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WHERE THE WORLD CONNECTS FOR HEALTH

Conference & Exhibition | March 5–9, 2018

Las Vegas | Venetian – Palazzo – Sands Expo Center

Fall Prevention and Fire Departments

Session 142, March 7, 2018

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Banner University Medicine

ENGAGED

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Conflict of Interest

Andrew Muth, MD

has no real or apparent conflicts of interest to report.

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Agenda

- Informatics role
  - Predictive analytics
  - Dashboard
- Prior infrastructure
- Project setup
- Encounters
- Care delivery/Outcomes
- Potential next steps

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Learning Objectives

- Identify strategies to manage the health of a population
- Describe how to risk stratify a patient cohort
- Design a predictive analytic tool
- Recognize opportunities to utilize telehealth

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News Release

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Project Flow Map

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Relationships

- Federal government
- State government
- City government

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Informatics Role

- People, Process, Platform
- Creating tools to enhance care delivery
- Segmenting populations
- Analyzing clinical data
- Making Predictions

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CAN Score
Patient Name
SSN
Age
Probability of Event
Diagnoses Count
ANEMIA
ASTHMA
CHF
COPD
CRF
CVA
DIABETES
DEMENTIA
DEPRSN
HTN
IHD

OBESITY
OSTEO
PTSD
PVD
Home Tele- Health
PALLIATIVE CARE
Last Pal Care Visit
HBPC
Last HBPC Visit
2yr ER/UC Visit Count
2yr Disch Count
Last Disch Date
2yr PC Visit Count
Last PC Visit Location
Last PC Visit Date
Next PCAppt Date
Next PC Visit Location

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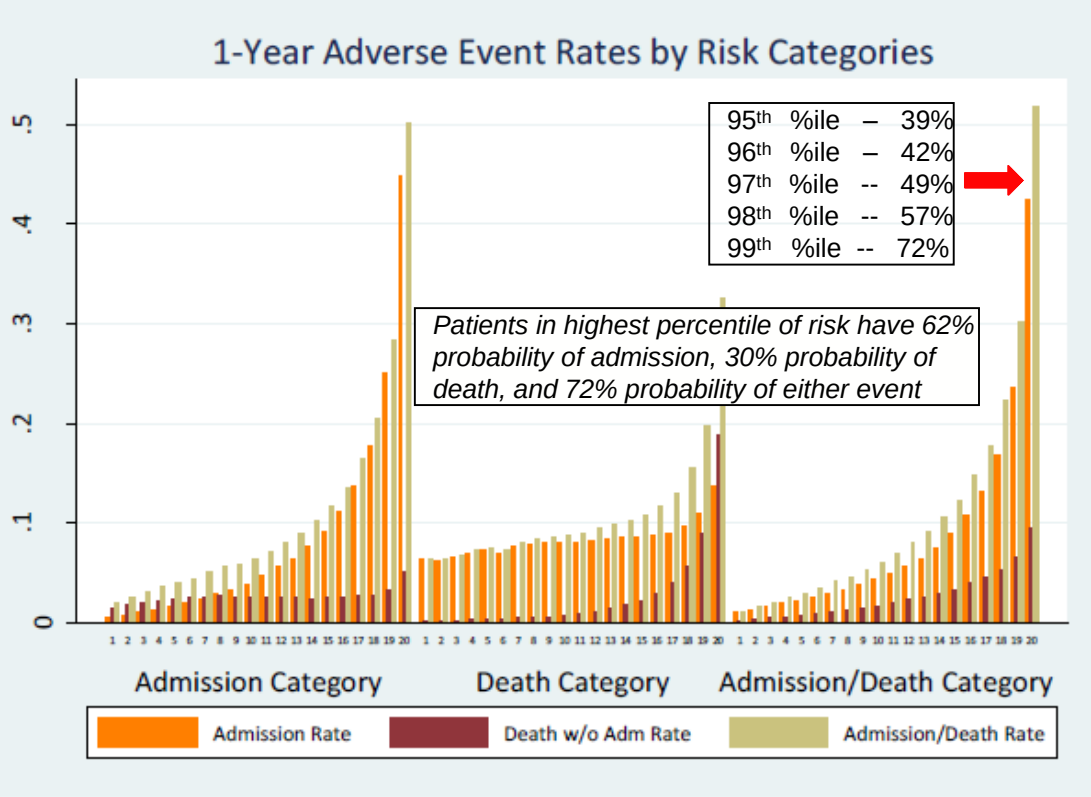

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Falls Background

- A leading cause of injury among the elderly population
- Common reason for EMS to be called
- High morbidity and mortality
- Expensive
- Known risk factors
- Proven interventions

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American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

Abstract

The 2015 American Geriatrics Society (AGS) Beers Criteria are presented. Like the 2012 AGS Beers Criteria, they include lists of potentially inappropriate medications to be avoided in older adults. New to the criteria are lists of select drugs that should be avoided or have their dose adjusted based on the individual's kidney function and select drug–drug interactions documented to be associated with harms in older adults. The specific aim was to have a 13-member interdisciplinary panel of experts in geriatric care and pharmacotherapy update the 2012 AGS Beers Criteria using a modified Delphi method to systematically review and grade the evidence and reach a consensus on each existing and new criterion. The process followed an evidence-based approach using Institute of Medicine standards. The 2015 AGS Beers Criteria are applicable to all older adults with the exclusion of those in palliative and hospice care. Careful application of the criteria by health professionals, consumers, payors, and health systems should lead to closer monitoring of drug use in older adults.

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Epidemiology. 2010 Sep;21(5):658-68. doi: 10.1097/EDE.0b013e3181e89905.

Risk factors for falls in community-dwelling older people: a systematic review and meta-analysis.

Deandrea S[1], Lucenteforte E, Bravi F, Foschi R, La Vecchia C, Negri E.

RESULTS: A total of 74 studies met the inclusion criteria and 31 risk factors were considered, including sociodemographic, mobility, sensory, psychologic, and medical factors and medication use. The strongest associations were found for history of falls (OR = 2.8 for all fallers; OR = 3.5 for recurrent fallers), gait problems (OR = 2.1; 2.2), walking aids use (OR = 2.2; 3.1), vertigo (OR = 1.8; 2.3), Parkinson disease (OR = 2.7; 2.8), and antiepileptic drug use (OR = 1.9; 2.7). For most other factors, the ORs were moderately above 1. ORs were generally higher for recurrent fallers than for all fallers. For some factors, there was substantial heterogeneity among studies. For some important factors (eg, balance and muscle weakness), we did not compute a summary estimate because the measures used in various studies were not comparable.

CONCLUSIONS: This meta-analysis provides comprehensive evidence-based assessment of risk factors for falls in older people, confirming their multifactorial etiology. Some nonspecific indicators of high baseline risk were also strong predictors of the risk of falling.

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can score	Tele health Encounter	Inpatient D/C	Fall Date	Joint Replacement	ED Visit Date	Diagnosis Count	Med Count	Fall Risk Dx Count
Add 50 points if CAN score > 94	Identify last encounter date with a primary stop code of "800010684 HT PROGRAM PATIENTS"	Identify patients with a 5 day post inpatient discharge date add 50 points to weight score	Identify most current fall date ICD-10 diagnosis within past 90 days. Add 50 points to weight score	Identify back/lower ext joint replacement based on ICD-10 procedure codes	Identify ED visit within last 5 days. Add 50 points to weight score	Identify current icd10 and icd9 that put patient at risk for fall.+ Generate count. Add count *5 to weight score	Active medications that put patient at risk for fall.++ Generate count. Add count *5 to weight score	Identify most current fall Health Factors.+++ Generate count. Add count *5 to weight score

+ Stroke, Parkinson's Disease, Morse fall score: high risk (>45), History of alcoholism, foot ulcer, abnormal gait, amputation affecting lower extremity, osteoarthritis, dementia, Alzheimer's, ALS, MS, impaired vision, spondyloarthoses

++Risperidone, Olanzaine, Quetiapine, Haloperidol, Diazepam, Alprzolam, Lorazepm,Clonazepam, Zolpidem, Zaleplon, Eszopiclone, Doxepin, Imipramine, Amitriptyline, Prazosin, Clonidine, Codeine, Hydrocodone, Oxycodone, Meperidine, Hydromorphone

+++Entries generated by clinical reminders and other Vista EHR scripts regarding fall

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Weight Calculations	
Category	add / mult
CANSCORE >94	+50
5 day post inpatient d/c	+50
History of Fall Diagnosis	+50
Joint Replacement	+50
ED visit	+50
health factor count	*5
Fall risk diagnosis count	*5
Fall risk medication count	*5
Age > 64	+5

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Tempe and Chandler FD Contact List

Description: A list of patients residing in Chandler or Tempe, that have: CAN score >94, or a 5 day Post inpatient visit, or a 5 day post ED visit, or a 90 day post Fall diagnosis, or Medic

Data Refresh: This data is current from the time the warehouse is updated (approx 0030).
Data Sources: EDIS, VISN Data Warehouse (VDW)
Info Specialist/designer: Michael Smith RN.Clinical Analytics . Published: 5/2/2016 Rev: 2/22/2017

Weighted Score	Name	Last4	Age	CAN Score	Tele Health Encounter	Inpatient D/C	Fall Date	Joint Replacement Date Time	ED Visit Date	ED Visit Reason	Diagnosis Count	Med Count	Fall Risk Diagnosis Count
⊞ 160			62	97	1/23/2017 1:00:00 PM	3/25/2017 1:00:00 PM	1/13/2017 2:50:00 PM					2	
⊞ 155			67	99		3/23/2017 6:30:00 PM			3/23/2017 6:54:00 AM	SOB			
⊞ 130			93	98	3/22/2017 1:00:00 PM		3/24/2017 3:01:00 PM						5
⊞ 115			86	98	9/16/2016 1:00:00 PM		1/11/2017 1:00:00 PM				2		
			79	99	11/29/2016 1:00:00 PM		1/13/2017 2:56:00 PM				2		
⊞ 110			54	98	8/30/2016 3:15:45 PM		1/24/2017 1:02:15 PM				2		
⊞ 105			67	96					3/26/2017 10:44:00 PM	GLF, R Knee Pain, L Shoulder Pain			
			65	99					3/24/2017 4:34:00 PM	chest heaviness/wants heroin/meth rehab			
			74	98	11/30/2016 9:00:00 AM				3/23/2017 3:23:00 PM	RLE wound,swelling			
			82	80		3/24/2017 4:22:00 PM			3/22/2017 1:18:00 PM	SOB/constipation			
			82	80		3/24/2017 4:22:00 PM			3/23/2017 12:08:00 PM	SOB/Cough			
			87	99	1/11/2017 1:00:00 PM				3/24/2017 10:36:00 AM	knee pain, difficulty with his brace			
			79	99	1/24/2017 1:00:00 PM				3/26/2017 11:51:00 PM	GLF, Dehydration, Weakness			
⊞ 75			83	95	2/27/2017 1:00:00 PM						2	2	
⊞ 70			68	99								3	
			72	96							3		
			67	99	1/28/2016 10:00:00 AM						3		
			73	95	8/29/2016 12:00:00 PM						3		
			70	85					3/25/2017 1:37:00 PM	CP		3	
			52	96							4		

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Encounters

- *Predictive analytics in action*

- Home evaluation
- Self-report
- Physical exam
- Medication Reconciliation

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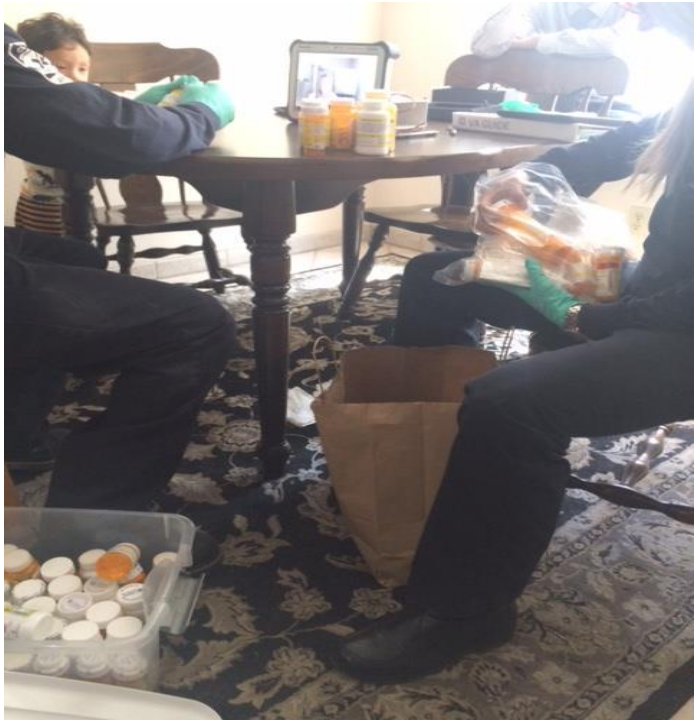
Encounters

- Plan
  - Orders
    - Lab
    - Imaging
    - Rx
  - PT/OT
  - Referral



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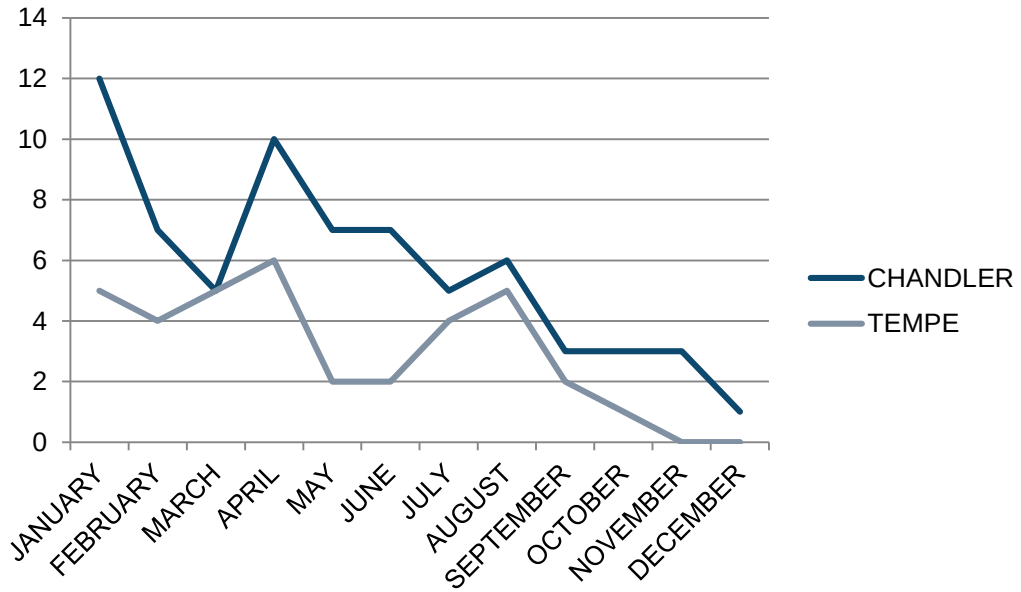
Care Delivery/Outcomes

- Patients evaluated

Month	CHANDLER	TEMPE
JANUARY	12	5
FEBRUARY	7	4
MARCH	5	5
APRIL	10	6
MAY	7	2
JUNE	7	2
JULY	5	4
AUGUST	6	5
SEPTEMBER	3	2
OCTOBER	3	1
NOVEMBER	3	0
DECEMBER	1	0
Total	**69**	**36**



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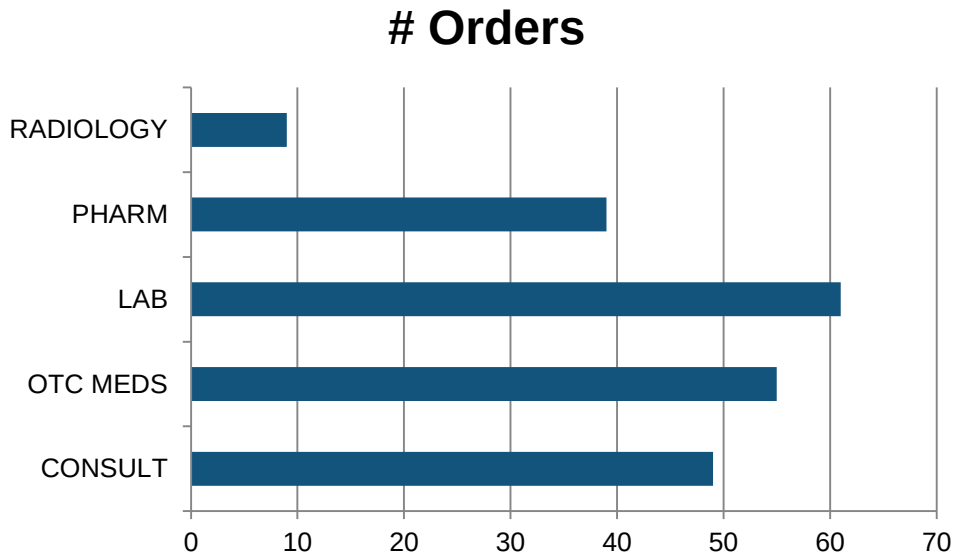
Care Delivery/Outcomes

- Orders completed

Type	Count
CONSULT	49
OTC MEDS	55
LAB	61
PHARM	39
RADIOLOGY	9
Total	**213**



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Care Delivery/Outcomes

- Challenges to capturing outpatient falls
- Need to use surrogate measures

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This pond is empty

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Potential Next Steps

- Partnering with more cities in the Phoenix metro
- Considering new diagnoses
- Frequent 911 callers
- Potential to expand to other healthcare systems

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New model of care

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  - Clinical Informatics & Analytics Department
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Questions

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