

Falls in Elderly ED Patients

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Disclosure:
No conflict
of interest



Introduction

- One third of older adults fall annually
- One out of five falls causes a serious injury such as broken bones or a head injury
- Falls are the second leading cause of unintentional injury deaths worldwide



Elderly ED Fall Patients

- Represents around 15-20% of elderly ED visits
- Head injury
- Osteoporotic fracture
- Death



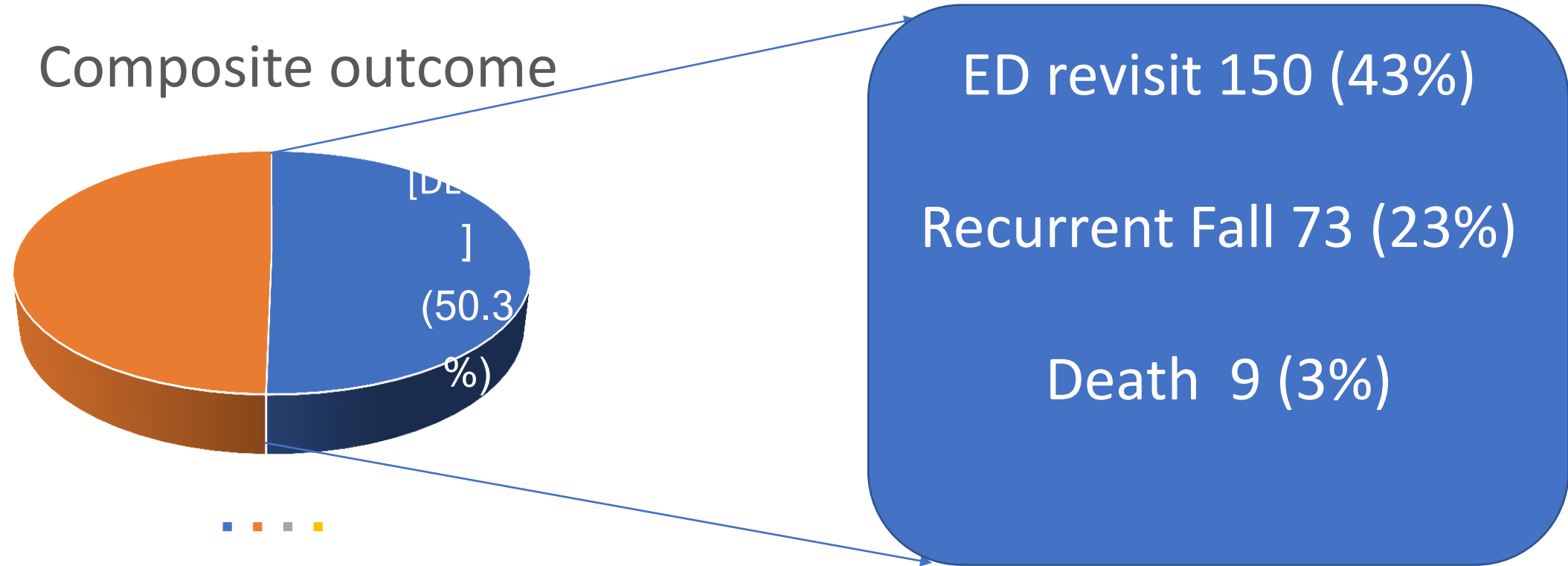
Adverse Events and Outcomes



What happens to elderly ED fall patients?

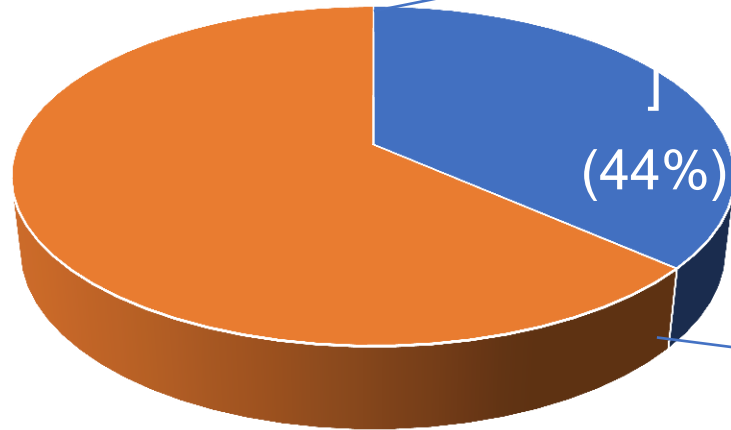
- Limited data on ED revisits, Subsequent hospitalization, Recurrent fall and Death after older adults ED fall visit.
- Conduct 2 studies examining adverse events and outcomes

Retrospective Chart Review (350 charts)



Prospective at 2 Hospitals (n=548)

Composite outcome



ED revisit 126 (27%)

Recurrent Fall 113 (21%)

Death 13 (2%)



Circle "Yes" or "No" for each statement below		
Yes (2)	No (0)	I have fallen in the past year.
Yes (2)	No (0)	I use or have been advised to use a cane or walker to get around safely.
Yes (1)	No (0)	Sometimes I feel unsteady when I am walking.
Yes (1)	No (0)	I steady myself by holding onto furniture when walking at home.
Yes (1)	No (0)	I am worried about falling.
Yes (1)	No (0)	I need to push with my hands to stand up from a chair.
Yes (1)	No (0)	I have some trouble stepping up onto a curb.
Yes (1)	No (0)	I often have to rush to the toilet.
Yes (1)	No (0)	I have lost some feeling in my feet.
Yes (1)	No (0)	I take medicine that sometimes makes me feel light-headed or more tired than usual.
Yes (1)	No (0)	I take medicine to help me sleep or improve my mood.
Yes (1)	No (0)	I often feel sad or depressed.

Stay Independent

Learn more about fall prevention.



STEADI

Stopping Elderly Accidents,
Deaths & Injuries

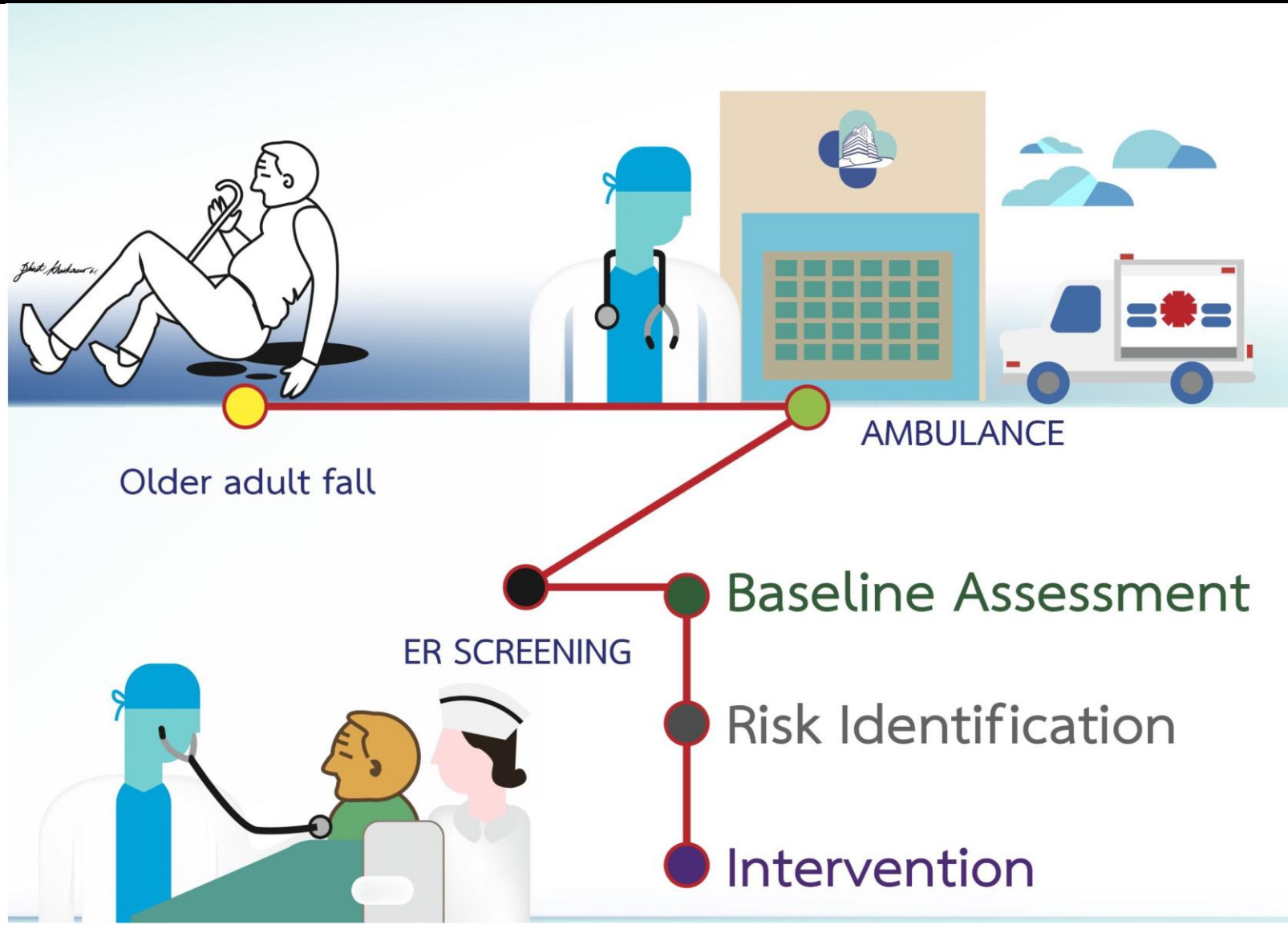
Multiple Logistic Regression for Recurrent Fall

Factors	Odds	95%CI
Q1. Previous fall	2.69	(1.72 - 4.23)
Q3. Feel unsteady when walking sometimes	2.86	(1.80 - 4.57)
Q9. Loss some feeling in their feet	1.83	(1.10 - 3.05)
Charlson co-morbidity index ≥ 4	1.67	(1.01 - 2.77)
Visual acuity $< 20/40$	0.34	(0.59 - 1.94)

Multiple Logistic Regression for ED Revisits

Factors	Odds	95% CI
Q 2. Use or have been advised to use a cane or walker	2.31	(1.56-3.42)
Q 10. Take medication that sometimes makes them feel light-headed or more tired than usual	2.00	(1.26-3.15)

What should the ED do to prevent falls?



Fall Risk Factors at Home



Fall Risk Factors at Home



Pre-hospital Intervention

Decreases in Fall

- Mason S. BMJ 2007
- Logan PA,. BMJ 2010

(Incidence rate ratio 0.45, 95% CI 0.35 to 0.58)

No effects

- Mikolaizak. iPREFER Study . Age and Aging 2017. (IRR 1.18, 95%CI 0.86-1.61)



Emergency Department Goals

- To diagnose and treat traumatic injuries
- To discover and manage the predisposing causes of the fall
- To prevent complications of falling and future falls

Case

- A 91-year old female
- Presented to ED with falls



Falls or Syncope?

- No witness
- Retrograde amnesia
- Multiple fall

Geriatric Emergency Department Guideline

Key History Assessment

- Cause and location of fall
- Difficulty with gait and/or balance
- Falls in previous (XX time)
- Time spent on floor or ground
- Loss of consciousness/AMS
- Melena

- Comorbidities such as dementia, Parkinson's, stroke, diabetes, hip fracture, and depression
- Alcohol use
- Activities of daily living
- Appropriate foot wear

Disease Related Risk Factors

- Age Related
- Neuro-motor Disease
- Orthopedic
- Cardiovascular

Orthostatic Hypotension

Postprandial Hypotension

Medications review

Benzodiazepine and hypnotics

Antidepressant / Antipsychotic

TCAs, SSRIs

Anticonvulsants

Levodopa

Opioids

Anti-hypertensive

Geriatric Emergency Department Guideline

Key Physical Examination

- Head to toe examination
- Orthostatic blood pressure assessment
- Visual or neurological impairments
- CV: Rate/rhythm/murmur
- Presence/absence of proximal motor strength

Physical Examination

- MSK: Muscle strength- presence/absence of proximal motor strength
- Psych: Cognitive impairment & depression
- Skin: Examine Feet/Footwear

ED workup

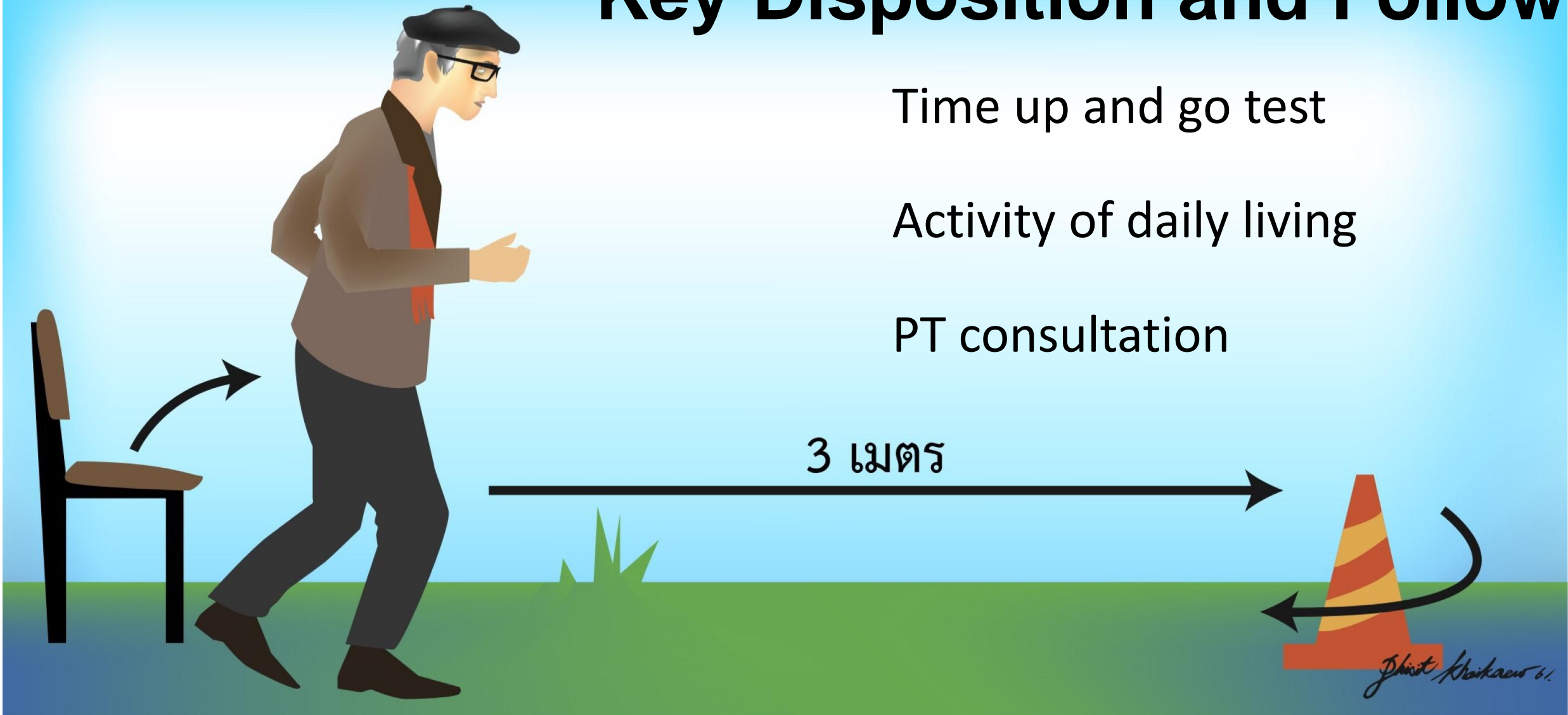
- CBC, electrolytes, BUN/creatinine, glucose
- Drug levels where appropriate
- Syncope: EKG
- Suspicious systolic murmur: cardiac echo
- Focal neuro abnormalities: CT or MRI
- Imaging for trauma driven by PE finding

Key Disposition and Follow up

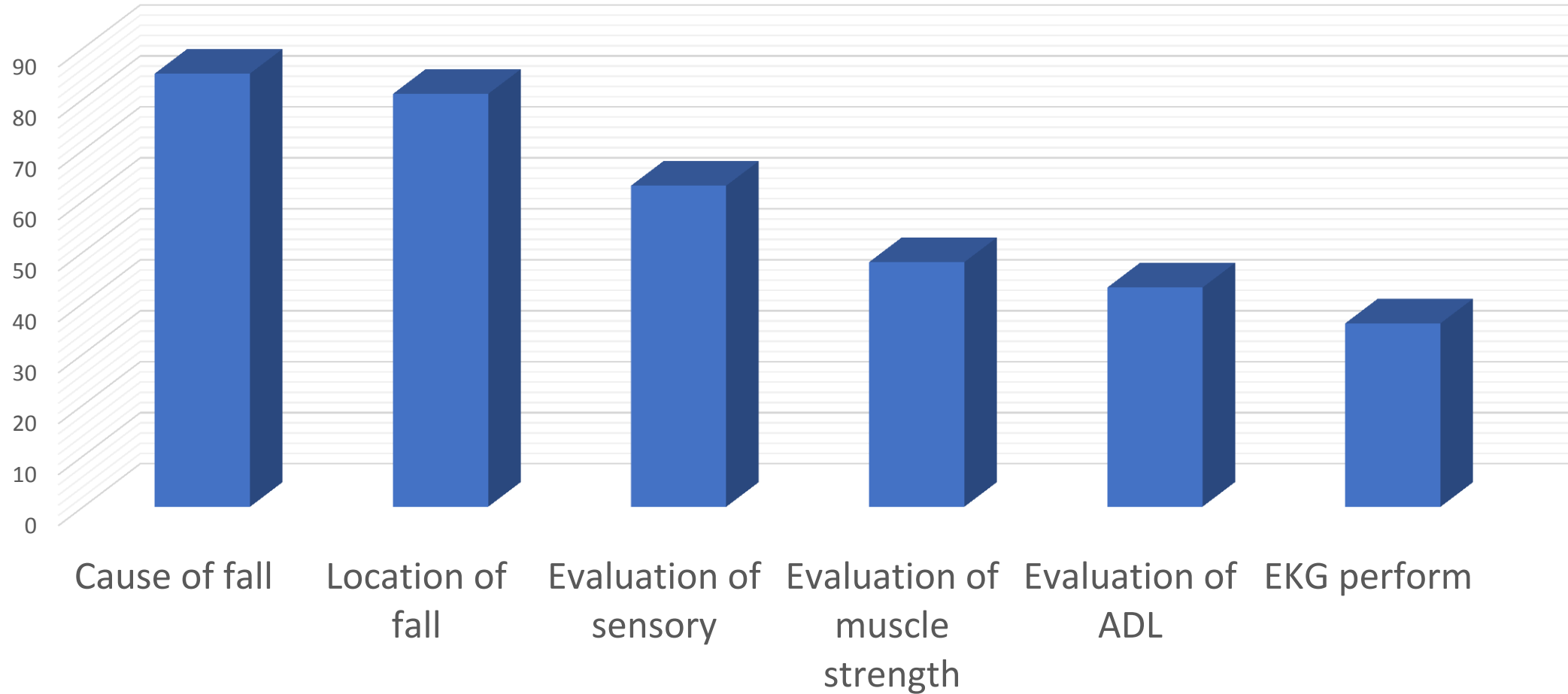
Time up and go test

Activity of daily living

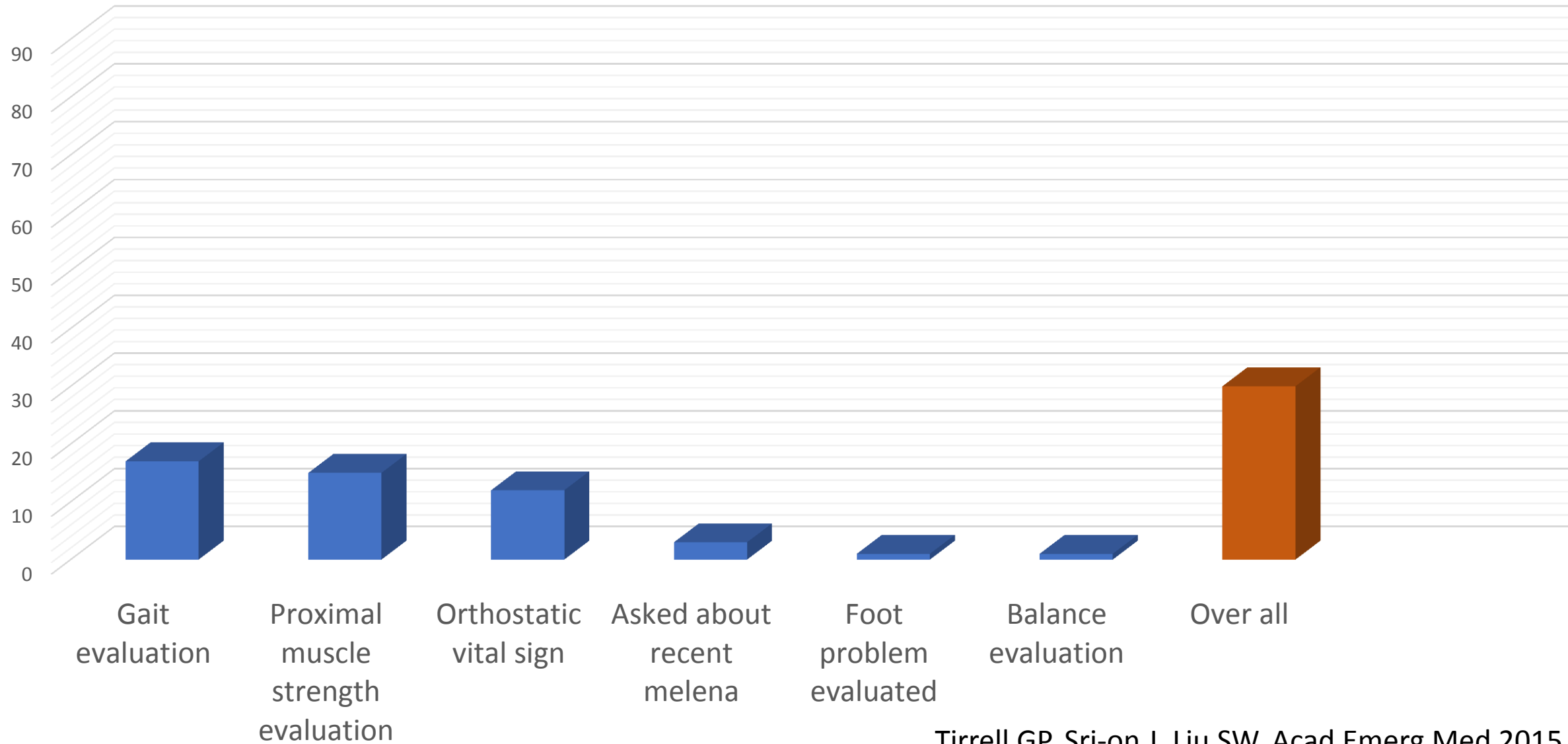
PT consultation



Adherence to the Guideline (%)



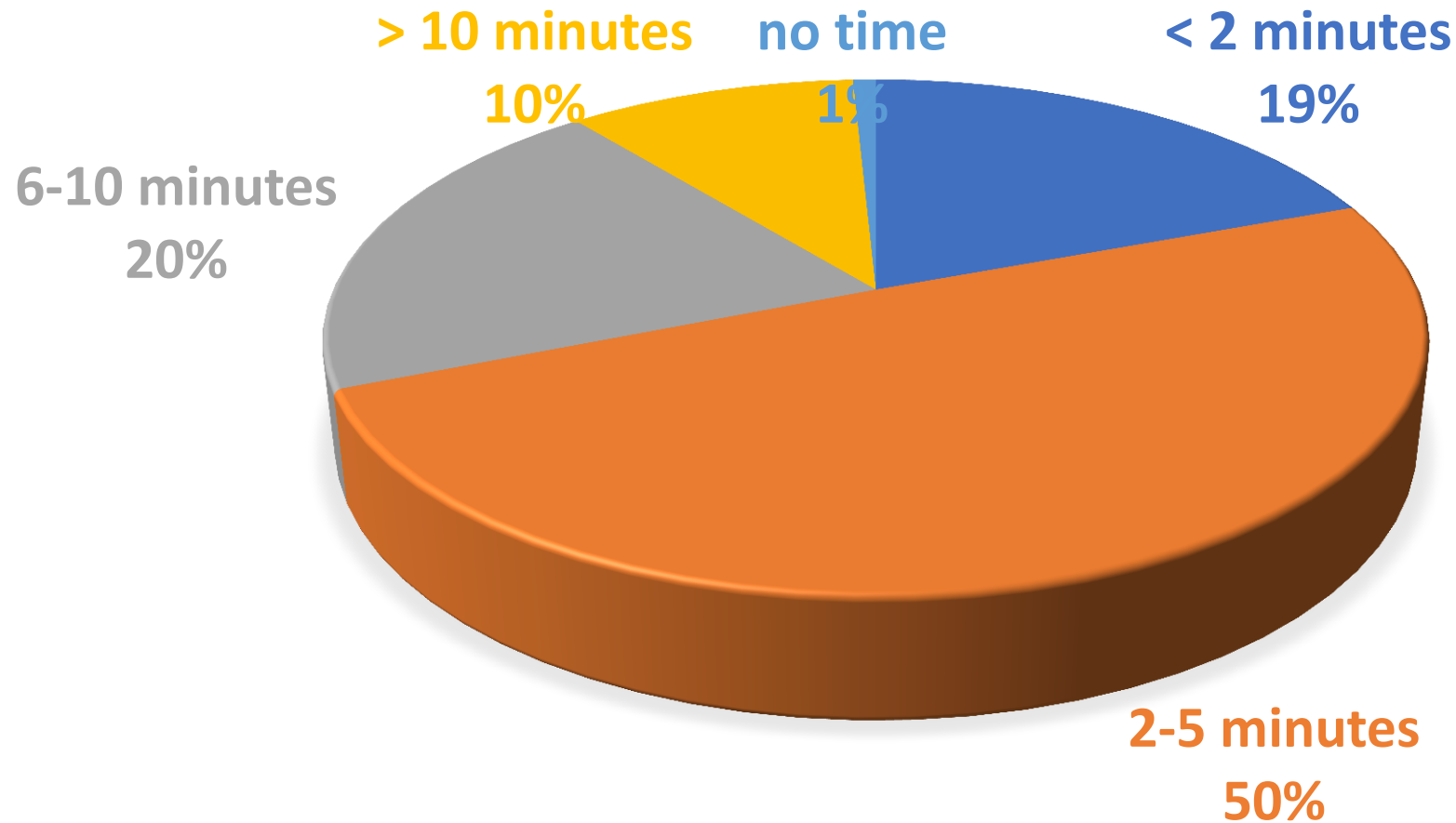
Adherence to the Guideline (%)



Challenge

- Time
- Screening/ Intervention
- How much time EPs willing to spend on fall risk assessment and prevention?

How much time EPs willing to spend on fall risk assessment and prevention?



ED Fall Intervention Studies

- No effect:
 - Baraff, 1999 AEM
 - Shaw, BMJ 2003 – Multifactor intervention in demented ED patients
 - Russell, J Am Ger Soc 2010



ED Fall Intervention Studies

- Decrease in falls:
 - Close, PROFET study, Lancet 1999
(OR 0.39 after intervention)
 - Davison, Age and Aging, 2005
(36% reduction in falls)



ED Fall Intervention Studies

- Barker, RESPOND study, Patient-center program, Inj Prev 2015
- The RCT recruit 528 community-dwelling persons aged 60–90 years who present to two tertiary referral EDs in Perth and Melbourne, Australia, with a fall.



Post ED evaluation

- Interventions tailored to identified risk factors + exercise program
- Cochrane review on exercise



A group of people, mostly older adults, are practicing Tai Chi in a park. They are standing in a line, facing right, with their arms extended forward in a slow, controlled movement. The background shows green trees and a paved path. A white circular graphic with a black border is overlaid on the left side of the image, containing the text "Exercise: Tai Chi".

Exercise: Tai Chi

Future of ED Fall Prevention

- Increase multi-factorial ED evaluation of fall patients
- Design ED based interventions vs. combination ED/referral based interventions
- Technology for ED fall prevention: Mobile app.



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