A qualitative analysis on the use of falls aggregate reviews from FY12 to reduce falls in the VA system

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Background on Falls

- Clinical concern among older adults
  - ~1/3 of adults ≥ 65 years old fall each year[1]
  - 2.4 million nonfatal injuries were treated in emergency departments, of which 722,000 were hospitalized/transferred (2012)[2]
  - Can lead to harmful, adverse outcomes: injuries such as lacerations, fractures in hip, spine, forearm, leg, ankle, pelvis, upper arm and hand, head traumas, and death[3]
- It's costly – direct medical costs of falls (adjusted for inflation) $30 million in 2010[3]

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[1]Tromp AM, Pluijm SMF, Smit JH, et al. Fall-risk screening test: a prospective study on predictors for falls in community-dwelling elderly. J Clin Epidemiol 2001;54(8):837–844.
[2]Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based Injury Statistics Query and Reporting System (WISQARS) [online]. Accessed February 11, 2014.
[3]Oliver, D., Healey F., Haines, T. (2010). "Preventing falls and fall-related injuries in hospitals." Clin Geriatr Med. 26(4): 645-692. doi: 610.1016/j.cger.2010.1006.1005.

What is an aggregate review?

- **Root cause analysis (RCA)**
  - Reviews serious and potential serious adverse events
  - Seeks to answer what happened, why it happened and what to do to prevent future events
- VA facilities combine data from adverse events during a 1 year period to produce an **aggregate review** of the data
  - Aggregate reviews decide on common root causes and develop action items

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What is an aggregate review?

Step 1
- Charter team
- Gather and analyze data

Step 2
- Flow chart general steps in process

Step 3
- Identify resources: evidence-based best practices, policies, procedures and staff

Step 4
- Determine focus of aggregate review

Step 5
- Determine root cause

Step 6
- Determine actions to address root causes

Step 7
- Write outcome measures for actions

Step 8
- Present analysis and actions to leadership for concurrence

Step 9
- Implement actions and evaluate effectiveness

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Why do an aggregate review?

- Lessons to be learned when looking at multiple events
  - Trends can point to system issue
  - Tackles overall/greater issue at hand
- To evaluate and understand the effectiveness of interventions implemented
- To engage senior leadership

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Method (Coding)

- Two authors coded the aggregate reviews using a coding system developed for a previous study (Kappa = 0.81)
  - Coded topics: area of focus, root cause and action
  - All discrepancies were coded by consensus

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Methods (Coding)

VISN Number	Station Number	Num Events	Event Description	Area of Focus Descrip.	Root causes Descrip.	Actions Descrip.	Outcome Measures	Area of focus	Root Cause 1,2,3…	Total # Root Causes	Action 1, 2, 3…	Total # Action Items

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Methods (Analysis)

Association between **action items** and **fall rate change** between FY12 and FY13 using Spearman's Rho (nonparametric measure of statistical dependence between two variables)

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Results

- 123 included FY 12 falls aggregate reviews with submitted IPEC falls data
    - 38,454 total fall events

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Results (Area of focus)

Table 1. Area of focus for aggregate reviews*		
Area of Focus	**Number of aggregate reviews**	**Percent aggregate reviews**
Inpatient	33	26.8
CLC/LTC	29	23.6
Inpatient & Outpatient	23	18.7
Not specified	16	13.0
Any combination of Acute, CLC/LTC, Mental Health	14	11.4
Mental Health	3	2.4
Outpatient	3	2.4
Acute	1	0.8
HBPC	1	0.8
Total	123	100

*Aggregate reviews meeting inclusion criteria: having reported IPEC falls rates and submitting FY12 falls aggregate (total count 123)

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Results (Root causes)

- Total number of root causes: 264
- Range of the number of root causes between 1 and 6
- Average of 2.2
- Median of 2
- Mode of 1
- About 85% of the aggregate reviews uncovered 3 or fewer root causes of the falls that occurred at their VA sites.

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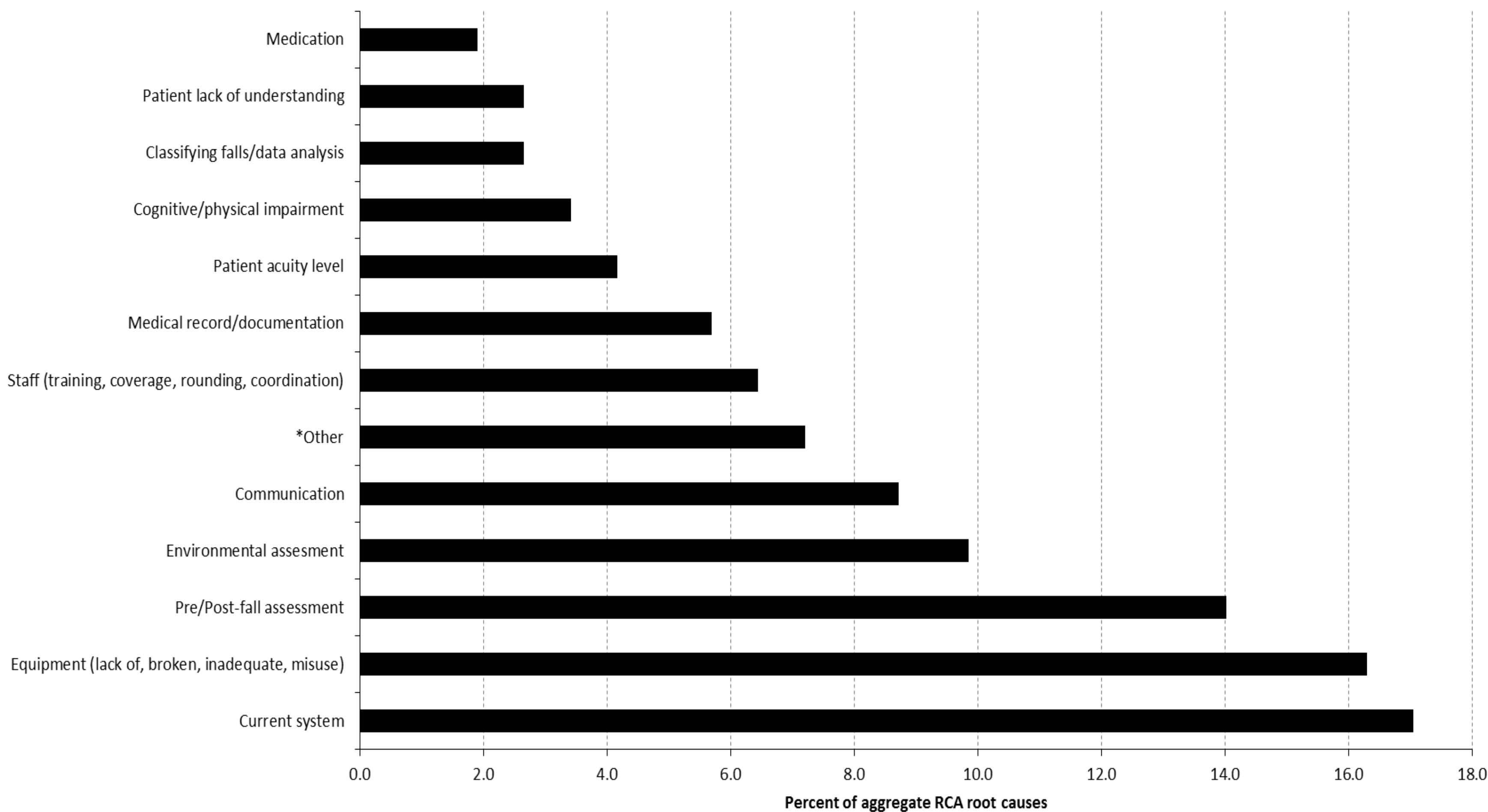
Results (Root causes)



n=264

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Results (Actions)

- Total number of action items: 450
- The range of action items was between 1 and 20
- Average of 3.7
- Median of 3
- Mode of 3
- About 75% of the aggregate reviews produced 4 or fewer action items to address their root causes at their VA facilities.

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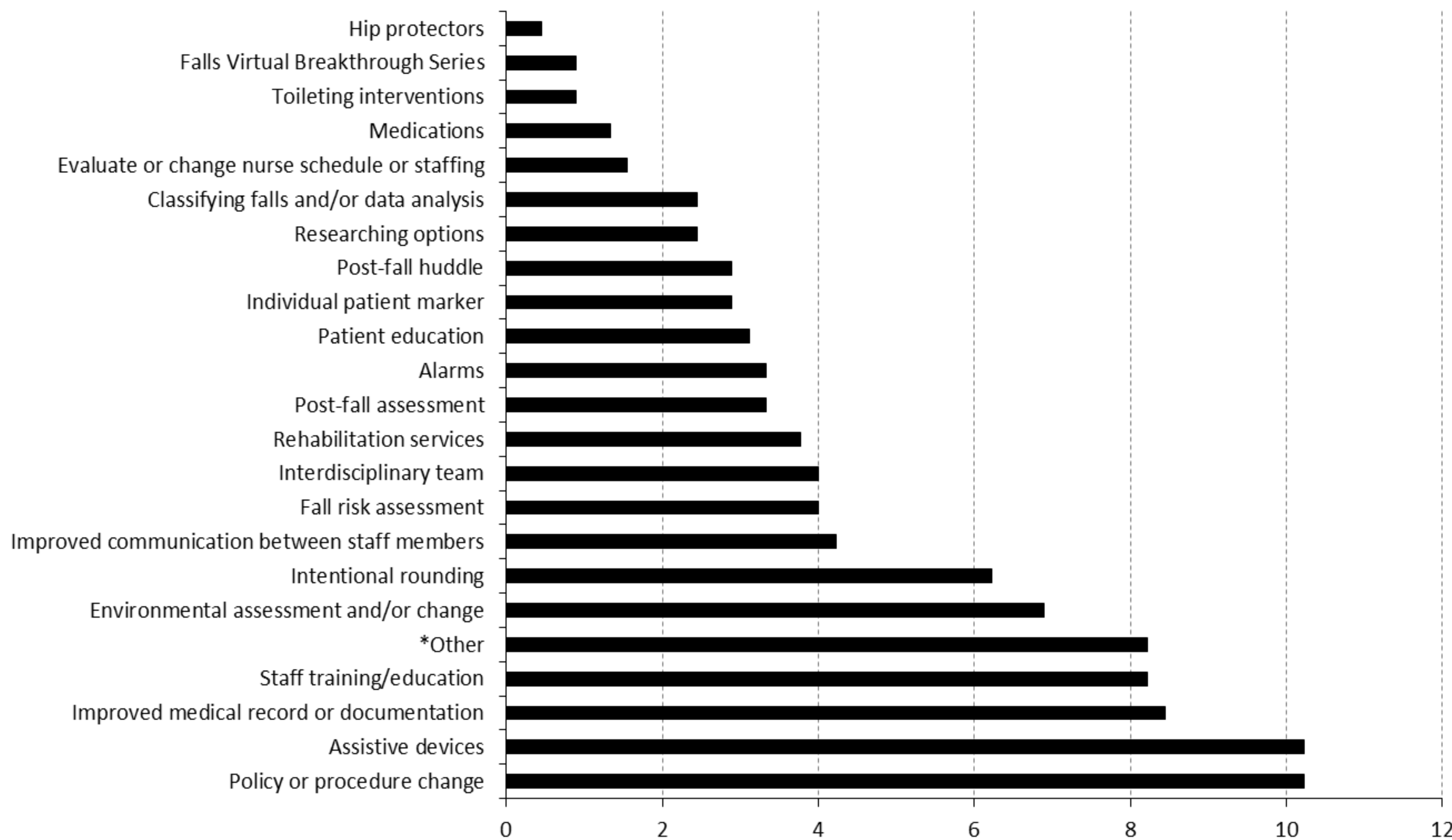
Results (Actions)



n=450

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Results

- Overall, there was no significant difference in the rate of falls for all the included facilities between FY 12 and FY 13 ($p=0.498$)
- The number of actions was not associated with the percent change in falls rate ($p=0.4196$)

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Results

Action item	Spearman's Rho	p-value
Individual marker for risk	-0.22	$p<0.05$
Intentional rounding	-0.25	$p<0.05$
Medication review	0.21	$p<0.05$
Researching options	0.27	$p<0.05$

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Discussion

- **Individual patient markers** (such as stars, signs, socks and bracelets) can help providers more aware of the high-risk patients
- A recent **hourly rounding program** showed early results of a reduction in fall rates
  - There is some doubt of the sustainability
  - This study found that the fidelity of rounding declined over time
- **Medication review**
  - Systematic review and adjustment in rx can reduce falls and prescribing costs, but few studies identify this as a single intervention*
- **Researching further options** for fall reduction was related to an increased fall rate may indicate the need for taking action sooner rather than later and instead of further study.
  - This supports the concept of implementing small cycles of change and monitoring impact.

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*Zermansky AG, Alldred DP, Petty DR, et al. Clinical medication review by a pharmacist of elderly people living in care homes--randomised controlled trial. *Age Ageing.* No

Limitations

- We do not know if all of these aggregate review action items were actually implemented and for how long.
- IPEC fall rates are self-reported by each VA facility.
- We also did not analyze fall-related major injury rates in relationship to actions.
  - Excluded because these rates are too low to provide significant information for the purpose of this paper.
  - At the same time there is some indication of reducing fall-related injury risk since if the patient does not fall he will not sustain a fall related injury

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Conclusion

- Doing something is better than nothing
- This aggregate analysis on aggregate reviews offering fresh insight for hospitals

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Thank you

- Julia Neily
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- Vince Watts
- NCPS

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Appendix 1a

Number	final understanding	root cause1	root cause2	root cause3	root cause 4	root cause 5	root cause 6	action1	action2	action3	action4	action5	action6
66	5.2	7	7	99	99	99	99	8	7	7	99	99	99
67	5.4	6	99	99	99	99	99	7	99	99	99	99	99
68	5.2	6	3	3	11	99	99	7	21	22	19	99	99
69	5.4	14	6	99	99	99	99	17	1	2	4	99	99
70	5	1	7	99	99	99	99	3	15	99	99	99	99
71	6.1	7	3	99	99	99	99	10	19	10	19	99	99
72	5.4	10	99	99	99	99	99	2	10	19	99	99	99
73	11	14	14	99	99	99	99	20	19	19	99	99	99
74	5.4	14	14	14	14	14	14	19	17	21	1	19	2
75	5	14	99	99	99	99	99	1	19	19	99	99	99
Agree	5	7	5	1	2	1	0	10	8	7	4	1	1
Disagree	5	3	2	1	0	0	1	0	1	1	0	0	0
Choices	10	14	14	14	14	14	14	21	21	21	21	21	21

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Appendix 1b

	Total	Agree	Disagree	# Choices	Expected Agreement	
final understanding	10	5	5	10	1E-10	
root cause1	10	7	3	14	3.45716E-12	
root cause2	7	5	2	14	9.48645E-09	
root cause3	2	1	1	14	0.005102041	
root cause4	2	2	0	14	0.005102041	
root cause5	1	1	0	14	0.071428571	
root cause6	1	0	1	14	0.071428571	
action1	10	10	0	21	5.99525E-14	
action2	9	8	1	21	1.259E-12	
action3	8	7	1	21	2.6439E-11	
action4	4	4	0	21	5.14189E-06	
action5	1	1	0	21	0.047619048	
action6	1	1	0	21	0.047619048	
TOTAL	66	52	14	220		
Observed Agreement	0.788062				0.015306123	**Ave. Expected Agreement**
					0.772755425	**Observed - Expected Agreement**
					0.984693877	**1 - Expected Agreement**
					0.784767168	**KAPPA**

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