National Institute for Health Research

Peninsula Medical School

Neurological conditions and falls

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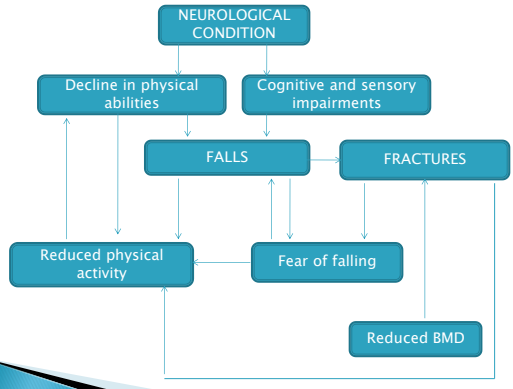
Summary

- Epidemiological data
- Risk factors
- Interventions
  - Stroke
  - Parkinson's disease
  - Multiple sclerosis
  - Huntington's disease

Proportion who fall

	Fall	Fractures
Older people	28-35%	5%
Stroke	40-70%	0.6-8.5%
PD	63-68%	13-27%
MS	31-63%	15-23%
HD	40-80%	?



In-patient falls following stroke

- Usually when transferring
- 4 to 22% fall during acute admission
- 11 to 47% fall during inpatient rehab
- Many people fall immediately post – discharge

Balance, mobility and falls in stroke

- Use of balance tests and mobility as predictors of falling is mixed
- Self-reported ↓ balance increases risk
- Most falls occur when walking
  - Walking speed not a risk factor
  - ? Effect of dual or complex tasks
  - ? Effect of gait impairment eg dropped foot

Physiotherapy and stroke

- Green et al 2002
  - N=170 a year post-stroke
  - 3 months community physiotherapy vs usual care
  - No difference in falls
- Marigold et al 2005
  - N=40
  - Balance and agility programme vs weight transference exercises
  - 3x per week, 10 weeks
  - Fewer falls

FLASSH study

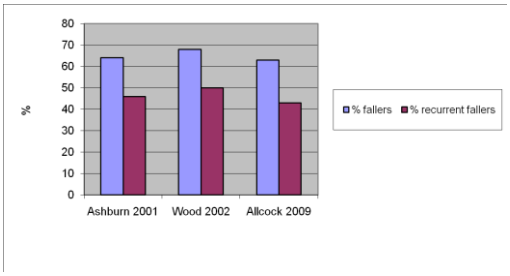
- Otago exercise programme
- 3 physiotherapist visits in a year
- Home exercise 5 x per week
- Additional risk factor modification
- Calcium and Vitamin D
- Hip protectors

Batchelor et al 2009

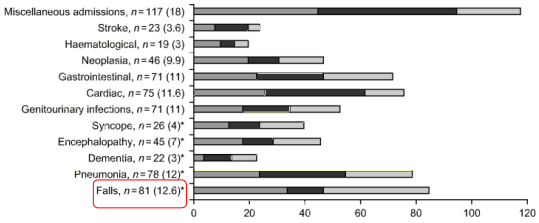
Functional electrical stimulation (FES)

- Improves gait
- Not explored with particular reference to falls

Are falls common in PD?



Hospital admissions and PD



Risk factors for falls

- ✓ Prior falls
- ✓ Fear of falling
- ✓ Freezing
- ✓ Mobility and balance impairment
- ✓ Reduced power

- ? Postural hypotension
- ? Disease severity
- ? Cognitive impairment
- ? Motor fluctuations
- ? Dyskinesia

Exercise to prevent falls in PD

- Physiotherapy led programmes
- Variety of programmes and delivery
- Some evidence that exercise can reduce the rate of falls but not risk

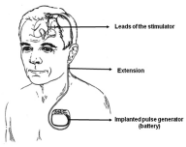
Medication

- Dopaminergics
  - no beneficial effect on falls
- Anticholinergics
  - Increase falls
- Cholinesterase inhibitors
  - May reduce falls

Deep brain stimulation

Weaver et al (2009)
- DBS (Gpi or STN) vs best medical care
- N=255
- Reduced dyskinesia
- Improved motor function and QOL
- Increase in falls

Ferraye et al (2010)
- PPN
- N=6
- Reduced freezing
- Fewer falls



Cueing

- Nieuwboer et al (2007) found improvements in gait and freezing
- No trials of examining effectiveness at preventing falls

Multiple sclerosis

Falls associated with
- Gait and balance impairment
- Spasticity
- Urinary incontinence
- Fatigue
- Reduced cognition

Injurious falls
- Fear of falling
- Osteoporosis

Preventing falls in MS

Cattaneo et al 2007
- 3 group RCT
  - Functional balance, gait and sensory training
  - Functional balance training
  - No balance training
- N=44
- Unclear impact on falls
- Improved balance
- No difference in confidence and gait

Huntington's disease

Fallers tend to

- Have worse balance
- Walk more slowly
- Be less confident
- Be less physically active
- Have worse cognition
- Be more aggressive

Can we prevent falls in HD?

- No studies examining interventions to reduce falls
- Physiotherapists consider falls to be a major issue
- Walking aids and gait re-education may be less useful
- ? Whether balance training may be beneficial

Conclusions

- Research in this area less well established
- Falls are very common
- Risks factors often associated with disease-specific symptoms
- Applying current evidence base to these populations needs further exploration
- Other technologies may be beneficial

Thank you for listening

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