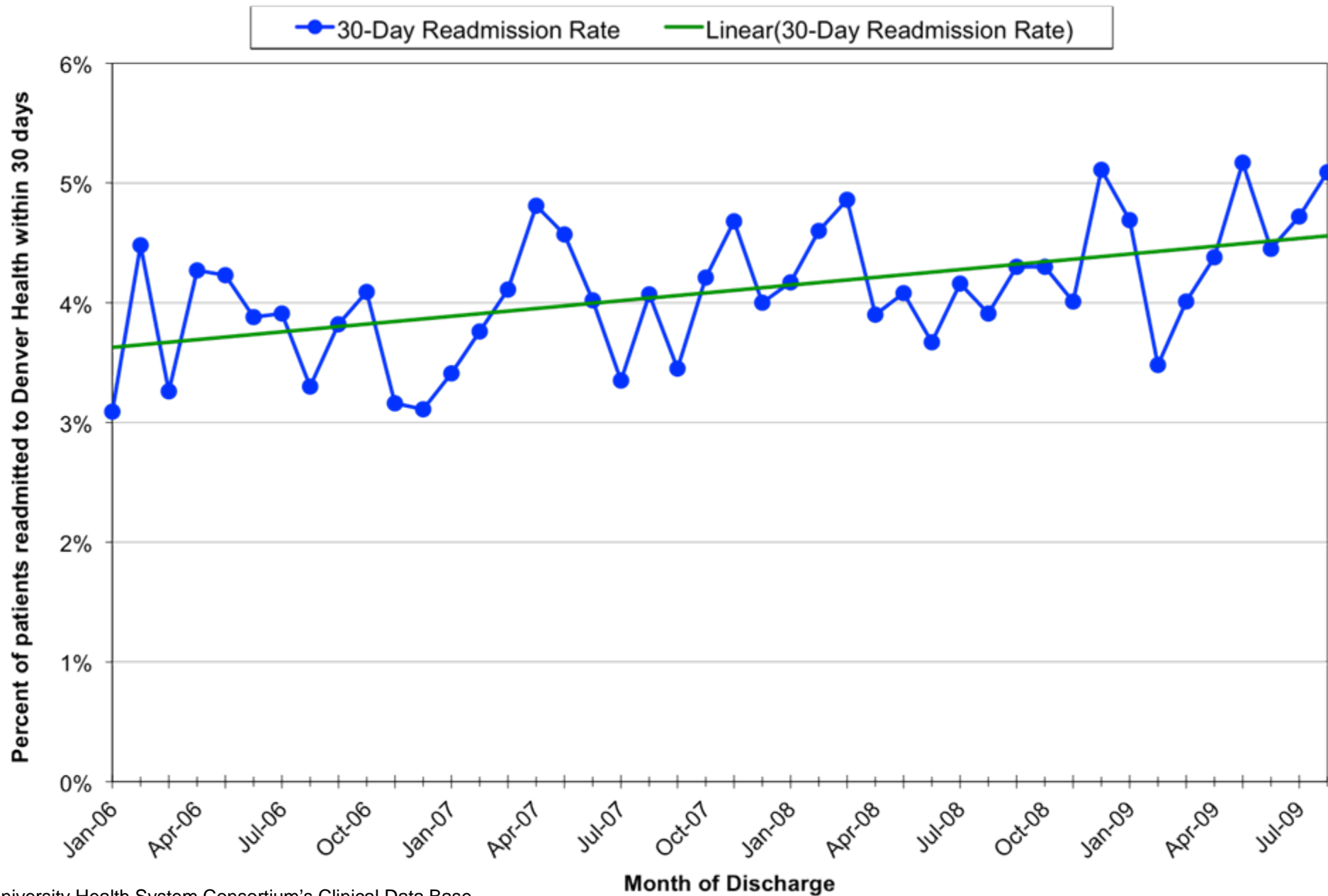
30-day Unrelated Readmission Rate

● 30-Day Readmission Rate — Linear(30-Day Readmission Rate)



30-day Related Readmission Rate*

*excludes dialysis, death first admit, rehabilitation, radiation therapy, chemotherapy



DH Top 25 Readmission Principle Diagnoses

Top 25 Readmission Principle Diagnosis

DX Rank	DX Code	DX Description	Pt Cnt	% Total	Cummulative % Total
1	786	Symptoms involving respiratory system and other chest symptoms	107	12%	12%
2	250	DIABETES MELLITUS	98	11%	23%
3	428	Heart failure	80	9%	32%
4	577	Diseases of pancreas	51	6%	37%
5	491	Chronic bronchitis	46	5%	42%
6	571	Chronic liver disease and cirrhosis	45	5%	47%
7	486	PNEUMONIA, ORGANISM UNSPECIFIED	37	4%	51%
8	493	Asthma	36	4%	55%
9	276	Disorders of fluid, electrolyte, and acid-base balance	34	4%	59%
10	291	Alcohol-Induced mental disorders	33	4%	63%
11	38	SEPTICEMIA	30	3%	66%
12	682	Other cellulitis and abscess	29	3%	69%
13	427	Cardiac dysrhythmias	28	3%	72%
14	584	Acute renal failure	26	3%	75%
15	578	Gastrointestinal hemorrhage	26	3%	78%
16	70	HEPATITIS	25	3%	81%
17	410	Acute myocardial infarction	22	2%	83%
18	599	Other disorders of urethra and urinary tract	21	2%	86%
19	780	General symptoms	21	2%	88%
20	572	Liver abscess and sequelae of chronic liver disease	20	2%	90%
21	403	Hypertensive chronic kidney disease	20	2%	92%
22	415	Acute pulmonary heart disease	19	2%	95%
23	518	Other diseases of lung	18	2%	97%
24	996	Complications peculiar to certain specified procedures	16	2%	98%
25	530	Diseases of esophagus	15	2%	100%
			903	100%	

** Top principle dx for index admission of patients that were readmitted

Readmissions by Payer Class

Financial Class	Admits	Readmits	% Readmits
CHS Total	215	32	14.88%
CICP Total	1528	202	13.22%
CICP Pending Total	176	14	7.95%
Commercial Total	350	18	5.14%
Dept of Safety Total	444	66	14.86%
DHMP Total	126	11	8.73%
Medicaid Total	986	246	24.95%
Medicaid Choice Total	975	229	23.49%
Medicaid Pending Total	428	141	32.94%
Medicare Total	2279	381	16.72%
NULL Total	12	0	0.00%
Other Total	28	5	17.86%
Other Government Total	48	7	14.58%
Self Pay Total	725	62	8.55%
Workers/ Comp Total	7	1	14.29%
Grand Total	8327	1415	16.99%

Readmissions

TABLE 2 Readmission for Prevention Quality Indicator (PQI) Conditions within Six Subsequent Months of Index Discharge^a

Age-Group	Number of Persons with an Initial PQI Admission (January-June)	At Least One PQI Readmission within 3 Months	At Least One PQI Readmission within 6 Months	At Least One Readmission of Any Kind within 6 Months	Hospital Cost of PQI Readmissions within 6 Months (\$million)	Hospital Cost of All Readmissions within 6 Months (\$million)	Population (million)
0-18	48,006	5.6%	9.2%	22.4%	51	136	10.6
19-64	106,640	11.7%	17.4%	32.5%	215	592	25.3
65+	191,005	16.1%	23.0%	40.1%	463	1,181	5.7
Total	345,651	13.3%	19.4%	35.3%	729	1,909	41.5 (15% of U.S. population)

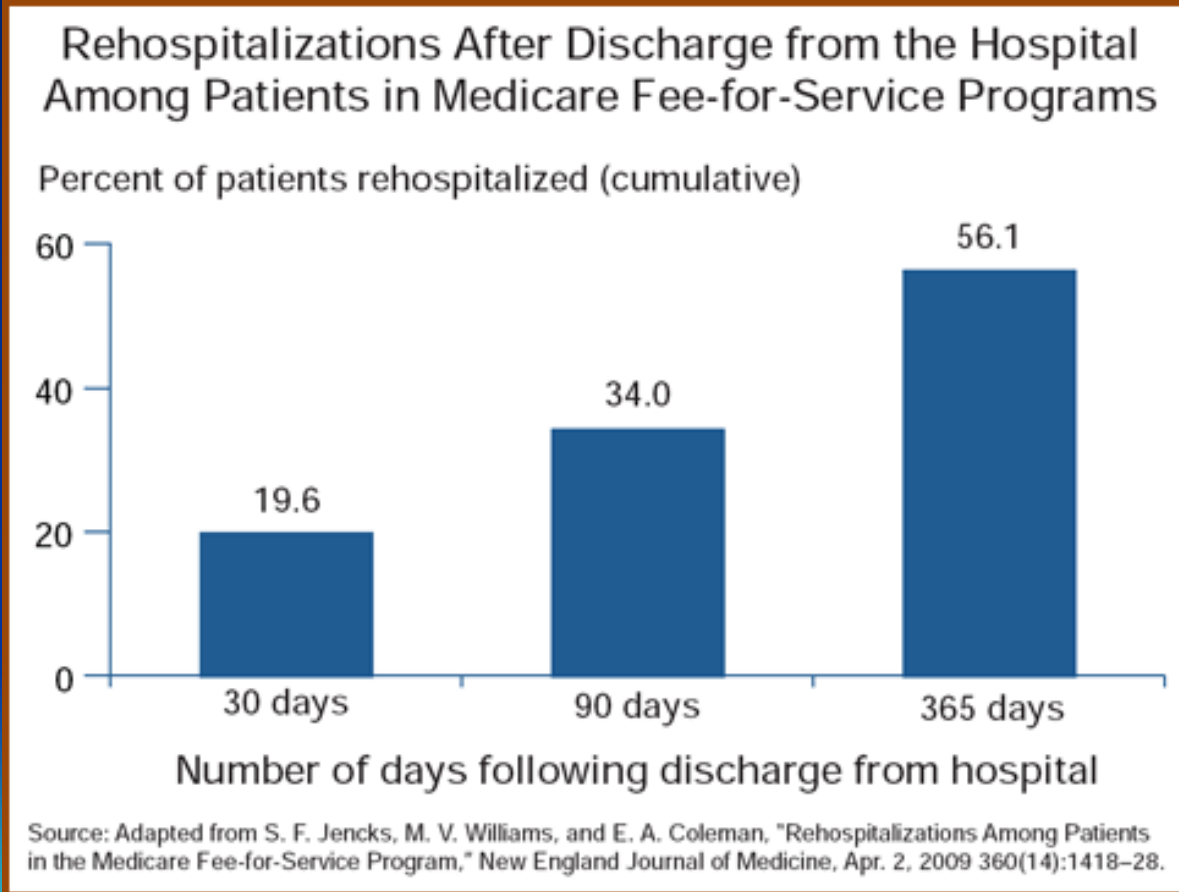
Source: Calculations from Healthcare Cost and Utilization Project (HCUP) statewide files using linked cost/charge ratios (see text).

a. 1999 for discharges of residents in four states: New York, Pennsylvania, Tennessee, Wisconsin).

b. This includes all PQI readmissions. Less than 1 percent of persons with initial PQI admission are missing a cost estimate. No imputation was made in those cases.

Friedman, B and Jayasree, B. The Rate and Cost of Hospital Readmissions for Preventable Conditions. Med Care Res Rev 2004; 61; 225.

Rehospitalizations among Medicare Patients



Conditions Associated with the Largest Number of Re-hospitalizations

- Medical
 - Heart Failure – 26.9%
 - Pneumonia – 20.1%
 - COPD – 22.6%
 - Psychoses – 24.6%
 - GI problems – 19.2%
- Surgical
 - Cardiac stent placement – 14.5%
 - Major hip or knee surgery – 9.9%
 - Other vascular surgery – 23.9%
 - Major bowel surgery – 16.6%
 - Other hip or femur surgery – 17.9%

Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med* 2009;360:1418-28.

Why were they readmitted?

Condition at DC	Most Frequent Reason for Readmit	Second Most Frequent Reason
Heart failure	Heart Failure	PNA
PNA	PNA	Heart Failure
COPD	COPD	PNA
Psychoses	Psychoses	Drug Toxicity
GI problems	GI problems	Nutrition/metabolic

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CMS Targets Readmissions

- CMS proposes to reduce reimbursement to re-hospitalized patients in 2010
 - Heart Failure
 - Pneumonia
 - Acute MI
- To create payment incentives to reduce the rates of re-hospitalization



Readmission by Payer Source

TABLE 4 Persons with at Least One Prevention Quality Indicator (PQI) Readmission within 6 Months^a

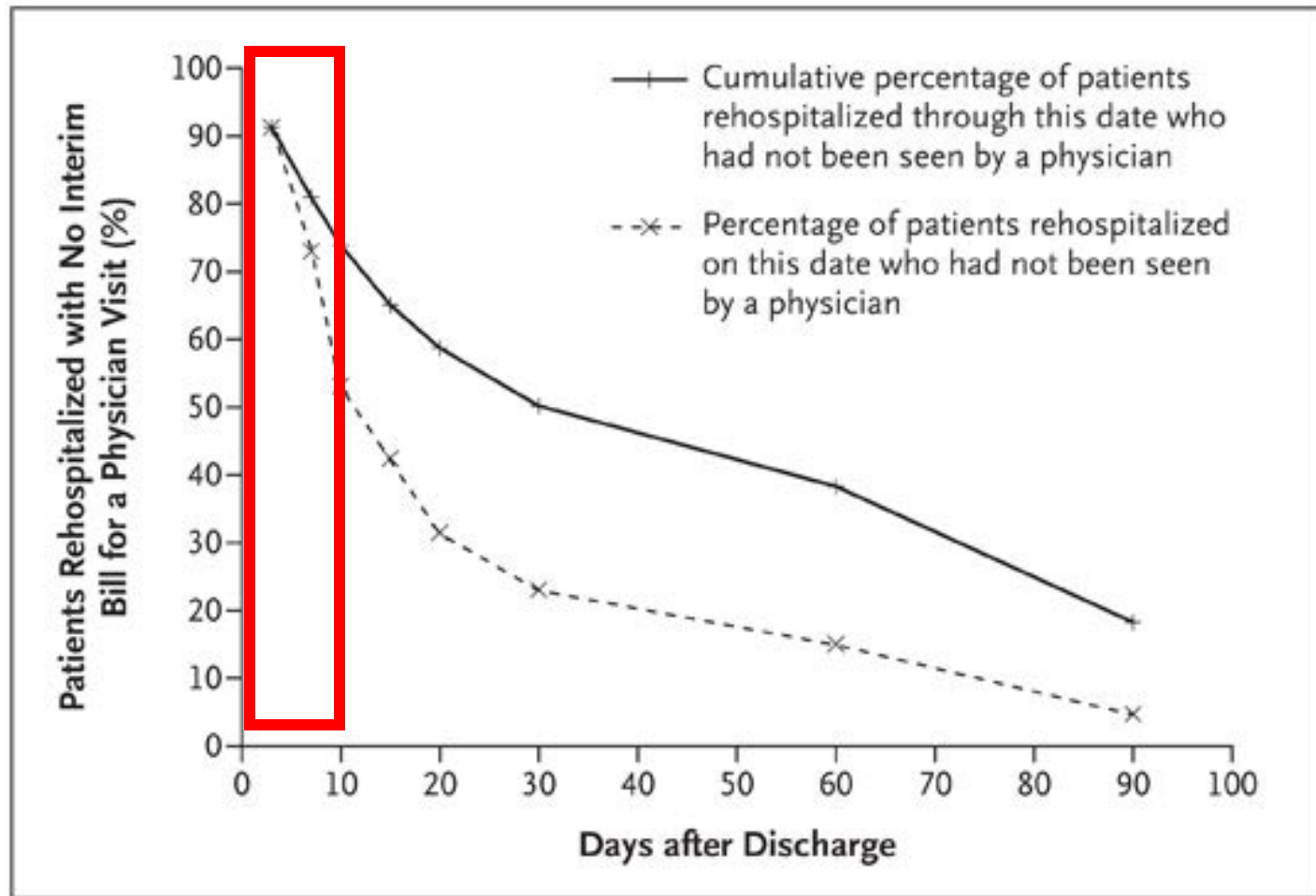
<i>Primary Expected Payer (exclude if missing)</i>							
<i>Age-Group</i>	<i>Medicare</i>	<i>Medicaid</i>	<i>Private Insurance</i>	<i>Self-Pay</i>	<i>No Charge</i>	<i>Other (include missing)</i>	<i>All</i>
0-18		11.4	7.5	9.9		7.9	9.2
19-64	26.7	21.8	12.6	11.3	17.3	15.9	17.4
65+	23.2	23.6	21.6	16.1		24.4	23.0
<i>Race/Ethnic Group (exclude if missing)</i>							
<i>Age-Group</i>	<i>White</i>	<i>Black</i>	<i>Hispanic</i>	<i>Asian and Pacific Islander</i>	<i>Native American</i>	<i>Other and Unknown</i>	<i>All (include missing)</i>
0-18	7.1	11.7	12.6	10.1	10.4	12.5	9.2
19-64	16.4	20.5	18.1	11.8	16.1	16.8	17.4
65+	22.8	26.0	25.2	20.7	24.9	21.6	23.0

Note: Estimated standard errors are not shown. The pooled standard error of the average in any line is very low, less than .002 (or 0.2 percent). Any cell value more than 0.6 percent different from the line average is outside the 99 percent confidence interval of the average.

a. Percentage of persons with initial PQI discharge January-June 1999. Residents of New York, Pennsylvania, Tennessee, Wisconsin.

Friedman, B and Jayasree, B. The Rate and Cost of Hospital Readmissions for Preventable Conditions. Med Care Res Rev 2004; 61; 225.

Readmissions w/ no Bill for PCP



Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the Medicare fee-for-service program. *N Engl J Med* 2009;360:1418-28.

Does increased access to primary care reduce hospital readmissions?

- Multicenter randomized controlled trial
- VA's
- Chronically ill patients (DM, CHF, COPD)
- Usual care vs. intensive primary care intervention
- Components of Intervention
 - 3 days before dc, primary nurse assessed needs, developed list of medical problems, educational materials, patient given pager numbers
 - PCP visited patient in hospital
 - F/u appointment made in 1 week
 - Patient called 2 days after dc
 - F/u w/ pcp and nurse

Does increased access to primary care reduce hospital readmissions?

- Patients severely ill
- Extremely poor quality of life scores
- Intervention group had significantly higher readmission rates (.19 vs .14 per month, $P=0.005$)
- More days during their rehospitalization (10.2 vs 8.8)
- Patients more satisfied w/ care



Weinberger, M, et al. Does increased access to primary care reduce hospital readmissions?. New England Journal of Medicine. May 30, 1996.

Pharmacist Education at DC

- Randomized control study of patients 80 years and older
- Comprehensive Med list at admission
- Drug Review and advice given to physician
- Patients educated and monitored throughout hospital stay
- Pharmacist communication w/ PCP
- Follow up call 2 months later



Pharmacy Education

- Intervention group
 - 16% reduction in all visits to the hospital
 - 47% reduction in visits to the ER
 - Drug related readmissions were reduced by 80%
 - After inclusion of the intervention costs, the total cost per patient was \$230 lower than that in control group
- If implemented, the addition of pharmacist to health care teams would lead to major reductions in morbidity and health care costs

Care Coordination Programs (CCP)

- Evaluate if CCPs reduced hospitalizations and Medicare expenditures
- Eligible fee-for-service Medicare patients
- 15 programs
- Nurses provided patient education and monitoring (mostly via telephone)

Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials. JAMA. 2009 Feb 11; 301 (6): 603-18.

Care Coordination Programs (CCP)

- 13 of 15 programs showed no significant differences in hospitalizations
- 2 “successful programs”
 - 1-in person contact per month
 - Need to target patients not low or high risk
 - Education on meds
 - Coordinators worked closely w/ hospital and physicians
- None of the 15 programs generated net savings

Peikes D, Chen A, Schore J, Brown R. Effects of care coordination on hospitalization, quality of care, and health care expenditures among Medicare beneficiaries: 15 randomized trials. JAMA. 2009 Feb 11; 301 (6): 603-18.

Comprehensive Discharge Planning & Home Follow-up Helpful

- Randomized clinical trial
- Advanced practice nurses
- Intervention group received comprehensive discharge planning and home follow-up designed for elders
- By week 24, control group patients more likely than intervention group to be readmitted (37.1% vs 20.3%)
- Total Medicare reimbursements \$1.2 million vs \$0.6 million

Care Transitions

- Randomized control trial
- Identified at time of hospitalization
- Community-dwelling adults >65 yrs
- Received
 - Tools to promote cross-site communication
 - Encouragement for more active role
 - Continuity across settings and a “transition coach”

Care Transitions

- Lower rehospitalization rates at
 - 30 days (8.3 vs 11.9)
 - 90 days (16.7 vs 22.5)
- Lower rehospitalization rates for same condition for original admission at
 - 90 days (5.3 vs 9.8)
 - 180 days (8.6 vs 13.9)
- Mean hospital costs lower for intervention patients at 180 days

Ideal World

- Front load primary care visits
- 24-Hour Availability/response programs
- Medication management
- Case Management
- Disease specific management programs
- Patient/caregiver education
- Telehealth



The Reason for Our Project

- To reduce our 30-day readmission rate for inpatient medical service
 - 10/08-9/09 baseline=16.9%
- Minimize the impact of CMS reimbursement reductions for readmissions
- Exclusions: OB, dialysis, chemo, radiation therapy, death on index admit



LEAN at Denver Health

- Lean process originated at Toyota in the 1930's
- MIT researchers analyzed it and brought it to the U.S. in 1988
- Focus on:
 - Value as defined by the end user or customer
 - Continuous improvement
 - Eliminating wastes of all kinds-”getting lean”



Denver Health Current State

- Little to no disease specific education for patients during hospitalization or at discharge
- Fragmented and non-standardized discharge process
- No “Captain of the ship” for patient discharge
- Limited patient education regarding discharge medications
- Limited mental health resources in Denver
- Poor outpatient access to care



Our Target State

- Patient leaves hospital with full understanding of disease process and treatment plan.
- Patient leaves hospital with all appropriate medications and supplies
- Patients have an understanding of, and timely access to appropriate outpatient care



Our Action Plan

Lean Event	Type	Team Lead
IP Disease specific patient education	RIE	CNE
Inter-professional Discharge Process	RIE	Hospitalist
OP Disease Specific DM	RIE	General Internist
Clean/Accurate D/C Med List	RIE	Pharmacist
Post D/C Appointment Access	RIE	Appointment Center Leadership
Medical “311”	RIE	MBB
Readmission Activation Team	RIE	CSW
Appropriate Admission Status	RIE	UM
Discharge Expectations	RIE	Hospitalist
“Get the Face Sheet Right”	RIE	MBB
Care Team Standard Work	RIE	Nursing Leadership
Improving PCP Discharge Communication	RIE	General Internist
On Demand Access	VSA	MBB

Our Goals

Metric	Baseline	Target
<i>Heart Failure Readmission Rate</i>	24.1%	19.3%
<i>Pneumonia Readmission Rate</i>	14.9%	11.9%
<i>Acute Myocardial Infarction</i>	15.9%	12.7%
<i>Medicine “All Cause” Re-Admit Rate</i>	16.9%	13.6%
<i>Medicine Readmissions</i>	1,463	1,170

Case Presentation

- 76 yo hispanic female with history of COPD and diet controlled diabetes
- No PCP visit in several years
- Admitted for COPD exacerbation
- Treated with steroids, albuterol, ipratropium
- HbA1c noted to be 10
- Sugars poorly controlled during hospital stay and patient started on lantus



Case Presentation

- During Hospital Stay (starting on Day 1)
 - Patient receives disease specific education for both her diabetes and her COPD throughout her stay
 - Pharmacist reviews and ensures patient on correct medications while in hospital and educates patient on medications
 - Patient begins checking her own blood sugars with the aid of nursing and learns how to deal with her diabetes
 - Nutritionist evaluates and educates patient
 - Discharge team with team lead ensures all aspects of patients discharge complete (check list)
 - Appointment made with pcp in <5 days (?discharge clinic)
 - Post discharge phone call in 24-48 hours by care provider



5 days later...

- Patient follows up with pcp
- Patient satisfied by her care
- Readmission avoided

