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Clinical Community Linkages:
A Perspective in Diabetes Interventions

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Learning objectives

1. List three categories of barriers to medication adherence potentially contributing readmissions.
2. Identify medication-related gaps in care associated with hospital admissions and readmissions.
3. Learn how specific pharmacy-related components impact an integrated care transition model.
4. Discover why a health system partnering with a community pharmacy can be effective in reducing readmissions.

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Rate of admissions

Admissions increased by 55% between 1997 and 2007 in the United States (that's 4.5% per year).

- Initial focus on hospitals: Quality of inpatient care and length of stay
- Community Care Transitions Program: ACOs, PCMH and Medical Neighborhood

Condition	% Readmissions		Relative Δ (%)	Absolute Δ (%)
	2008	2010		
Medical	16.2	15.9	-1.7%	< 0.5%
CHF	21.4	21.1	-1.4	< 0.5
AMI	18.7	18.1	-3.2	- 0.6
PN	15.3	15.3	<0.5	< 0.5
Surgical	12.7	12.4	-3.0	< 0.5

Source: Goodman DC, Fisher ES, Chang C. After Hospitalization: A Dartmouth Report On Readmissions Among Medicare Beneficiaries. February 2013. Robert Wood Johnson Foundation. Available at: <http://www.rwjf.org/content/dam/farm/reports/reports/2013/rwjf404178>

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Burden of readmissions

- **20% of Medicare beneficiaries** readmitted within 30 days of discharge.¹
- Readmissions were estimated to cost taxpayers **\$15 billion** in 2004.¹
- Readmissions cost Medicare \$17.5 billion in inpatient spend alone in 2012.²

1. Jencks, Stephen F., Mark V. Williams, and Eric A. Coleman. "Rehospitalizations among Patients in the Medicare Fee-for-Service Program." *New England Journal of Medicine* 2009, 360:1418-28.

2. National Medicare Readmission Findings: Recent Data and Trends. 2012. Available at: <http://www.academyhealth.org/files/2012/06/day30reim.pdf>

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Risk for readmissions

Patient-specific factors

- Age, sex, socioeconomic deprivation, prior health care use, and specific conditions such as malignancy, progressive heart failure, and a range of comorbidities

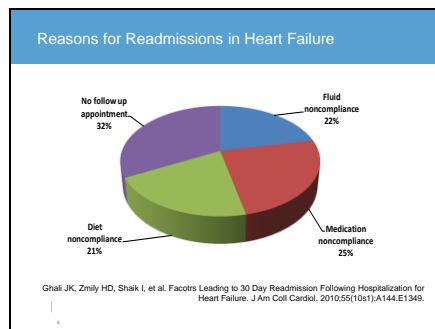
Quality of in-hospital care

- General quality of hospital care experienced by the patient and patient climate

Quality of discharge planning/follow-up care

- Presence and adequacy of discharge planning, level of appropriate outpatient and community care, the degree of patient and family education, and how frequently the patient meets with their physician after discharge

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Can we identify who is at risk?

Assessed the predictions made by

- Physicians
- Case managers
- Nurses

"...none of the AUC values were statistically different from chance"



Alshuler N, Schriger J, Chew E, Washienko M, Vidyarthi AR. Ability of providers to predict hospital readmissions. J Gen Intern Med. 2011;26(7):771-6.


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Interventions to reduce readmissions

Systematic review of 43 studies identified three types of interventions:

- Pre-discharge
- Post-discharge
- Bridging



Hansen LO, Young RB, Hinami K, Leung A, Williams MV. Interventions to Reduce 30-Day Rehospitalization: A Systematic Review. Annals of Internal Medicine. Oct 18 2011;155(8):520-528.

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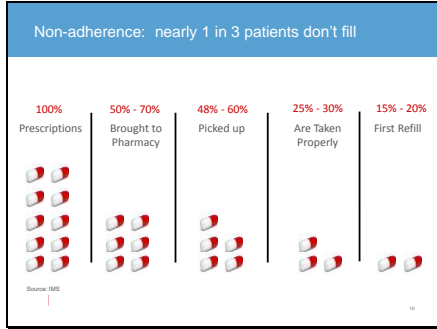
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Pharmacist Services Targeting Quality Gaps in Transitions of Care

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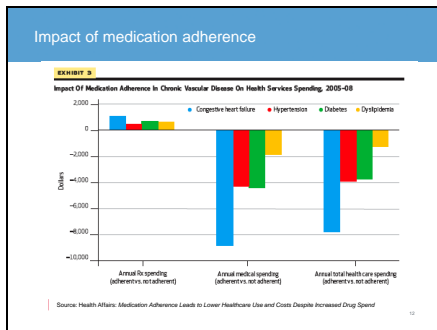


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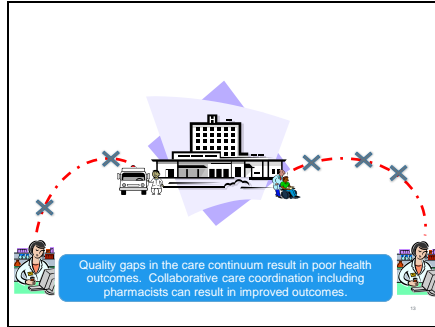
Burden & barriers of medication non-adherence

<p>Burden</p> <ul style="list-style-type: none"> Clinical <ul style="list-style-type: none"> Up to 25% of hospital admissions¹ Financial <ul style="list-style-type: none"> Estimated annual cost \$290bn² Humanistic <ul style="list-style-type: none"> Approximately 342 Americans die every day¹ Prevalence <ul style="list-style-type: none"> As many as 40% of patients³ 	<p>Barriers</p> <p>RAND Review (2009)</p> <ul style="list-style-type: none"> Patient Factors <ul style="list-style-type: none"> Health beliefs Cognition Demographics Disease burden Medication characteristics <ul style="list-style-type: none"> Health System <ul style="list-style-type: none"> Cost and managed care Provider <ul style="list-style-type: none"> Trust and satisfaction Communication
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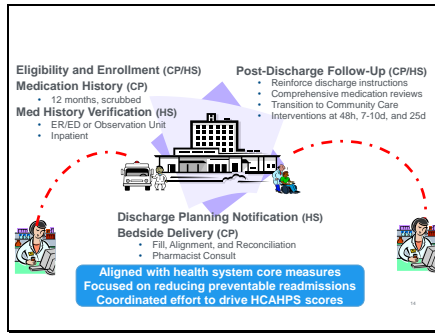
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 DeKalb Medical

Case Study: DeKalb Medical

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DeKalb Medical – Early Phase Model Outcomes

3 hospital system in Metro Atlanta Region

- 407 beds, 22,000 discharges, 65,000 ED visits, 4.6 ALOS
- 100 bed, 5,800 discharges, 58,000 ED visits, 4.18 ALOS
- 40 bed LTACH

DPHO, mostly non-employed physicians
Hospitalists – employed

Major factors impacting hospital utilization trends

- Growing Uninsured populations
- Health Care Reform PPACA Impact
- Misalignment of financial incentives among healthcare providers
- Fragmentation of health care delivery system

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Methodology

DeKalb Institutional Review Board (IRB):

- Expedited review
- Waiver of documentation of consent and HIPAA
- Approved on April 25, 2012 (DM Protocol #040512)

Study Design

- Retrospective cohort
- Census of all discharges

Control populations

- Historic data (a type of retrospective cohort study)
- Non-participating contemporaneous matches
 - a. North Decatur campus
 - b. Hillendale

30-day readmission calculation based on CMS SAS code, though

- Only 2-hospital system
- Not limited to Medicare population

Multiple logistic regression, controlling for demographic and clinical variables

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Key Findings & Study Limitations

At both hospitals, readmission rates are trending higher,
–Historic period (2010) versus current period (2011 – June 2012)

Adjusting for gender, age, race, length of stay, month of discharge, and CMS condition, **all four control groups had greater likelihood of readmission (*adjusted OR* = 1.6 – 2.1) as compared to intervention cohort.**

Not adjusted for comorbid conditions
Lack of data about readmissions to other area hospitals
Selection bias likely
Not all criteria in the CMS code could be applied

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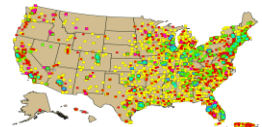
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Community pharmacy as a new provider paradigm to improve outcomes

- Not physician focused, but linked to physicians and patients
- Leverages certified SMEs (NPs and Pharmacists) as "trusted sources of information"
- Regional and national reach
- Focused on metrics that matter



Legend:

- Retail - Existing
- Retail - Approved
- Retail Clinics
- Employer Worksites
- Hospital On-Sites
- Specialty
- Home Infusion/IT
- Mail

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**Any questions?
Thank you!**

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**Appendix: Case Study Outcomes
Descriptive Statistics**

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Descriptive Statistics						
Variable	Historic Hillandale	Contemporaneous Hillandale	Historic North Decatur	Contemporaneous North Decatur	Intervention Group North Decatur	
n (count of qualifying admits)	4232	7024	13293	19089	1518	
30-day readmit (% n)	9.5%	10.8%	10.6%	11.5%	5.6%	85
LOS (mean ± SD)	4.3	4.3	9.8	5.5	6.4	4.2
age > 65 (% n)	30.8%	31.3%	41.1%	54.9%	41.8%	444
age (mean ± SD)	54.9	18.0	55.6	18.4	59.5	17.7
HF case (% n)	3.5%	1.4%	2.1%	1.4%	2.2%	5
AMI case (% n)	1.3%	5.6	1.1%	7.4	1.0%	130
PN case (% n)	4.87	206	4.2	295	3.52	468
Medicaid (% n)	12.0%	509	12.8%	802	9.9%	1312
Race: Other (% n)	2.1%	90	1.3%	93	5.0%	669
Race: Black (% n)	92.3%	3908	92.8%	6521	62.1%	8242
Race: White (% n)	5.5%	234	5.8%	410	32.9%	4372

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Adjusted risk of readmission				
Independent variables and covariates	OR	95% CI	Pr >	ChiSq
Male	0.954	0.896 1.014	.1316	
Age 65 + *	1.302	1.221 1.389	<0.0001	
Medicaid *	1.437	1.31 1.577	<0.0001	
Race (Reference Group: White)	0			
Black *	1.243	1.153 1.339	<0.0001	
Other	0.895	0.757 1.061	0.2019	
Month *	1.019	1.01 1.028	<0.0001	
LOS *	1.026	1.022 1.031	<0.0001	
CMS Conditions (Reference: without condition)				
HF *	1.554	1.267 1.905	<0.0001	
AMI *	0.426	0.292 0.627	<0.0001	
Interventional group comparison (Reference Group: Enhanced Bedside Delivery)	0			
Historic Hillandale *	1.572	1.232 2.005	0.0003	
Contemporaneous Hillandale *	1.879	1.488 2.373	<0.0001	
Historic North Decatur *	1.828	1.458 2.293	<0.0001	
Contemporaneous North Decatur *	2.071	1.655 2.591	<0.0001	