

SMARTboard

Drug Utilization Review + *Innovation*
+ *Design Thinking* =
Advancing Health Care Quality

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Drug Utilization Review

Two approaches to DUR are generally accepted

- **Prospective-** (also known as concurrent) involves reviewing each prescription for patients before dispensing to identify drug-related problems
- **Retrospective** – occurs after the prescription has been dispensed and uses practice patterns analysis to identify opportunities for improvement, e.g. prescriber education of optimal or cost-effective dosages regimes
- Research reports have identified important gaps and concerns regarding current DUR practices and potential gains.

(Fulda, T.R., et al. J Manag Care Pharm. 2004; 10(5): 433-41)

Established & Innovative Medication Related Practices

- Medication Therapy Manage (MTM) Service
- Telepharmacy +/- onsite support
- Patient Centered Care – pharmacists provided
- Nurse/discharge planner – coordinated MR
- ED Pharmacy Practices
- Pharmacist-managed MR/Discharge planning services
- Nursing Home Consultant pharmacist
- Interdisciplinary teams – Medical homes
- Rounding

Established & Innovative Medication Related Technologies

- Drug databases
- Email
- E-prescribing
- EHR/Health Information Exchanges
- Rx Hub/Surescripts (outpatient databases)
- Clinical Decision - Support/Computerization
- Telemedicine/Telepharmacy
- Drug Information/patient drug information-Electronic/Mobile
- Web-based Patient Med Histories (PHR)

Ref.: Vassi et al. The Annals of Pharmacother. 2010; 44(5):885-97

Design Thinking for Health Care

“The Design Process at its best, integrates the aspirations of art, science and culture”

(Jeff Smith)

Antiretroviral - Psychotherapeutic DDI Case Study - Escitalopram

46 yo F with HIV-Hepatitis C co-infection and child C Cirrhosis was started on escitalopram 10mg bid for 5 years for depression. Four days after newly starting dauranavir 600mg bid, ritonavir 100mg bid, and Truvada, and 7 days after starting esomeprazole 40mg po daily for GERD, the patient presented with nausea, confusion. On PE, diaphoretic, mydriasis, myoclonus, deep tendon hyper-reflexia and rigidity. Escitalopram was stopped with resolution of symptoms in 24 hours.

Antiretroviral - Psychotherapeutic DDI

Case Study - Escitalopram

6 hours post dose, escitaloprim serum level 695 nmol/L (nl 40-250) Serum $t_{1/2}$ 68 hr (nl 27-33 hrs) Pre esomeprazole ARV, level was 52 nmole/L.

Suspected cause (CYP2C19 and CYP3A4 DDI as well as 2D6 and 2C19 polymorphism)

Ref: AIDS 2012;26:2417-2423

Researching the Problem

Design Thinking - (Observation)

Case Study:

Psychotherapeutic drugs often possess potential for serious DDI, including QT Prolongation.

The Setting

In a 20-bed behavioral health unit with 11 psychiatrists on staff

Researching the Problem

Design Thinking - (Observation)

Observation Method:

1. Retrospective review of clinical records of target patients.
2. Review of results of prescriber response to decision support (DDI alerts) in EHR vs standard references
3. Interviewing 2 high-volume prescribers

Researching the Problem

Design Thinking - (Observation)

Observation Method:

4. Review DDI monitoring capabilities of practice.
5. Review of ADR reports of DDI

Researching the Problem

Design Thinking - (Observation)

The Team:

1. Chief, Psychiatry Service
2. Clinical Pharmacists
3. Chief, Cardiology Service

Researching the Problem

Design Thinking - (Observation)

Psychotropic DDI Alert Management
(DATA):

Sample Size:

249/317 alerts

(78%) based on top prescribers on the
service

Researching the Problem

Design Thinking - (Observation)

Results (part 1):

DDI - QT Prolongation by top 2 prescribers - Psychiatrists

DDI-QT Prolongation	Severity Level	Psychiatrist ID #	Action (O= Overridden or R=Removed)
Ziprazidone 40mg po/ Escitaloprim 20mg po	Contraindicated - 1	1	O
Trazadone 50mg/ Haldol 5mg po	Severe - 2	2	O
Trazadone 100mg po/ Haldol 5mg po	Severe - 2	2	O
Trazadone 100mg po/ Ranolazine 500mg po	Severe - 2	1	R
Ziprazidone 80mg po/ Quetiapine 25mg po	Severe - 2	2	O
Ziprazidone 80mg po/ Quetiapine 100mg po	Severe - 2	2	O
Trazadone 50mg/ Haldol 5mg/ml inj	Severe - 2	2	O

Researching the Problem

Design Thinking - (Observation)

Results (part 2):

Alert Responses by top 5 prescribers - Psychiatrists

MD ID #	Total alerts - overrides	Total alerts - Removed	Total alerts
1	115	40 (25.8%)	155
2	45	2 (4.2%)	47
3	77	17 (18%)	94
4	4	2 (33.3%)	6
5	15	0 (0%)	15

Researching the Problem

Design Thinking - (Prototyping)

Case Study: Antiretroviral Drug Treatment Adherence

Antiretroviral Therapy (ART) is now recommended by USPHS to be initiated early (regardless of CD₄ count) and treatment adherence should be high, e.g. $\geq 95\%$. This goal is challenging. Primary treatment adherence is a particularly challenging aspect for retrospective DUR as well as clinical practice in ambulatory settings.

The Setting:

A single large primary care clinic of a HIV-specialist within a provider network of a state Medicaid and ADAP program.

Researching the Problem

Design Thinking - (Prototyping)

The Team:

HIV specialist/ Family practice medicine, clinical pharmacists at CPA, and pharmacy manager, ADAP .

Prototype:

Design, implement and test clinical quality improvement program utilizing CPA's ConcurDurSM protocol, e-prescribing vendor (for CPA), member eligibility and claims vendors for 6 month period.

Researching the Problem

Design Thinking - (Prototyping)

Results (Summary):

- Medical and pharmacy practice and technology integration (ConcurDurSM) within a single public health insurance program was feasible.
- During the prototype phase, integration of ConcurDurSM into two public health insurance programs was not feasible

Researching the Problem

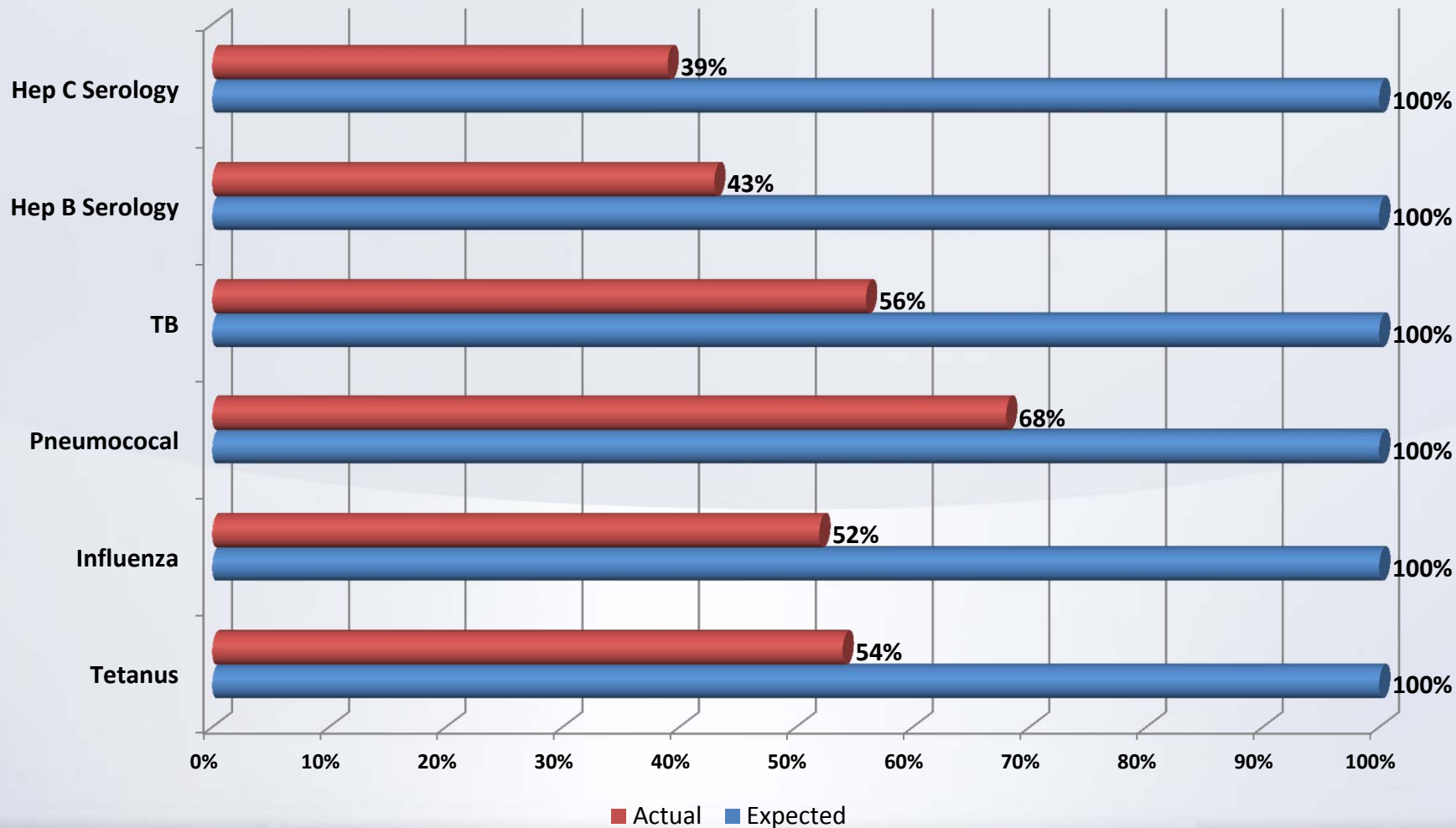
Design Thinking - (Prototyping)

Results (Summary-Cont'd):

- Primary treatment non-adherence was missed by physician and pharmacy providers frequently utilizing conventional practice models and DUR program within the public health insurers' program
- Patients sometimes reported good primary treatment adherence to their physician without any quantitative evidence to support their statements. This occasionally resulted in inappropriate changes in treatment regimes.

Oral Ambulatory Medical Care

EMA-Wide OAMC Immunization and Serology Documentation N=916



Researching the Problem

Design Thinking – (Story Telling)

Case Study:

Perinatal immunization of Tdap is recommended by the Advisory Committee on Immunization Practice for women during each pregnancy, regardless of duration between immunizations.

1. How often are providers successful with this recommendation based on DUR findings?
2. Do woman (and their babies) experience any added benefit or risk with Tdap use during transitions in care?
3. What can technology and practice innovation do today based on DUR findings to improve quality of care with prevention of pertussis and other preventable infections in newborns?

Perinatal Vaccination- Tdap

Pregnant Woman & Unborn Child

LOCATIONS



HOSPITAL



OFFICE/CLINIC



PHARMACY

CHALLENGES

- a) Care Coordination
- b) New Technology and Practice Innovation

RESOURCE TOOLS



Polypharmacy – Clinical Case

- Patient Experienced Complication/Adverse Event
 - Rx clindamycin 150mg po q 6hrs for dental procedure
 - Post procedure and PTA – several days of diarrhea, weakness, dizziness and SOB
 - Acute emergency department (ED) admission with
 - Hypotension/shock
 - Severe hyperkalemia
 - AKI
 - INR 9 (no acute hemorrhage)
 - Respiratory distress/ failure
 - Severe metabolic/ lactic acidosis

Researching the Problem

Design Thinking – (Brainstorming)

Case Study:

ICD-10-CM became mandatory effective October 1, 2015 for Hospitals and Insurers in the USA. For the first time, code structure includes:

1. Medication error and their respective causes and consequences
2. Medication under dosing
3. Adverse drug events for inpatients and admitted outpatients
4. Some of these medications-related adverse event codes are reimbursement based codes, e.g. for primary discharge diagnosis

Researching the Problem

Design Thinking – (Brainstorming)

EXERCISE:

ASSUMING ADVERSE DRUG EVENTS ARE IMPORTANT, EXPLORE HOW ARE/CAN MEDICATION-RELATED ICD-10-CM CODES BE INCORPORATED INTO DUR PROGRAMS

Thank
You

