Falls
Falls are common among older people.
One third of community-dwelling individuals older than 65 years fall every year
Associated with significant morbidity/mortality: 5-10% of falls cause serious injuries (hip fracture/subdural/psychosocial)
Up to 50% of older fallers unable to get up after fall (rhabdomyolysis; pneumonia; hypothermia)
Greater likelihood of nursing-home placement
Diverse aetiology.
Diagnostic evaluation influenced by thorough history and examination.

Aetiology of falls
(overlap between all three)
- Simple trip
- Falls without loss of consciousness
- Falls with loss of consciousness –
  - Syncope
  - Seizure
  - Stroke

General risk factors for falls

Key is *Neurovascular instability*

- Age – postural sway
  (Incidence of falls increases with age)
- Neurological
  - NB Vascular gait dyspraxia
  - Pyramidal weakness
  - Extrapyramidal syndromes
  - Cerebellar/Vestibular disorders
  - Cognitive impairment
  - Sensory impairment
  - Peripheral neuropathy
  - Visual impairment
  - Epilepsy
- Cardiovascular
  - NB Postural hypotension
  - Carotid sinus syndrome
  - Vasovagal episodes
  - Arrhythmias
  - Critical valvular lesions
- Structural
  - Muscular eg. Myopathy
  - Rheumatological e.g. OA
- Drugs ≥4 medications assoc with ↑ risk of fall
  - Antihypertensives
  - Sedatives/neuroleptics
  - Antidepressants esp. TCAD
  - Levodopa
  - Anticholinergics
  - Alcohol
- Environment

Lighting
Floor surface
Footwear
Cotsides
Clutter

Assessment of the older faller

History

A Prior to fall
Posture - lying/sitting/standing
Warning symptoms – dizziness (should not be confused with vertigo)/visual/palpitation/aura/focal weakness
Environment – Obstacles/visibility

B During the fall (often need a collateral history)
Loss of consciousness (including duration)
Seizure activity’ (jerking/incontinence/tongue biting) may occur in syncope
Focal neurological signs

C After the fall
Focal neurological signs
Post-ictal state
Injuries sustained

Isolated incident? Or recurrent falls

Physical examination

Evidence of injury

Neurological
- Pyramidal
- Extrapyramidal
- Cerebellar
- Cognitive function
- Gait

Cardiovascular
- Pulse rate and rhythm
- +/- carotid sinus massage
- Lying and standing blood pressures
- Murmurs/carotid bruits

Rheumatological

Function
- Level of assistance required/ Use of walking aid

Investigations
- ECG
- Postural blood pressures
- Carotid sinus massage

No place for routine-
- EEG
- Echo
- 24 hr. holter, (unless history suggestive or abnormal ECG)

Prevention of falls
- Individual vs. population prevention
- Risk Assessment
Tinetti’s risk factor index looks at:

- Sedative drug use
- Cognitive impairment
- Foot problems
- Lower extremity disability
- Abnormalities of gait/balance

Risk of falls rises from 8% with one risk factor rising to 78% with four risk factors

Exercise programmes
FICSIT trial –
Exercise reduced risk of falls by 10%
By 23% if balance training exercise
No reduction in fall-related injuries
Participation in once per week tai chi classes for 16 weeks can prevent falls.

Low bone density increases the risk of hip and other fractures and should be identified and treated.
Vitamin D + Calcium supplementation in older nursing home patients reduced hip fracture by 20%.

Hip protectors-studies have been inconsistent and contradictory; 2007 trial of more than 1000 nursing home residents - no benefit.

Individual risk factor modification – difficult to study.

Treatment
Multidisciplinary approach
Treat underlying medical illness (Up to 10 percent of falls unrelated to syncope are related to acute illness)
Stop offending medications/ reduce the total number of medications
Physiotherapy – gait assessment and prescription of muscle strengthening and balance training exercise.
Occupational Therapy – assessment of environment and modification of home hazards

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Postural Hypotension
Definition: fall of > 20mmHg systolic or 10mmHg diastolic in BP
Patient should be supine for 15 minutes initially
Standing blood pressures should be measured at 2 and 5 minutes.
Aetiology:
Idiopathic (probably hypertension-related)
Prolonged bedrest
Autonomic neuropathy – diabetes/alcoholism
Drug induced – anti-parkinsonian medications
Antihypertensives
Antidepressants
?Shy-Drager syndrome (Parkinsonism plus)

Treatments
Stop offending drugs
Avoid sudden standing

Mineralocorticoids
Alpha-adrenergic agents (midodrine)

Syncope
Transient loss of consciousness due to lack of blood supply to brain.
Causes-
Excess vagal tone – vasovagal episode
Prolonged valsalva manoeuvre – cough syncope
Carotid sinus syncope (see below)
Postural hypotension (see above)
Cardiac arrhythmia
Critical valvular lesions
Vertebrobasilar TIA

Carotid sinus syncope
Stimulation of carotid sinus baroreceptors causes bradycardia (cardioinhibitory) and a slight fall in blood pressure (vasodepressor response).
This response normally becomes less marked with age.
In people with Carotid Sinus Hypersensitivity tight collars, sudden neck movements or cervical osteophytes may cause syncope due to profound bradycardia or hypotension (10% of cases).
Bradycardia can be demonstrated by performing carotid sinus massage by a trained senior clinician while connected to a cardiac monitor and a non-invasive continuous BP monitor.
Positive cardioinhibitory response - asystole > 3 secs.
Positive vaso-depressor response - Systolic BP Drop >50mmHg or >30mmHg with symptoms.
Some patients have both.
Contraindications to testing - recent MI, known stroke disease or carotid bruit.
Complications - arrhythmia + stroke 0.14%

Treatment – First line - Dual chamber pacemaker.
Second line - Anticholinergics and glossopharyngeal transection

Routine consideration should be given to bone health status in all older people who fall (AgePage 10)