

***Some Practice Tips for Clinicians seeing Patients with Mobility and
Balance Problems and recurrent Falls
By Dr Frank Nicklason – 20 November 2002***

I will make some generalisations about these clinical problems but clearly, each patient presents individual features which require specific attention. My clinical experience in this area derives from working in a multidisciplinary Falls Prevention Clinic and from seeing the results of falling in hospitalised patients.

In this group of high risk frail patients, the following clinical patterns emerge.

1. There is usually an identifiable neurological disease which represents the main cause of falling.
2. Additional factors which aggravate a chronic tendency to falling are common. These include a variety of medications, pain syndromes, physical deconditioning consequent upon sedentary life-style, and urinary urgency. In patients referred to the clinic, visual dysfunction and postural hypotension were not common primary explanations for falling. This probably reflects, to a significant degree, referral bias with these problems having been resolved in general practice or elsewhere.
3. Environmental hazards in and around the home area are a common feature and seem to be associated with cognitive impairment and suboptimal social support structures.
4. Psycho-social morbidity is very common in patients with recurrent falling tendency, poor mobility and balance impairment. This includes depressive symptoms, anxiety, fear of falling and social isolation.

Neurological Disease and Falling:

Maintenance of upright posture requires integration in the central nervous system of incoming sensory information (visual, proprioceptive, vestibular) to produce a timely and appropriate motor response. Adequate cerebral perfusion is ensured by vascular responses which may be impaired by vaso-active drugs and a variety of diseases, particularly diabetes and Parkinson's disease.

Normal walking is basically an automatic activity and normally one is able to walk and engage in other activities, such as conversation and appreciating the scenery. In other words, subconscious (subcortical) mechanism of motor planning exist which constitute 'motor memory'.

A variety of disease processes can lead to deficits in motor memory. These include deep white matter ischaemic disease and normal pressure hydrocephalus. In deep white matter ischaemic disease there is a disconnection of the pre-frontal and frontal regions at the subcortical white matter from other parts of the motor control system.

The underlying pathology here is small vessel disease and the important risk factors are ageing, smoking, hypertension and diabetes. Deep white matter ischaemic disease presents a fairly characteristic clinical picture. There is frequently mild cognitive impairment which can easily be overlooked unless it is specifically looked for.

Useful cognitive tests in this situation include the interrupted recall tests of three items (e.g. carrot, key, foot). The clock drawing test assesses so-called 'executive' functions and constructional praxis. Successful completion requires forethought and planning. It is very often abnormal in patients with deep white matter ischaemic disease. Abstraction can be assessed by asking a patient to define the fundamental difference, for example, between a mistake and a lie. It is surprising how commonly patients have difficulty with this latter test. It is not likely that this is related to educational achievement (as it is such a universal concept). Difficulty with this test underlies the importance of obtaining corroborative information in the clinical assessment process.

Patients with deep white matter ischaemic disease may exhibit a dyspraxic gait with short shuffling steps on a widened base but with normal arm-swing and normal social facial movements (as opposed to patients with Parkinson's disease). Patients usually also have an abnormality of the postural righting reflexes which protect us from falling if we are knocked off balance. Postural righting reflexes can be assessed with the Marsden's Test. The clinician applies graded posterior displacing forces and observes the arms and legs for righting responses.

The management of deep white matter ischaemic disease involves tight vascular risk factor control. Providing that cognitive function is reasonably well preserved, Physiotherapy can be quite helpful at re-training gait and balance and allaying fear of falling.

The Dizzy Patient with Falling:

Non-specific dizziness is well known as a 'heart sink' symptom. I find that it is easiest to attempt to classify dizziness into one of three groups clinically.

1. Presyncope: These patients are more likely to report 'light-headedness' and may have postural hypotension or other conditions which reduce cerebral blood flow (e.g. cardiac dysrhythmia or critical aortic stenosis).
2. Vertigo: True vertigo is an hallucination of movement. These patients are more likely to term their problem as giddiness. Brief episodes of true vertigo precipitated by activity such as rolling over in bed, may be due to benign positional vertigo. These patients are rewarding to identify as they can be very effectively treated by specific vestibular exercises, e.g. Epley manoeuvre.
3. Most of the patients seen at the Falls Prevention Clinic have neither of the above. They have a much more complex syndrome of perceived (and real) unsteadiness (with observed poor posture righting responses) and frequently there is secondary anxiety and fear of further falls (FFF Syndrome).

Careful questioning will frequently expose that the 'dizziness' is precipitated by movements or activities which stress balance, e.g. turning around quickly or reaching into a cupboard.

As anxiety and depressive symptoms are common in this group of 'dizzy patients' as well as in the 'fearful of further falls' group, it is common for these patients to be taking psychotropic medication. The difficulty which then arises is that, particularly with the long acting benzodiazepines, (e.g. diazepam and nitrazepam) and the tricyclics (especially amitriptyline and doxepin) the falling propensity can be increased by this medication.

Many patients will have acquired both physical and psychological dependence on these medications and they may be quite reluctant to undertake a trial of phased reduction/cessation. Patients can often with counselling or with less hazardous alternative medication, be helped to avoid these particularly high risk medications. Patients who argue that they have been taking these medications for many years without adverse effects can often accept that it is the combined effect of ageing, age related disease and these medicines, which is now unacceptably increasing their risk of falling.

The Patient with Parkinson's Disease (P.D.) with Recurrent Falling:

It is distinctly uncommon for a younger patient (< 65 years) with early to midstage P.D. to have falling as a clinical feature. Older patients with P.D. tend to present with a bradykinetic-rigid syndrome with less prominent tremor. It is important to exclude drug-induced Parkinsonism in such patients (neuroleptics – including risperidone, stemetil, maxolon, lithium). In older patients with P.D., cognitive impairment and balance problems with falling, may present problems early in the clinical course.

Whereas in deep white matter ischaemic disease, the deficits seen clinically relate to a loss of the (automatic) motor planning for gait and balance in P.D. the problem is of failure to normally activate gait and balance control.

Both groups of patients report a loss of pleasure in walking which probably largely relates to a loss of the 'automaticity' of walking. With loss of motor memory functioning comes a need to (consciously) compensate using attentional strategies. Anything that divides or diverts these attention strategies, is likely to greatly increase the risk of falling. Common clinical factors which can divide or reduce attentional compensatory strategies are sedating and anticholinergic drugs, (e.g. tricyclic and antidepressant), pain and urinary (or faecal) urgency.

Patients with motor memory problems are at particular risk in environments which are unfamiliar or where there are excessive stimuli (either visual or auditory).

Rationale for Preventing Falls

Injury from falls is a well-documented health problem for older people. In Tasmania, over the period 1993 to 1998, almost 50% of all injury and poisoning hospital admissions for people aged 65 or more years were the result of a fall, and almost 50% of these falls were the result of a trip, slip or stumble. The consequences of a fall in the elderly can be very serious:

- The average length of stay in hospital, following a serious fall, is around 12 days for people aged between 65 and 74 years.
- For people aged 75 or more years the average length of stay increases to around 16 days.
- Fractures of the lower limb, especially fractures of the hip, accounted for the majority of admissions.
- 50% of all fall related injuries occurred in the home.
- 25% of fall injuries in the 75 plus age group occurred in residential institutions.
- Older females are more likely to fall than older males and have much higher hospitalisation rates from injuries as a result of falling.
- Older people who live in rural and remote communities, who are of Aboriginal or Torres Strait Islander origin or who come from culturally diverse backgrounds tend to have higher fall rates than urban dwelling older people.
- The long term outcomes for the elderly can be very serious resulting in long periods of rehabilitation, reduced quality of life because of decreased mobility and independence, and higher mortality¹.

Not only does Tasmania have high hospital admissions rates due to fall injuries, but population projections suggest a significant increase in the proportion of older Tasmanians in the coming years. This ageing of the population will result in a significant increase in demands on the health care system in relation to chronic diseases and injuries and their related complications and long-term outcomes. To ease this burden, much can be gained by investing in the early identification of older fallers or those at risk of falling in the community and by providing better integrated multidisciplinary interventions for older clients with complex care needs.

¹ DHHS Injury Hospital Separations Database