

CAPTURE Falls

Collaboration and Proactive Teamwork Used to Reduce

Best Practices in Mobility Assessment to Decrease Fall Risk

July 9, 2013 10:00 – 11:00 a.m. CST

Dawn M. Venema, PT, PhD

Jill Hassel, DPT



Acknowledgement



This project is supported by grant number R18HS021429 from the Agency for Healthcare Research and Quality. The content is solely the responsibility of the authors and does not necessarily represent the official views of the Agency for Healthcare Research and Quality.



Learning Objectives

- **Review baseline data from 2011 hospital survey specific to physical therapy participation in fall risk reduction**
- **Explain the role of physical therapy in mitigating common fall risk factors in individual patients**
- **Explain the role of physical therapy as a member of a fall risk reduction team**
- **Describe performance based fall risk assessments appropriate for an acute care setting**



Introduction: Review of Baseline Survey Data



2011 Falls Survey in NE Hospitals

- **Examined structures-processes-outcomes related to fall risk reduction**
- **70 of 83 general community hospitals in NE responded (84%)**
 - 56 of 65 CAHs (86%)
 - 14 of 18 non-CAHs (78%)

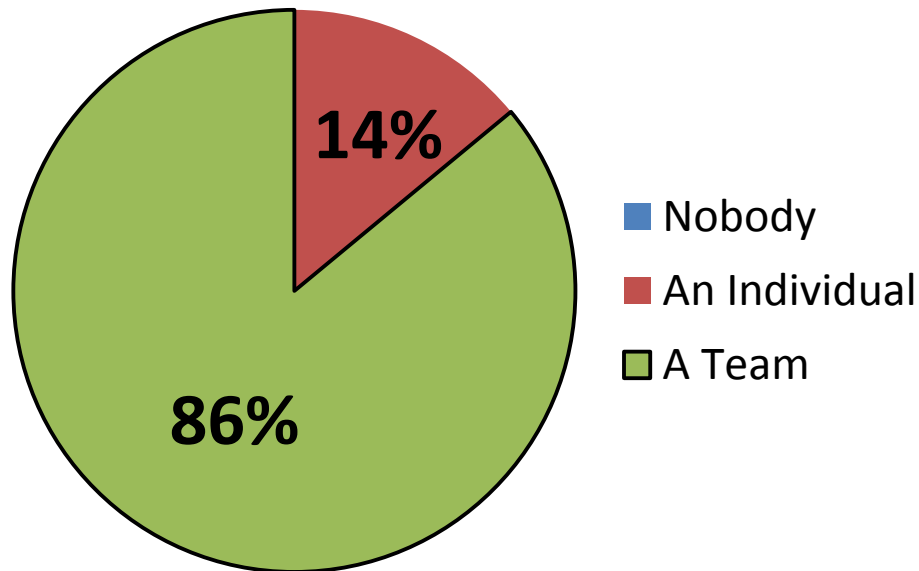




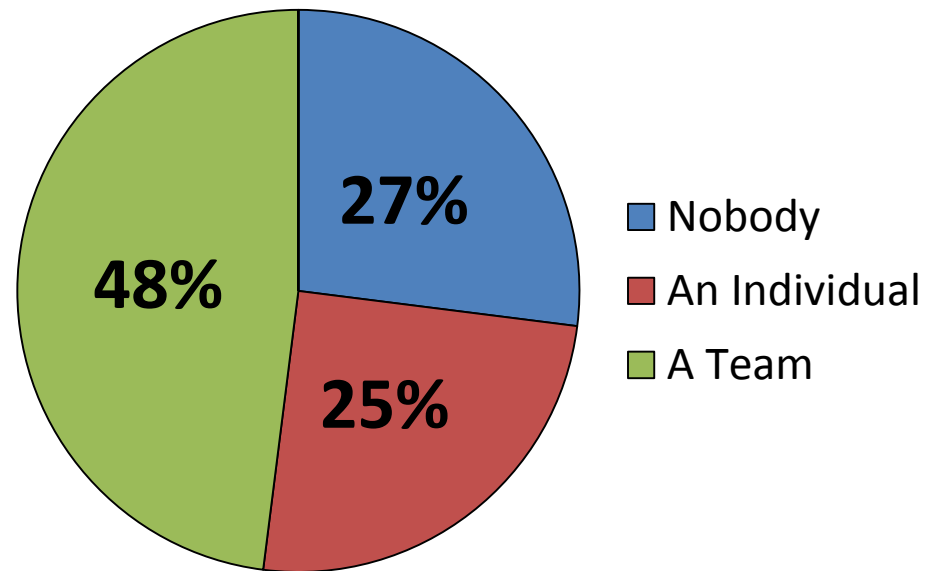
Fall Risk Reduction Strategies: Structures

Who is accountable for implementing your fall risk reduction program?

**Non-CAHs (46 – 689
Beds, n=14)**



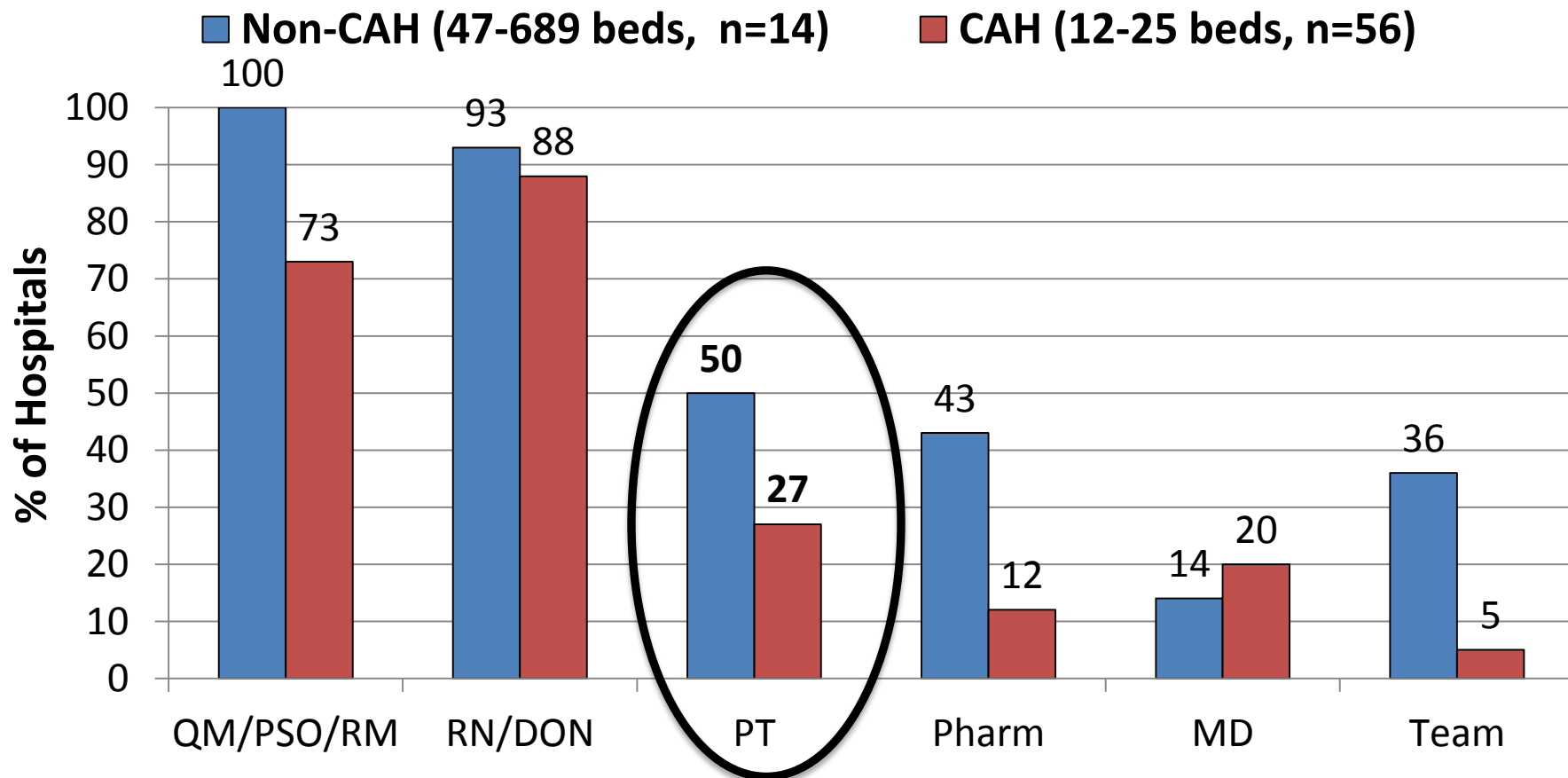
**CAHs (12 - 25 Beds,
n=56)**





Fall Risk Reduction Strategies: Structures

If you have a team, who is on it?

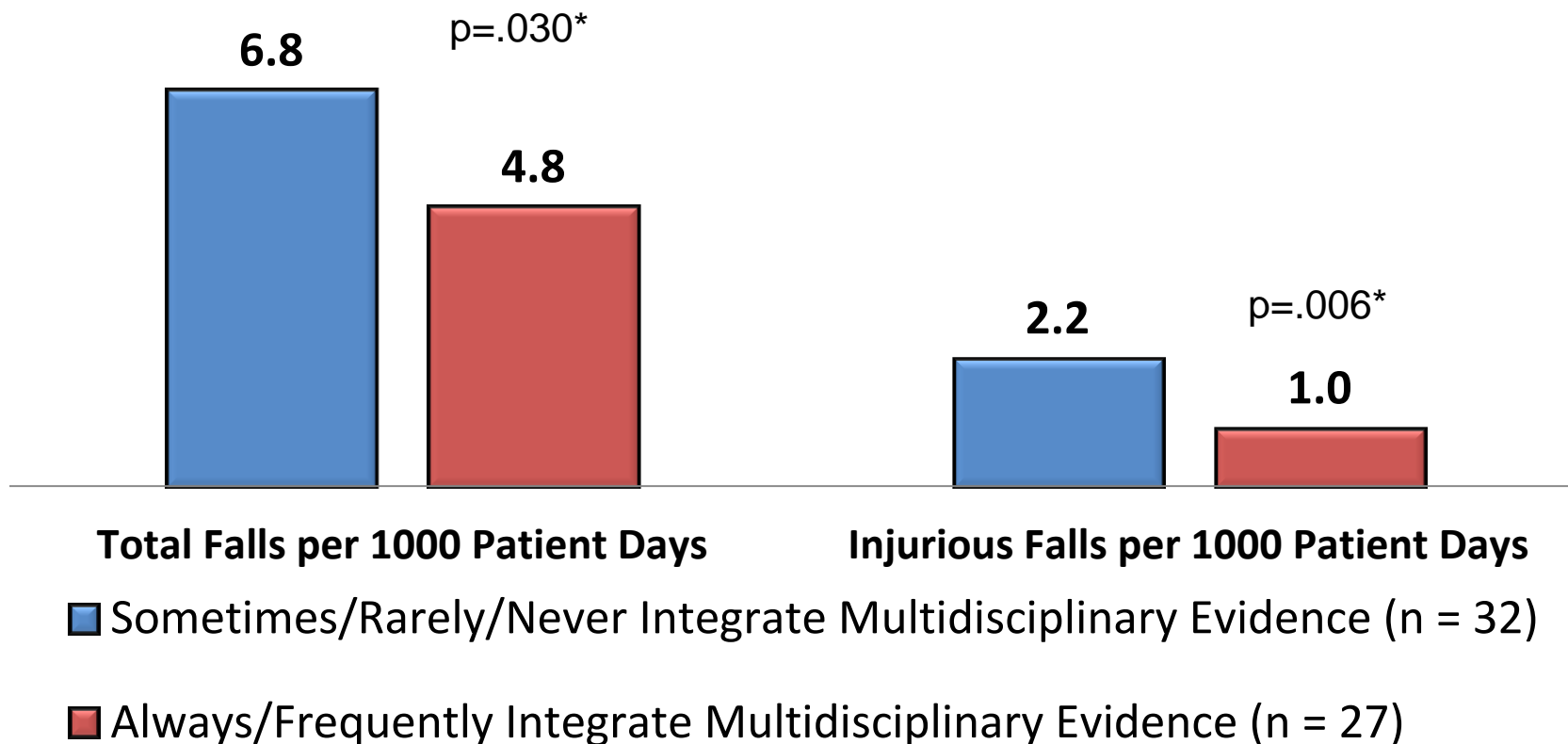


QM = Quality Manager; PSO = Patient Safety Officer; RM = Risk Manager; RN = Registered Nurse; DON = Director of Nursing; PT = Physical Therapist; Pharm = Pharmacist; MD = Physician or Medical Director; Team= Interprofessional Team



Fall Risk Reduction Strategies: Processes

Does your fall risk reduction team integrate evidence from multiple disciplines to continually improve fall risk reduction efforts?



*Negative binomial model

Fall Risk Reduction Strategies: Processes

How commonly are PT and OT used?

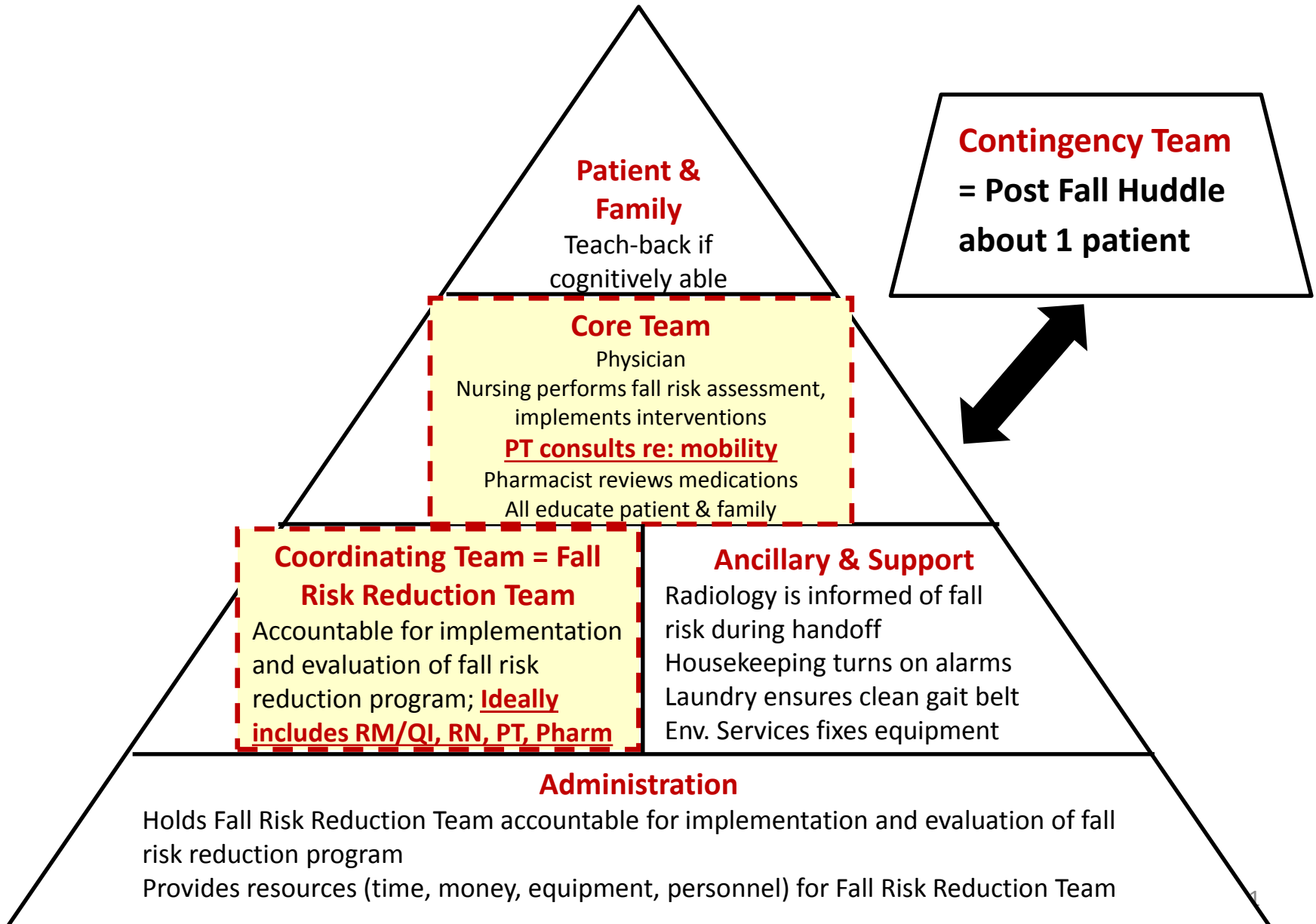
| Targeted Interventions | % Non-CAH (n=14) | % CAH (n=56) |
|--|---------------------|-----------------|
| Elevated Toilet Seat | 79 | 70 |
| Physical Therapy Evaluation | 79 | 59 |
| Sitter | 86 | 54 |
| Toileting Schedule | 86 | 52 |
| Medication Review | 71 | 50 |
| Occupational Therapy Evaluation | 57 | 41 |
| Hip Protectors | 21 | 13 |



The Role of Physical Therapy in Fall Risk Reduction



Fall Risk Reduction Multi-Team System





Nursing: The Fall Risk Assessment Triage

- **Nursing completes fall risk assessment upon admission**
- **Triage—depending on the patient's specific risk factors, the nurse can make appropriate referrals**





Common Fall Risk Factors¹⁻³

- **History of Falls**
- **Muscle Weakness**
- **Gait Deficits**
- **Balance Deficits**
- **Use of Assistive Device**
- **Visual Deficit**
- **Arthritis**
- **Impaired ADL status**
- **Depression**
- **Cognitive Impairment**
- **Age > 80**
- **Polypharmacy**



Common Fall Risk Factors: Weakness vs. Gait Deficits

Weakness

- Example clinical presentation: difficulty rising from a seated position
- Inability of a muscle to generate sufficient force
- Lower extremity weakness is a risk factor for falls and should be assessed and treated as part of a fall prevention strategy⁴

Gait Deficits

- Example clinical presentations: shuffling gait, asymmetry in step length or stance time, alteration in step width, excessive trunk sway
- May be caused by weakness, pain, or impaired motor control
- Common dx associated with gait impairment AND ↑ fall risk: Parkinson's Disease, CVA, polyneuropathy, multiple sclerosis⁵



PT: Part of The Core Team

- **Physical therapists are responsible for:**
 - Assessing strength, range of motion, posture, sensation, balance, transfers, gait, and need for an assistive device
 - Developing interventions to address the above





PT: Part of The Core Team

- **Physical therapists are responsible for:**
 - **Providing education to patient and family about safe mobility including transfers, gait, & environmental modification**
 - **Assistive device prescription and instruction**
 - **Patients who use AD's are at greater risk for falls^{1,6}, but correct use of assistive devices may decrease fall risk⁷**





PT: Part of The Core Team

- **Physical therapists are responsible for:**

Providing an exercise program to mitigate strength and balance impairments⁸

Group and home-based exercise programs supervised by a PT reduce the risk of falling in community dwelling adults^{9,10}

Exercise included as part of a multifactorial intervention reduces the risk of falling in frail or institutionalized older adults¹⁰

50 hours of exercise achieved over 3-12 months is the minimal recommended dose of exercise to protect community dwelling older adults against falls¹¹



PT: Part of The Core Team

- **Physical therapists are responsible for:**
 - **Providing education/consultation to hospital staff about the best way to assist individual patients with gait and transfers**





PT: Part of The Core Team

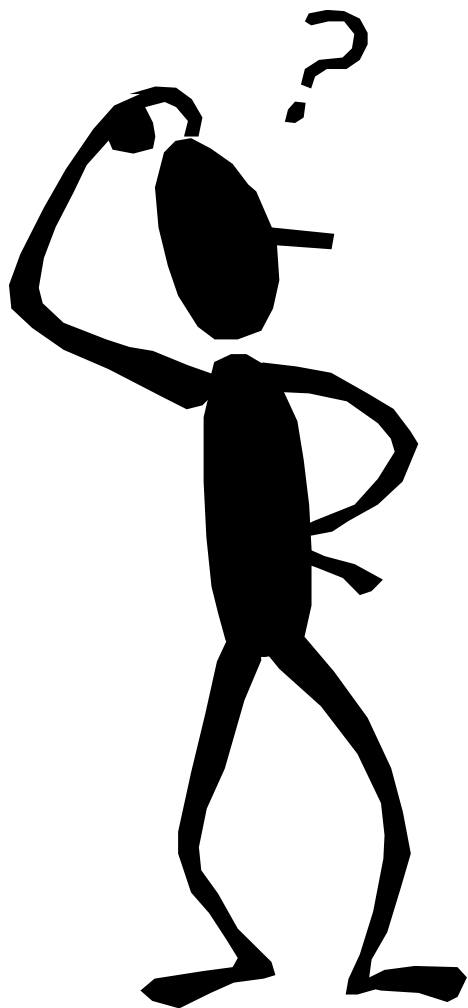
- **Physical therapists are responsible for:**
 - **Providing recommendations for discharge from acute care**
 - **Appropriate discharge setting given current mobility status**
 - **Home modifications**
 - **Referral for continued PT**





PT: Part of The Core Team

■ When Should I Involve PT?



- Identification of any impairments in transferring or gait during the initial fall risk assessment¹²
- Patient has a history of falls^{1,2}
 - Admittance to the hospital for a fall or if a fall occurs while hospitalized
- Uncertainty of how to safely assist the patient with transfers and gait



PT: Part of The Core Team

- **Examples of Commendable “Real-Life” PT Utilization**
 - PT screen automatically triggered for all patients identified at risk according to the fall risk assessment
 - Moving beyond writing “1”, “2”, or “Hoyer” on the white board: posting photos of transfer techniques for individual patients; direct communication of mobility status during rounds
 - Open communication b/t nursing and PT: frequent consultation for best transfer technique – even if pt isn’t officially on PT’s caseload

- **As a member of the Fall Risk Reduction Team, physical therapists can provide:**
 - **Input on:**
 - Development of fall risk policies and procedures
 - Patient education materials
 - Environmental modifications to hospital rooms
 - Interpretation of fall event data
 - **Staff competency training for safe transfers and gait**





PT: Part of the Fall Risk Reduction Team

- **Examples of Commendable “Real-Life” PT Utilization**
 - **Different mind-set when examining fall events – focus on patient’s ability (or inability) to move safely**
 - **Providing input on most efficient process to initiate screening program**
 - **Developing a documentation form to communicate a patient’s mobility status to other members of the core team**
 - **Providing input on what fall risk assessments should be built into EMR**



Part 3: Fall Risk Assessments

Performance Based Fall Risk Assessments: Those Common and Feasible for Acute Care



Fall Risk Assessments

What Does “Performance Based” Mean?:

- Fall risk is assessed based on the patient’s ability to carry out the task in the assessment
- PTs should communicate a patient’s scores on these assessments (and the relevance of these scores) to other staff caring for the patient





Review: Sensitivity and Specificity

- **Sensitivity is the ability of a fall risk assessment tool to correctly identify a patient who IS at risk for falling**
 - In a highly sensitive test, a person who tests negative is rarely a faller (SnNout)
- **Specificity is the ability of a fall risk assessment tool to correctly identify a patient who IS NOT at risk for falling**
 - In a highly specific test, a person who tests positive is rarely a non-faller. (SpPin)



Reliability

- **Inter-Rater Reliability:**
 - Tells you the degree of agreement among raters.
 - Important if more than one person will be completing the assessment over time
- **Intra-Rater Reliability:**
 - Tells you the degree of agreement among multiple trials of a test performed by the same rater (PT).
- **Test-Retest Reliability:**
 - Tells you the degree of consistency for a test (not necessarily a rater)



PT Fall Risk Assessments

Timed Up and Go (TUG)

| | |
|----------------------------|---|
| Description: | Patient starts sitting in a chair. The patient stands up from the chair, walks 3 meters at their comfortable walking pace, turns around, walks back to the chair and sits down. The time it takes to perform this task is recorded. |
| Reliability: | Interrater Reliability: 0.98 ¹³ |
| Validity: | Sensitivity and Specificity: 0.87 ¹³ |
| Fall Cut Off Score: | A score of ≥ 14 seconds indicates that community-dwelling older adults are at increased risk for falls. ¹³ |



PT Fall Risk Assessments

Performance-Oriented Mobility Assessment (POMA)

| | |
|----------------------------|---|
| Description: | A 16 item assessment that is score out of 28 points. Items on the assessment were designed to measure sitting and standing balance and gait function. |
| Reliability: | Interrater Reliability: 0.91-0.93 ¹⁴ |
| Validity: | Sensitivity : 0.64 ¹⁴ Specificity: 0.66 ¹⁴ |
| Fall Cut Off Score: | A score of 19/28 or less indicates that the patient is at increased risk for falls. ¹⁴ |



PT Fall Risk Assessments

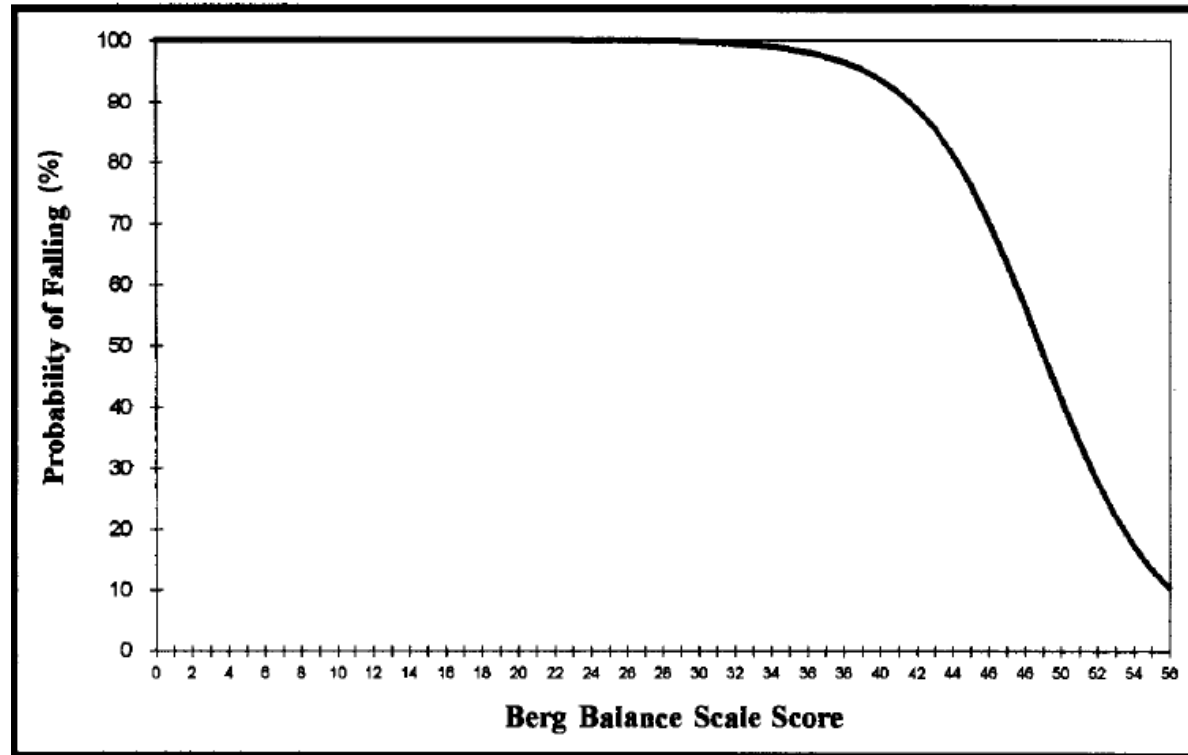
Berg Balance Scale (BBS)

| | |
|----------------------------|--|
| Description: | A 14 item assessment that is scored out of 56 points. Items on the assessment were designed to measure static and dynamic balance abilities. |
| Reliability: | Interrater Reliability: 0.98 ¹⁵ |
| Validity: | Sensitivity : 0.53 ¹⁶ Specificity: 0.96 ¹⁶ |
| Fall Cut Off Score: | A score of 45/56 or less indicates an increased risk for falls. ¹⁶ |



PT Fall Risk Assessments

Berg Balance Scale (Cont)



- As BBS score decreases, probability of falling increases¹⁷
- Combining the BBS and history of falls may be a better predictor of falls than the BBS alone¹⁷



PT Fall Risk Assessments

5 Times Sit To Stand (5x STS)

| | |
|----------------------------|--|
| Description: | The patient sits in a chair with their arms folded over their chest. From sitting, the patient comes to a fully erect standing position 5 times. The time taken to perform 5 sit to stand transfers is recorded. |
| Reliability: | Test-Retest Reliability: 0.89 ¹⁸ |
| Validity: | Sensitivity: 0.66 ¹⁸ Specificity: 0.55 ¹⁸ |
| Fall Cut Off Score: | A score of 12 seconds or more indicates an increased risk for falls. ¹⁸ |



PT Fall Risk Assessments

Gait Speed (10 Meter Walk)

| | |
|----------------------------|---|
| Description: | Gait speed is most commonly assessed through the 10 meter walk test. With this test the patient ambulates 10 meters while time is recorded. Gait speed is then calculated in a rate of meters/sec ¹⁹ |
| Reliability: | Test-Retest Reliability: 0.97 ²⁰ |
| Validity: | Sensitivity: 0.72 ²¹ Specificity: 0.74 ²¹ |
| Fall Cut Off Score: | <p>Gait speed of 0.56 m/s is the cut-off to identify risk of recurrent falls for the sensitivity/specificity values noted above.²¹</p> <p>Persons who walked at a speed of < 0.7 m/s were 1.5 times more likely to fall than person who walked at least 1.0 m/s.²²</p> <p>Persons who walked at a speed of < 0.7 m/s were 5.4 times more likely to fall, 5.9 times more likely to be hospitalized, 9.5 times more likely to need a caregiver, and 2.7 times more likely to experience a new fracture than persons who walked >1.1 m/s.²³</p> |



Other Mobility Assessments

What Can I Do If a Physical Therapist is Not Available For These Performance-Based Assessments...?





Simple Mobility Assessments

Mobilization Test in ICU:²⁴

■ Description:

- A series of mobilization tests that can help determine whether the patient has the motor control and adequate oxygen delivery to support activity





Simple Mobility Assessments

Mobilization Test in ICU:²⁴

1. Can the patient raise each leg against gravity in supine?

2. Can the patient sit on the side of the bed with minimal support?

3. With the walker and assistance, can the patient stand?

4. With the walker and assistance, can the patient shift weight laterally?

5. With the walker and assistance, can the patient take steps in place?

6. Progressive walking with walker and assistance if appropriate



Simple Mobility Assessments

Egress Test²⁵:

■ Description:

- A series of 3 tests that can be completed at the bedside prior to the patient transferring or ambulating

■ The 3 Tests:

- 3 Reps of Sit to Stand
- 3 Steps of Marching in Place
- Advance Step and Return Each Leg



Part 4: Case Study/Summary

Case Study and Summary



Case Study Example

- **86 y/o female, admitted with CHF exacerbation**
- **Identified as high fall risk per nursing-based fall risk screen**
- **Fall interventions in place: use of walker, gait belt, bed alarm, low bed**
- **PT not currently ordered**



Case Study Example

- **On day 3 of admission , pt was amb to bathroom with walker, 2 assist, and gait belt**
- **Legs “gave out” as patient was turning to sit on toilet; lowered to floor; no injury**
- **Possible action to prevent further falls: Use bedside commode rather than ambulate to the bathroom**



Case Study Example

- **Questions:**
 - **Is the patient experiencing deconditioning associated with decreased activity levels due to hospitalization?**
 - **Did the patient's cardiovascular meds contribute to the fall?**
 - **Is it possible that the Egress Test or ICU Mobilization Test would have forecasted the fall?**
 - **Should PT be initiated now? If so, what would PT contribute to lowering this patient's fall risk?**



Summary

- **Nursing often triages for the team and makes the necessary referrals to other team members based on fall risk factors**
- **Physical therapists help manage mobility of individual patients at risk for falls and provide unique input related to their expertise when they are members of Fall Risk Reduction Teams**
- **Physical therapists use performance based assessments to add to the picture of fall risk for an individual patient**
- **Simple mobility assessments can be completed at the bedside by nursing**



Thank You



Contact Information

Dawn Venema, PT, PhD
dvenema@unmc.edu



References

1. American Geriatrics Society, British Geriatrics Society, and American Academy of Orthopedic Surgeons Panel of Falls Prevention. Guidelines for the prevention of falls in older persons. *J Am Geriatr Soc*. 2001;49:664-672.
2. Summary of the Updated American Geriatrics Society/British Geriatrics Society clinical practice guideline for prevention of falls in older persons. *Journal Of The American Geriatrics Society*. 2011;59(1):148-157.
3. Tinetti M, Williams T, Mayewski R. Fall risk index for elderly patients based on number of chronic disabilities. *The American Journal Of Medicine*. 1986;80(3):429-434.
4. Moreland J, Richardson J, Goldsmith C, Clase C. Muscle weakness and falls in older adults: a systematic review and meta-analysis. *Journal Of The American Geriatrics Society*. 2004;52(7):1121-1129.
5. Stolze H, Klebe S, Zechlin C, Baecker C, Friege L, Deuschl G. Falls in frequent neurological diseases--prevalence, risk factors and aetiology. *Journal Of Neurology* . 2004;251(1):79-84.
6. Grundstrom A, Guse C, Layde P. Risk factors for falls and fall-related injuries in adults 85 years of age and older. *Archives Of Gerontology And Geriatrics*. 2012;54(3):421-428.
7. Allman RM, Sawyer P, Brown CJ, Ahmed A. Do Canes and Walkers Prevent Falls in Community Dwelling Old. *Discovery to Practice: Innovative Translational Approaches to Injury Prevention and Care*. 2009
8. Centers for Disease and Control and Prevention. Older Adult Falls Publications. Accessed on May 17, 2013. Available at <http://www.cdc.gov/HomeandRecreationalSafety/Falls/pubs.html#com>.



References

9. Gillespie L, Robertson M, Lamb S, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Of Systematic Reviews*. 2012;9:CD007146.
10. Shubert T. Evidence-based exercise prescription for balance and falls prevention: a current review of the literature. *Journal Of Geriatric Physical Therapy*. 2011;34(3):100-108.
11. Sherrington C, Whitney J, Lord S, Herbert R, Cumming R, Close J. Effective exercise for the prevention of falls: a systematic review and meta-analysis. *Journal Of The American Geriatrics Society*. 2008;56(12):2234-2243.
12. Sennour Y, Counsell S, Jones J, Weiner M. Development and implementation of a proactive geriatrics consultation model in collaboration with hospitalists. *Journal Of The American Geriatrics Society*. 2009;57(11):2139-2145.
13. Shumway-Cook A, Brauer S, Woollacott M. Predicting the probability for falls in community-dwelling older adults using the Timed Up & Go Test. *Physical Therapy*. 2000;80(9):896-903.
14. Faber MJ, Bosscher RJ, van Wieringen PC. Clinimetric properties of the performance-oriented mobility assessment. *Phys Ther*. 2006;86(7):944-954.
15. Berg K, Wood-Dauphinee S, Williams JI. The Balance Scale: reliability assessment with elderly residents and patients with an acute stroke. *Scand J Rehabil Med*. 1995; 27(1):27-36.
16. Bogle Thorbahn L, Newton R. Use of the Berg Balance Test to predict falls in elderly persons. *Physical Therapy*. June 1996;76(6):576-583.



References

17. Shumway-Cook A, Baldwin M, Polissar N, Gruber W. Predicting the probability for falls in community-dwelling older adults. *Physical Therapy*. 1997;77(8):812-819.
18. Tiedemann A, Shimada H, Sherrington C, Murray S, Lord S. The comparative ability of eight functional mobility tests for predicting falls in community-dwelling older people. *Age And Ageing*. 2008;37(4):430-435.
19. Fritz S, Lusardi M. White paper: "walking speed: the sixth vital sign". *Journal Of Geriatric Physical Therapy*. 2009;32(2):46-49
20. Steffen T, Hacker T, Mollinger L. Age- and gender-related test performance in community-dwelling elderly people: Six-Minute Walk Test, Berg Balance Scale, Timed Up & Go Test, and gait speeds. *Physical Therapy*. 2002;82(2):128-137.
21. VanSwearingen JM, Paschal KA, Bonino P, Chen TW. Assessing recurrent fall risk of community-dwelling, frail older veterans using specific tests of mobility and the physical performance test of function. *J Gerontol A Biol Sci Med Sci*. 1998 ;53(6):M457-64.
22. Verghese J, Holtzer R, Lipton R, Wang C. Quantitative gait markers and incident fall risk in older adults. *The Journals Of Gerontology. Series A, Biological Sciences And Medical Sciences*. 2009;64(8):896-901.
23. Montero-Odasso M, Schapira M, Soriano ER, Varela M, Kaplan R, Camera LA, Mayorga LM. Gait velocity as a single predictor of adverse events in healthy seniors aged 75 years and older. *J Gerontol A Biol Sci Med Sci*. 2005 Oct;60(10):1304-9.
24. Perme C, Chandrashekar RK. Managing the patient on mechanical ventilation in ICU: early mobility and walking program. *Acute Care Perspect*. 2008;17(1):10-15.
25. Dionne M. Introducing the Egress Test. *Advance for Physical Therapy and Rehab Medicine*. 2004;15(13):39.



Mobility Assessment Resources

For more information on performance based and simple fall risk assessments you can visit:

- **www.rehabmeasures.org**
- **POMA:** <http://www.nyc.gov/html/doh/downloads/pdf/win/tinetti-test.pdf>
- **BBS:** http://www.aadep.org/documents/filelibrary/presentations/pmd_evaluationmartin_and_pilley_aafp/BERG_B2_4FD2998A0AB77.PDF
- **Egress Test:** <http://physical-therapy.advancweb.com/Article/Introducing-The-Egress-Test.aspx>



Please complete the webinar
evaluation by clicking on the link
below:

<https://www.research.net/s/capturefalls-eval7>

We value your input!



CAPTURE Falls

Collaboration and Proactive Teamwork Used to Reduce

http://unmc.edu/patient-safety/capture_falls.htm