


ADVANCING QUALITY OUTCOMES AND
INNOVATIONS:
 Preparing pharmacy for the future

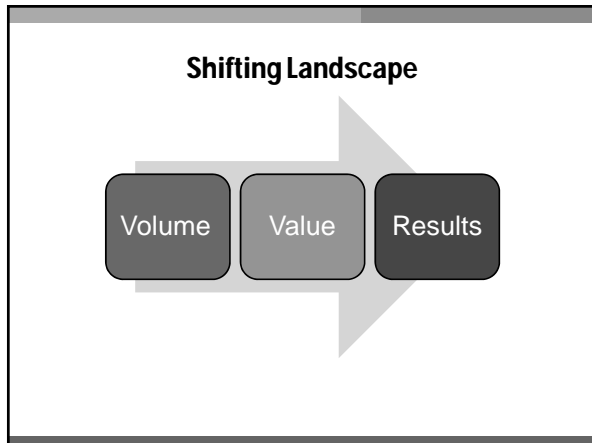


What is Health-System Pharmacy's Contribution to the Value Equation?

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Learning Objectives

- Describe health-system pharmacy imperatives as a result of changes in the healthcare landscape.
- Identify high impact areas and metrics to demonstrate value.
- Describe the transformation of pharmacy practice from acute care to patient-centered care.



Health-System Transformation

Traditional Acute Care Volume	Health and Wellness Value
<ul style="list-style-type: none"> • Episode-based • Medical care • Treatment of acute conditions • Admissions • Medication orders • Outpatient revenue • Oral medications mainstay for chronic diseases 	<ul style="list-style-type: none"> • Patient-centered care • Team-based care • Preventing readmissions • Transitions of care • Patient's medication list • Outpatient costs • Specialty medications for chronic diseases

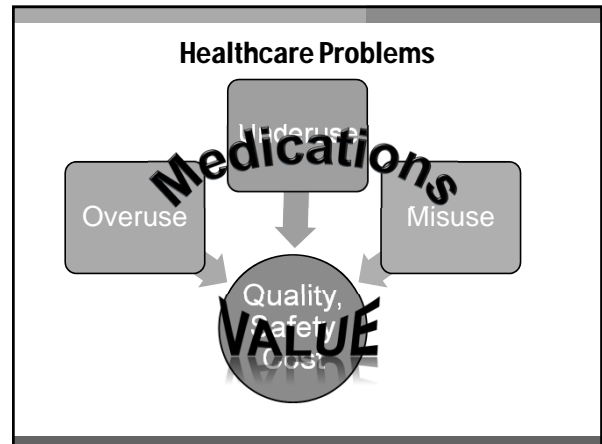
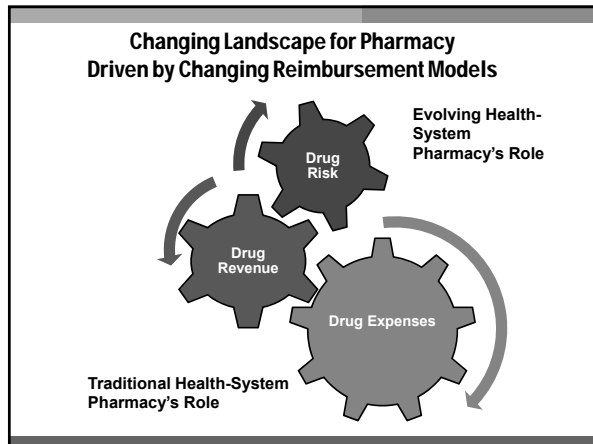
Health-System Implications Managed Care 2.0

- Population health
- Risk-based contracting
- Focus on efficiency and costs
- Reducing readmissions and Length of Stay (LOS)
- Mergers-acquisitions and joint ventures
- Metamorphosis of retail sector
 - Hospital-retail partnerships
 - Healthcare clinics
 - Infusion services

Outpatient Conundrum

- Cancer Centers
- Specialty Drugs
 - Outpatient Infusions
 - Prescriptions
- Diagnostics/Procedures

Revenue Risk



IMS Health Identifies Potential Savings of \$213.2 billion

- Overuse
 - 78 million outpatient visits
 - 248 million prescriptions
 - 4 million needless Emergency Department (ED) visits
- Opportunities
 - Improve adherence
 - Evidence-based treatments
 - Focus on antibiotic misuse
 - "Mismanaged polypharmacy" in elderly
 - Targeted disease management

IMS Health Identifies Potential \$213.2 Billion Savings in Healthcare Costs <http://www.firstreportnow.com/articles/ims-health-identifies-potential-2132-billion-savings-healthcare-costs> (accessed 2014 July 15)

Transforming Patient Expectations

- Choosing Wisely ([choosingwisely.org](http://www.choosingwisely.org))
 - 60 specialty societies
 - Evidence based recommendations
 - Many are medication-related
 - Don't prescribe a medication without conducting a drug regimen review. *American Geriatrics Society*
- Choosing Wisely

<http://www.youtube.com/watch?v=FqQ-JuRDk8> <http://www.choosingwisely.org/> (accessed 2014 Aug 1)

Choosing Wisely

- Consists of evidence-based recommendations
- Supports patient engagement in discussions about treatments and tests
- Has many medication-related recommendations
- All of the above

High Impact Areas to Demonstrate Value

- Drug expenses with focus on specialty medications
- Cancer Care
- Antimicrobial Stewardship
- Transitions of Care

Specialty Drug Spend

- PMPY* 2013 for medical and pharmacy cost: \$348 vs traditional drugs: \$676
- PMPY 2018 anticipated specialty: \$846 vs. traditional \$836
- Cost savings opportunities
 - Site of administration
 - Specialty disease algorithms aka clinical pathways 2.0
- Prerequisites: clinical subject matter experts

*per member per year

Cost Saving Opportunities for Specialty Medications: <http://www.firstreportnow.com/articles/cost-saving-opportunities-specialty-medications> (accessed 2014 Sept 28)

Specialty drug management strategies include



- Developing treatment guidelines or pathway
- Selecting least costly site of administration
- Having pharmacist specialists evaluate orders
- All of the above

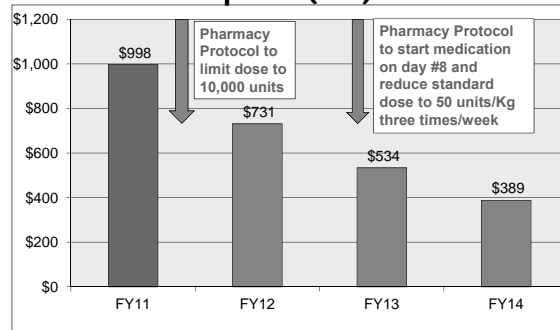
Rheumatoid Arthritis (RA) Pathway Results

CareFirst BlueCross BlueShield, Cardinal Health

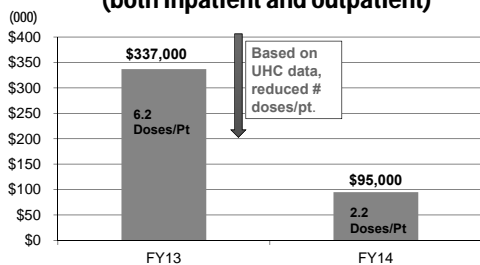
- Payer-sponsored collaborative
- Evidence based, consensus driven RA pathway
- Reimbursement enhancements to support adoption and compliance
- Goal 70% 1st year, 80% 2nd year
- 1800 pt results: Adherence to pathway did not increase Clinical Disease Activity Index (composite score of disease) based on patient and M.D. perspective
- 8% reduction in biologics

Feinberg BO. Rheumatoid arthritis pathway program impact on patterns of care. ISPOR 2014

Epoetin (000)



Hepatitis B Immune Globulin (both inpatient and outpatient)



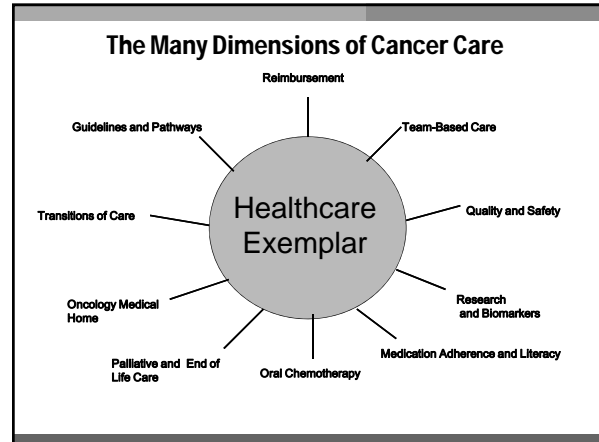
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Value Examples

Medication	Opportunity Identified and Pharmacist Intervention	Cost Savings
CMV-IVIG	Patient with CMV viremia who had response to change in antiviral from ganciclovir to foscarnet. Intervention: Discontinued CMV-IVIG	\$75,000
Glucarpidase	Patient with methotrexate toxicity. Intervention: Dose rounding	\$24,805
Hemin for injection	Patient without lab confirmation of acute intermittent porphyria. Intervention: Hold therapy pending lab results. Labs returned negative.	\$24,984
IVIG	Patient with HIV, hepatitis C, ITP; received 3 doses of IVIG as outpatient. Admitted with bruising and headache, platelet count of 9000/ μ L. M.D. ordered 2 more doses, however platelets were increasing. Intervention: Discontinue IVIG order	\$15,074
Idursulfase	Patient with VP shunt malfunction repair. Receives idursulfase weekly as an outpatient. Intervention: Contacted patient's medical geneticist to administer dose post-discharge.	\$10,500

Delivering High-Quality Cancer Care: Charting a New Course for a System in Crisis

http://som.edu/~media/Files/Reports/20Files/2013QualityCancerCare/qualitycancercare_rh.pdf (accessed 2014 Aug 8).



Cancer care includes the following dimensions except:

- Palliative care
- Team-based care
- Nursing
- Guidelines and Pathways

Cancer Care Trends

- 900 oncology drugs in development; 50% are oral
- Cost cancer care \$100 billion/year; projected to grow to \$200 billion by 2020
- Approximately 14 million people have had cancer in U.S.; projection: 18 million survivors by 2030
- Center for Medicare & Medicaid Services pays for 45% of patients with cancer
 - 53% of cancer diagnoses were in pts. ≥65 years old in 2012
- Oral drugs cost up to \$100,000/year
- Care is often fragmented and poorly coordinated

Hospital Acquisition of Oncology Practices

- Higher cost of care: 55% increase to infuse in hospital-based setting (source Medicare)
- Higher out of pocket costs for patients
- Risk to hospitals and M.D. = Narrow networks
- Payer focus on site of care

Delivering Affordable Cancer Care in the 21st Century

Institute of Medicine (IOM) Workshop examined drivers of cancer care costs

- Inappropriate financial incentives
- Unrealistic expectations re: effectiveness of screening & treatments for cancer by patients and clinicians
- Overuse and misuse of medical resources and inadequate adherence with treatment guidelines
- Lack of evidence on what represents high quality, affordable cancer care

IOM (Institute of Medicine). 2013. *Delivering affordable cancer care in the 21st century: Workshop summary*. Washington, DC: The National Academies Press

IOM Recommendations

"If we can find a way to solve this problem for cancer care, we have the keys to solve it for health care more broadly."

Harvey Fineberg, IOM President

Value of Cancer Treatment

- Does median survival of 1-2 months at a cost up to \$100,000 represent value?
- United Kingdom Value Based Pricing
 National Institute of Health and Care Excellence (NICE): evaluation of new medications and development of guidelines
 - Quality Adjusted Life Year (QALY) = length of life x quality of life
 - Therapeutic benefit (Value) determination
 - Threshold for drug approvals: \$30,000-\$50,000 for each quality-adjusted life year added by an intervention
 - Oncology drugs may be funded at a higher level: approx \$16,000

Value-Based Pricing in the UK. <http://www.ugr.es/~davidpestein/notes/VBP2.pdf> (accessed 2014 Sept 26).

American Society of Clinical Oncology (ASCO) Value in Cancer Care Initiative

- Value algorithms for chemotherapy
- Indicators under development
 - Overall survival and/or progression-free survival
 - Quality of life
 - Impact on patient's health based on treatment toxicities
 - Disease-specific cost

ASCO Develops New Strategy to Increase Value in Cancer Care: A Conversation With Lowell E. Schnipper, M.D. <http://www.ascopost.com/issues/may-15-2014/asco-develops-new-strategy-to-increase-value-in-cancer-care.aspx> (accessed 2014 Aug 8).

Episode Payment for Breast, Colon, Lung Cancer A Preview of Coming Attractions

- Bundled payment for treatment episode with aligned M.D. incentives, i.e., use of higher cost chemo didn't increase reimbursement
- 60 measures of cost, quality and use
 - Survival: time to progression and survival
 - Use of CSFs
 - ED visits/admissions for cancer- or treatment-related symptoms
 - Days in hospice
- Results
 - 34% reduction in total medical cost and 179% increase in chemotherapy drug cost
 - Decreases in hospitalization and use of therapeutic radiology
 - Delays in post-discharge follow up resulted in readmissions

Newcomer, LN, et al. Changing physician incentives for affordable, quality cancer care: result of an episode payment model. *Jop.ascopubs.org*; 8/1/14.

Oncology Value Initiatives FY14

High Cost Cancer Comte Created Jan 13	Supportive Care Guidelines <ul style="list-style-type: none"> • Antiemetics • Growth Factors • ESAs • CSFs • Bone-Modifying Agents • Savings: \$1.25 million 	Disease Research Groups cancer-specific guidelines : Breast, Thoracic, Prostrate-done Gyn, GI, Lymphoma, Melanoma-in progress	Strategies: ASCO Choosing Wisely: ECOG>2 discussion re: chemo Dose Rounding to Vial Size	FY 14 Results \$4.2 million under budget
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Performance Status and End of Life Chemotherapy

- **Why measure performance status?**
 - ASCO Choosing Wisely: tests, procedures and/or treatments whose common use and clinical value are not supported by available evidence
 - Number 1: Do not use cancer-directed therapy for solid tumor patients with the following characteristics: **low performance status (ECOG* 3 or 4)**
- **Why target chemotherapy use at the end of life?**
 - As compared with pts receiving standard care for metastatic NSCLC**, patients receiving early palliative care had **less aggressive care** at the end of life but **improved quality of life and longer survival** (Temel, et al. NEJM 2010)

*Eastern Cooperative Oncology Group Score
 ** Metastatic non-small-cell lung cancer
<http://www.choosingwisely.org/doctor-patient-lists/american-society-of-clinical-oncology/> (accessed 2014 Sept 9).

ECOG Score Definitions Eastern Cooperative Oncology Group


0	Fully active Able to carry on all pre-disease performance without restriction
1	Restricted in physically strenuous activity but ambulatory and able to carry out work of a light or sedentary nature
2	Ambulatory and capable of all self-care but unable to carry out any work activities. Up and about more than 50% of waking hours
3	Capable of only limited self-care Confined to bed or chair more than 50% of waking hours
4	Completely disabled Cannot carry on any self-care; totally confined to bed or chair
5	Dead

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% Documentation of ECOG on Chemotherapy Orders

	2013	Feb	Mar	Apr	May
Outpatient					
ECOG (IV orders)	55 %	85%	85%	95%	94%
Inpatient					
ECOG (IV)	37 %	93%	97%	100%	100%
ECOG (Non-IV)	0%	100%	65%	68 %	100%
Total					
ECOG document		87%	89%	94%	95%
Pts with ECOG >2		5	7	9	13

Chemotherapy Stewardship
Inpatient Order form implemented May 6th 2013
 Outpatient Order form implemented June 3rd 2013

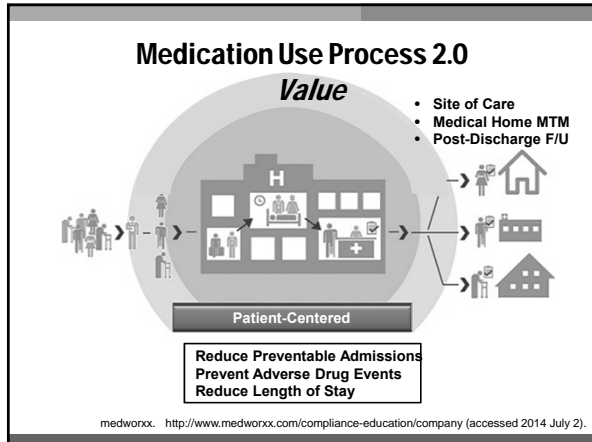
- ### Episode-based reimbursement for oncology provides pharmacists with opportunities to
- 
- Develop disease-specific guidelines
 - Develop supportive care guidelines
 - Integrate performance status into chemotherapy decision-making
 - All of the above

- ### Antimicrobial Stewardship
- 3 day timeout
 - De-escalate
 - D/C
 - IV to p.o. conversion
 - Non-SCIP (Surgical Care Improvement Project) Prophylaxis
 - Advanced Antimicrobial Management
 - Immunosuppressed patients with complex infections
 - Antivirals
 - Antifungals
 - Antibiotics for resistant strains
 - Core competency is prerequisite to pharmacy value

Transformation of Pharmacy Practice: Acute Care to Patient-Centered Care

Traditional Medication Use Process *Quality and Safety*

The Medication Use Process. <http://ia.escupg.com/Newsroom/ViewAttachment.aspx?StateName=us&pharm=ED&EntryID=7318&AttachmentID=4830806-2778-488-9621-us&docType=1>
(revised 2014 Sept 25)



Patient Understanding and Adherence

50% of patients do not take their medications as prescribed

\$100 billion/year in medication-related admissions

Mitzy Medsyn

<http://www.cdc.gov/primarycare/materials/medication/docs/medication-adherence-01-coof.pdf> (accessed 2014 Aug 1).

Why medication literacy matters?

- The instructions are 3 times daily
 - I am taking the medication at 8am, 9am, and 10am.
- My friend is getting 100mg for his blood pressure.
 - Why am I only getting a 5mg pill?
- I am taking both pravastatin and pantoprazole.
 - Pantoprazole is for my high cholesterol and pravastatin is for my acid reflux, which I only take as needed.

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Med "Wreck"

- Over 1/3 of patients had a medication error at admission and 85% had errors that originated from their prior to admission medication histories¹
- 54-86% of patients have discrepancies in medications upon admission to the hospital with an estimated 3.3 discrepancies per patient^{2,3}
- 14-80% of patients experienced at least one medication discrepancy post-discharge^{4,5,6,7}
- 19% of patients experienced an adverse event within 3 weeks of hospital discharge, 67% were attributed to medications, and 12% of the adverse drug events were preventable⁸

References in handout.

Medication lists generated by electronic health records are generally accurate

a. True
 b. False

Ensuring the Accuracy of the Medication List

- A medication order is a sentence and if any element: drug, dose, dosage form, route, frequency, duration are incorrect, patient harm can result
- A variety of individuals (licensed and non-licensed) enter medication information into traditional and electronic health records across different settings
- Clinicians rely on the information and prescribe medications that are listed even though the information may be inaccurate

Kwan, JL; Lo, L. Medication Reconciliation During Transitions of Care as a Patient Safety Strategy. *Ann Intern Med.* 2013;158:397-403.

CMS 2012-Meaningful Use

- Any licensed healthcare professional and *credentialed medical assistants*, can enter orders into the medical record
- Credentialed medical assistants* are:
 - Certified medical assistants**-graduates of an accredited medical assisting program
 - Accredited Medical Assistant Programs requirements: 2-6 units of pharmacology training. (based on evaluation of 4 California programs)
 - Medical assistants (who are not certified)** who have completed a required order entry course

http://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/downloads/Stage2_EPCore_1_CPOE_MedicationOrders.pdf, (accessed 2014 April 30).

Requirements for Medical Assistants (non-certified) to Perform Order Entry

- 2 year recent experience in a health care facility under the supervision of a licensed health care provider
- Application signed by supervising (LHP) attesting proficiency in electronic health record proficiency demonstrated by knowledge in areas including pharmacology
- Completion of Assessment-Based Recognition in Order Entry (ABR-OE) training-5 courses (1 hr each)
 - Clinical Laboratory Testing
 - Disease Screening
 - Legal Aspects of Patient Care Documentation
 - Lost in Translation: Eliminate Medical Errors
 - Medical Records: A Vital Wave

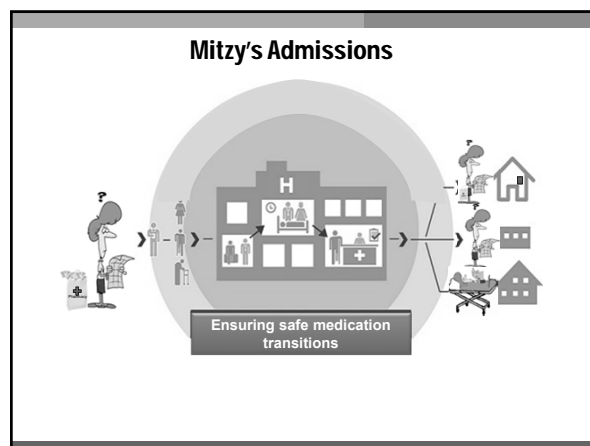
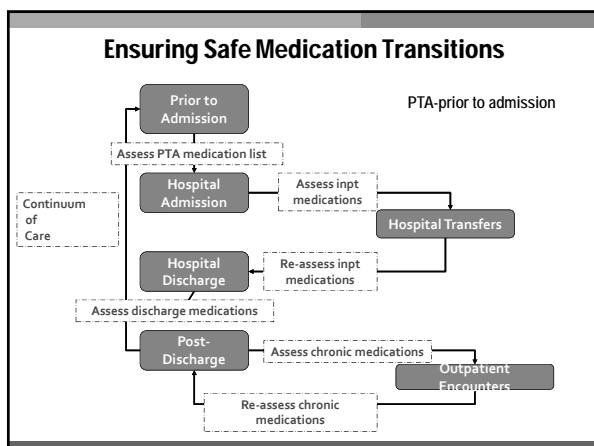
Sources of Medication Lists

Errors introduced in any of these settings can become "hardwired" into the pt record

Home · Patient · Family members · Caregivers · Home Health nurses	Outpatient Settings · Certified medical assistants · Physicians · Community pharmacies · Patients	ED/Hospital · Nurses · Physicians · Pharmacists · Pharmacy technicians · Pharmacy residents, students	Skilled Nursing Facility · Nurses · Physicians
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Pharmacist's Value in Evaluating Medications

Medications Prior to Admit Medication List As well as new orders Drug Indication Dose Route Frequency Dosage form Duration	Patient Characteristics Age -Pediatrics -Geriatrics Gender Height/Weight Allergies Kidney/Liver Function Current labs Previous admissions	Current Medication List Drug-drug interactions Drug-disease interactions Drug-food interactions Duplicate therapy Contraindications Medications needed but not prescribed Monitoring requirements	Special Considerations High risk patients or therapies such as: Chemotherapy Blood thinners Antibiotics Drugs with narrow therapeutic index ICU
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CSMC MedAL Algorithm Medication Adherence and Literacy Score

		Medication Literacy (Scale 0-4)		
		High Literacy (4 points)	Intermediate (2-3 points)	Low Literacy (0-1 point)
Medication Adherence (Scale 0-4)	High Adherence (4 points)	No Post DC Follow-up	No Post DC Follow-up	Perform Post DC Follow-up
	Intermediate (2-3 points)	No Post DC Follow-up	Score 6: No Post DC Follow-Up Score <6: Perform Post DC Follow-Up	Perform Post DC Follow-up
	Low Adherence (0-1 point)	Perform Post DC Follow-up	Perform Post DC Follow-up	Perform Post DC Follow-up

DC= Discharge from hospital
 1. Impact of Pharmacist Post-Discharge Phone Calls on Hospital Readmission and Patient Medication Literacy and Adherence. <http://clinicaltrials.gov/show/NCT02093406>
 2. Medication Adherence and Literacy as Predictors of Hospital Readmission. *American Diabetes Society Meeting 2014*
 3. Transition metrics: calibrating the severity of drug related problems, medication adherence, and literacy in a high risk population. [Abstract]. Presented at ASHP The Midyear on December 10, 2015.

Use of the MedAL Algorithm to Identify Patients At Risk for 30-Day Readmission

- Primary objective**
Determine if the Medication Adherence and Literacy (MedAL) algorithm effectively identifies patients at risk of readmission within 30 days
- Secondary objective**
Determine if post-discharge interventions impact 30-day readmission rates for pts identified by the MedAL algorithm

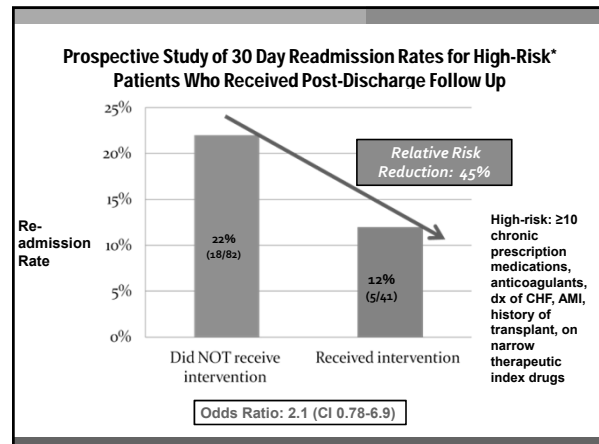
Use of the MedAL Algorithm to Identify Pts At Risk for 30-Day Readmission

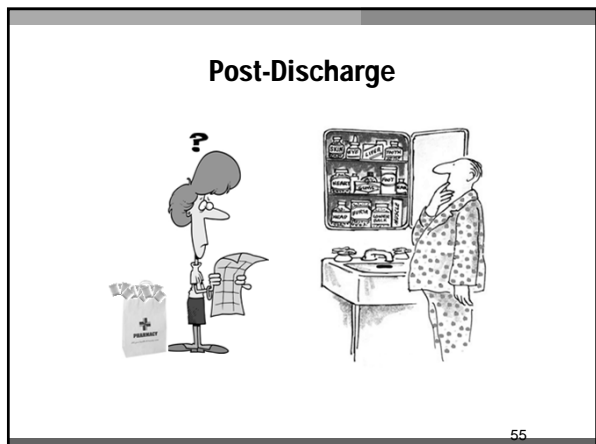
Retrospective Cohort Study (n=278)
Pts admitted to hospitalist service and identified as high risk

Need for Post-Discharge Follow Up based on MedAL algorithm	30 Day Readmissions
Did not need post-discharge intervention (n=115)	10% (12/115)
Needed post-discharge intervention (n=163)	24% (39/163)
Post-discharge follow-up completed (n=102) Post-discharge follow-up not able to complete (n=61)	14% (14/102) vs 41% (25/61)

Use of the MedAL to Identify Pts At Risk for 30-Day Readmission Value as Predictive Indicator

- Results**
 - The odds of readmission for the group identified as needing post-discharge follow-up was 2.8 times greater than for the group identified as not needed post-discharge follow-up (95% CI 0.172 - 0.710, p=0.0045)
- Conclusion:**
 - The MedAL algorithm can serve as a tool to identify patients that are at risk for readmission within 30 days.
 - Post-discharge follow-up of patients identified by the MedAL algorithm may reduce 30-day admission rates.





Safe Medication Transitions Metrics and Results

- Ensure accurate medication lists on admission, especially for high risk patients
 - 7 errors or discrepancies (DRP: drug-related problems) identified and resolved/patient
 - 50-60% of DRPs are serious or life-threatening
- Post-discharge follow up of high risk patients with focus on adherence and literacy
 - 50-60% of patients have low literacy and/or adherence
 - 2.1 fold readmissions for patients who had follow up compared to those who did not
 - Average of 2 serious DRPs/patient resolved at discharge/post-discharge
 - SNF pts: 50% of patients require intervention due to serious DRPs

Examples of Pharmacist Post-Discharge Follow-up

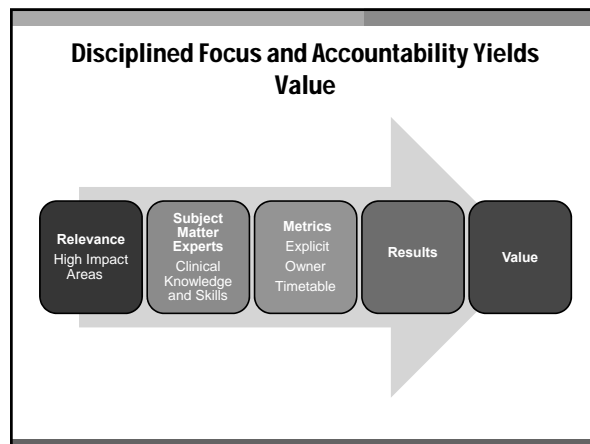
Reason for Admission	Drug-Related Problems Identified Post-Discharge and Pharmacist Intervention	Adverse Outcome Prevented
54 y/o w/ HTN & DVT admitted for sickle cell crisis & left parietal stroke	Issue discovered: Pt. had self-discontinued warfarin, amlodipine, and carvedilol Intervention: Contacted M.D. and confirmed that warfarin and anti-hypertensives should be re-started. Educated pt. and instructed to take all meds as prescribed	Avoided potential thromboembolism, readmission, and/or death
92 y/o w/ altered mental status found to have a UTI & toxic digoxin level, also w/ arrhythmias & low blood pressure	Issue discovered: Pt. had continued taking medications that had been stopped, including digoxin, metoprolol, and zolpidem Intervention: Instructed patient to d/c these medications	Avoided potential drug toxicity, life-threatening arrhythmias, recurrence of confusion, readmission, and/or death

Examples of Pharmacist Post-Discharge Follow-Up Skilled Nursing Facility Patients

Reason for Hospital Admission	Drug-Related Problems Identified Post-Discharge and Pharmacist Intervention	Adverse Outcome Prevented
98 y/o M from home w/ hip fracture and multiple medical issues.	Issue discovered: Pt. was a new start on fentanyl 25mcg in house. Dose was increased to 50mcg one hour prior to discharge. Intervention: Called SNF to d/c fentanyl 50mcg order. Informed SNF R.N. that the patch was already placed on the pt. SNF R.N. was unaware.	Avoided severe respiratory depression or death due to potential supra-therapeutic dose of fentanyl.
79 y/o M w/ ESRD - HD on Tu,Th,Sat - with catheter-related S. aureus bacteremia.	Issue discovered: Per ID, vancomycin after dialysis to be continued after d/c and was on discharge medication list. There was an order at the SNF for vancomycin but not at the dialysis center. Pt dialyzed on Sat after d/c but did not receive vancomycin. Intervention: Ensured vancomycin administration occurred.	Avoided progression of bacteremia and catheter re-infection d/t missed doses of antibiotics.

Transformation of Pharmacy Practice: Acute Care to Patient-Centered Care

- Integration of acute care and transitions of care
 - Knowledge and skills
 - Roles and responsibilities
- Layered learning models: students, residents
- Leveraging techs
- Team-based care models
- Understanding of implications of Population Health



References

1. Gleason KM, McDaniel MR, Feinglass J, et al. Results of the medications at transitions and clinical handoffs (MATCH) study: an analysis of medication reconciliation errors and risk factors at hospital admission. *J Gen Intern Med*. 2010;25(5):441-447.
2. Cornish PL, Knowles SR, Marchesano R, et al. Unintended medication discrepancies at the time of hospital admission. *Arch Intern Med*. 2005;165(4):424-429.
3. Sharma AN, Dvorkin R, Tucker V, Margulies J, Yens D, Rosalia Jr. A. Medical reconciliation in patients discharged from the emergency department. *The Journal of Emergency Medicine*. 2012;43(2):366-373.
4. Coleman EA, Smith JD, Raha D, Min SJ. Posthospital medication discrepancies: prevalence and contributing factors. *Arch Intern Med*. 2005; 165:1842-7.
5. Vira T, Colquhoun M, Etchells E. Reconcilable differences: correcting medication errors at hospital admission and discharge. *Qual Saf Health Care*. 2006;15(2):122-126.
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7. Kilcup M, Schultz D, Carlson J, et al. Postdischarge pharmacist medication reconciliation: Impact on readmission rates and financial savings. *J Am Pharm Assoc*. 2003; 53:78-84.
8. Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. *Ann Intern Med* 2003; 138: 161-7.