

MEDICATION & FALLS



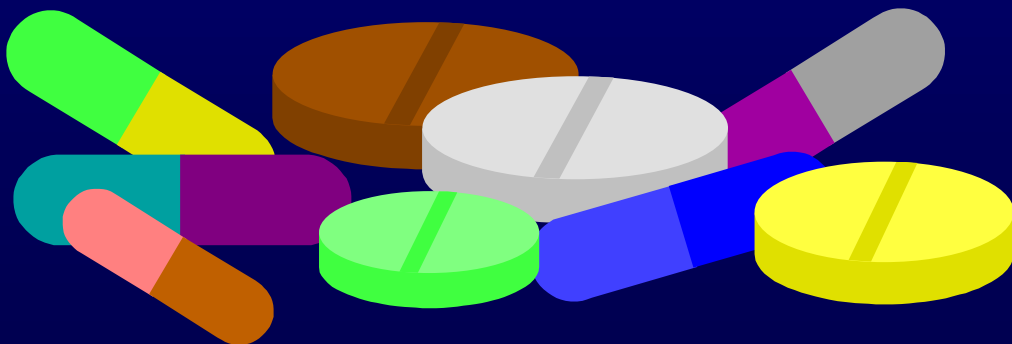
Victorian Falls Clinic Coalition

30th November 2007

A/Prof Michael Dorevitch

“I do not want two diseases - one nature made, one doctor made”

Napoleon Bonaparte 1820

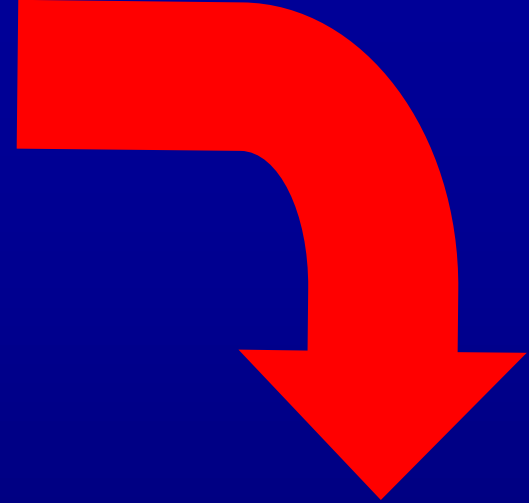
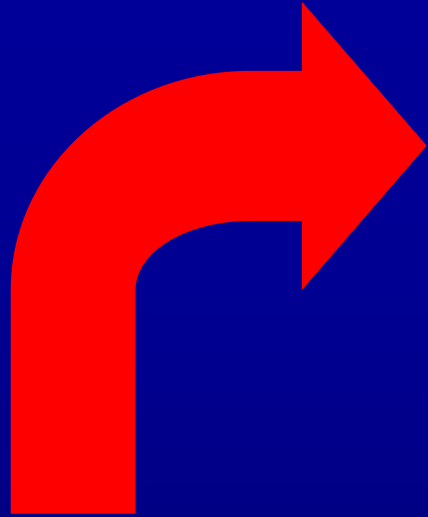


Overview

- Drugs associated with falls
- Select review of evidence
- Rationale for reviewing drug regimens
- Adverse Medication Outcomes (ADO's)
- Approach to medication review
- Prescribing rules



CENTRAL PROCESSING

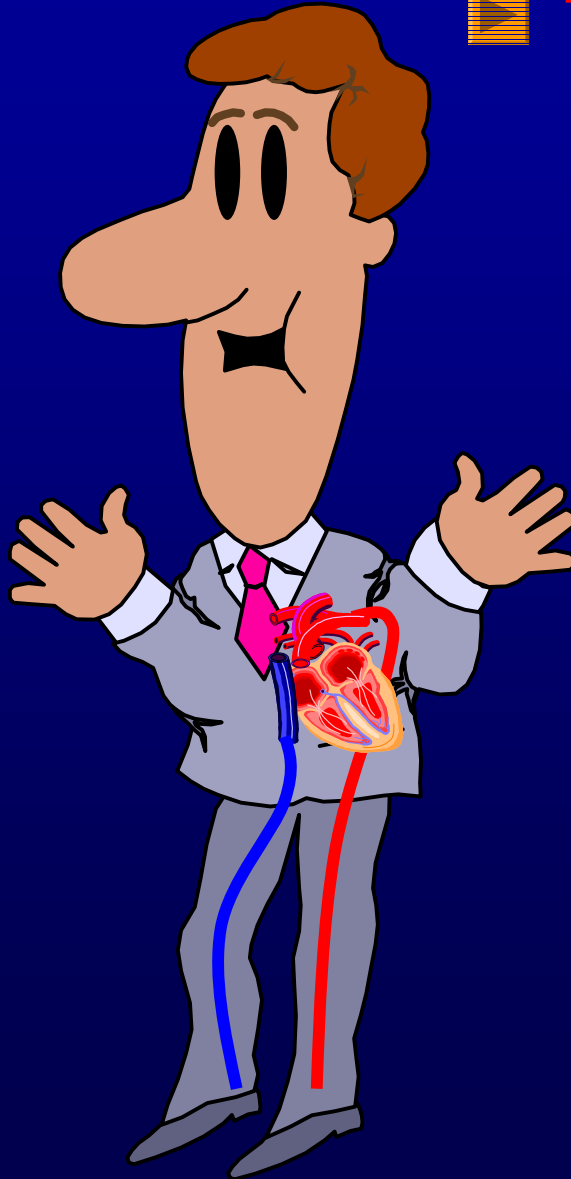


SENSORY INPUT

visual

vestibular

somato-sensory



MOTOR OUTPUT

ORTHOSTASIS

Falls related medication side effects



Information sheet developed by: Mansfield District Hospital

An information sheet that outlines the side effects of a range of medications known to increase the risk of falling. The list includes both the generic and trade names of the medication and how they may increase the risk of falling.

<http://www.health.vic.gov.au/agedcare>

Drugs and falls in the community

Leipzig et al, 1999

- ≥ 3 drugs increases falls risk
- cardiovascular (weak association)
 - digoxin
 - diuretics (as a group)
 - 1A anti-arrhythmics (quinidine, procainamide)
- analgesics (no association)
- psychotropics (consistent association)
 - neuroleptics (phenothiazines, butyrophenones)
 - sedatives/hypnotics (mainly BZP's)
 - antidepressants (mainly TCA's)

Multifactorial Intervention “Yale FICSIT Trial”

Design

- RCT (n = 301)
- Community based
- Age > 70
- Intervention:
 - Medication review (4+ drugs)
 - Home-based exercise program (gait, balance & strength)
 - Education
 - Home hazard assessment & modification

Results

- Significant reduction in time to first fall
- Significant reduction in fallers (23%)

Source: Tinetti et al. NEJM 1994;331:821-827

Single intervention

Reducing Psychotropic Use

Design

- RCT (n = 93)
- People using benzodiazepines or antidepressants
- Gradual withdrawal of psychotropics (blind) over 3 months

Results

- **66% reduction in risk of falling at 44 weeks**
- 81% re-commenced using psychotropics within 1 month of end of trial

Source: Campbell et al. *J Am Geriatr Soc* 1999;47:850-853

Drugs & falls in residential care

- Yip & Cumming (1994)
 - much greater falls risk among residents on antipsychotics
- Mustard & Mayer (1997)
 - ↑ risk of injurious falls over 5 years in residents on antipsychotics & sedatives

Multifactorial Intervention Nursing Home setting

Design

- RCT (n = 482)
- Individual interventions
 - environmental modification
 - wheelchairs
 - psychotropic medication adjustment
 - safe transfers/ambulation
- Staff interventions
 - appointment of a falls co-ordinator
 - training of nursing home staff
 - training of visiting doctors

Results

- 20% reduction in falls
- Fewer injurious falls (NS)
- Greatest benefits seen with recurrent fallers or for those with full compliance

Source: Ray et al. JAMA 1997;278:557-562

Drugs & falls in hospital

- Murdock et al (1998)
 - 2 year prospective study in psych. hospital
 - ↓ risk of repeat falls following measurement of postural BP post fall & medication review

Why review drug regimens?

- Drug therapy is associated with adverse outcomes in the elderly, including falls
 - rate increases with age
- 10-24% of all hospital admissions due to an AMO
 - 81,000 admissions per annum
 - \$350M per annum
- 25% result in permanent disability or death
- 50% are highly preventable

Types of AMO

- Adverse Drug Reaction
- Administration error
- Inappropriate indication
- Underprescribing
- Poor compliance

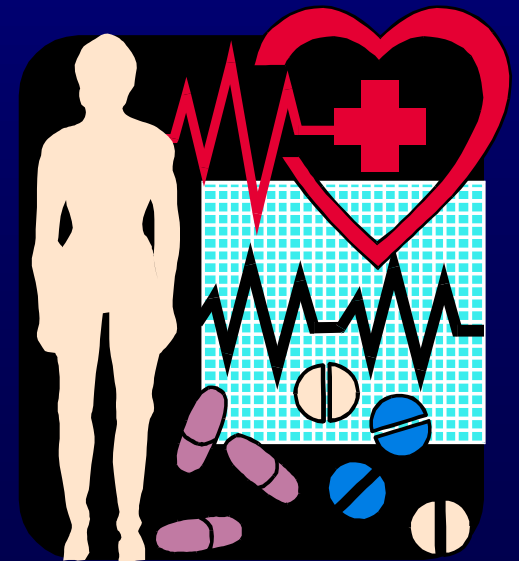


Why AMO's more common in the elderly?

- Altered pharmacokinetics & dynamics
- Polypharmacy more common
 - increased risk of drug drug interaction
- Presence of comorbidity
 - treating one condition may cause problems with another
- Problems with compliance
- ?? independent effect of age

ADR's in the elderly

- Implicated in up to 15% of elderly hospital admissions
 - likely to be an underestimate due to atypical presentations
- Up to 5 times more likely in elderly
- Incidence increases with:
 - increasing no. medications
 - <3 2% chance ADR
 - >10 17% chance ADR
 - increasing age



Polypharmacy in the elderly

- Expectation of prescribing
 - 60% GP visits results in prescription
- Multiple points of medical service contact
- Reluctance to stop medication that has been prescribed for a long time
- Continuation of hospital discharge medications (esp hypnotics, anti-emetics, aperients, analgesics)

Compliance in the elderly

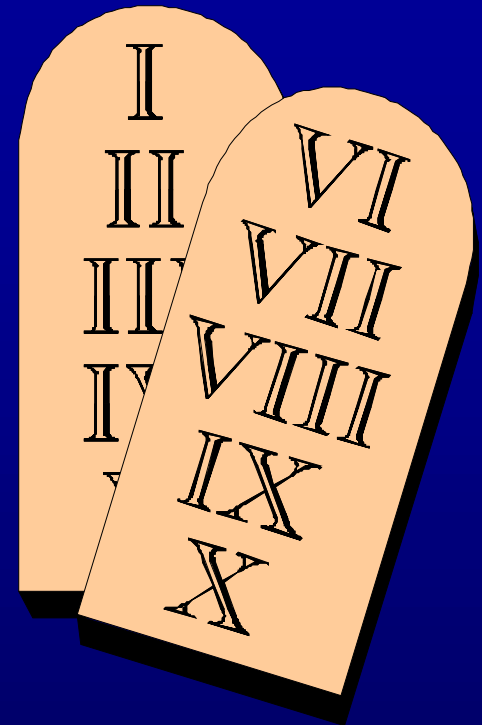
- Up to 1/2 of all patients poorly compliant
- Factors influencing compliance include:
 - patient understanding
 - NESB
 - cognitive impairment
 - accessibility of prescriptions & dispensed medicines
 - ease of administration (packaging, labeling)
 - number of drugs
 - complexity of scheduling
 - duration of therapy

Approach to drug regimen review

- Is there an indication for ongoing therapy?
- Is there a condition that isn't being treated?
- Is the dose suitable?
- Is the drug working?
- Is the drug producing any side-effects?
- Is the drug interacting with another drug(s)?
- Is the drug interacting with another medical condition(s)?
- Is the patient able to afford the medication?
- Is the patient able to comply with treatment?

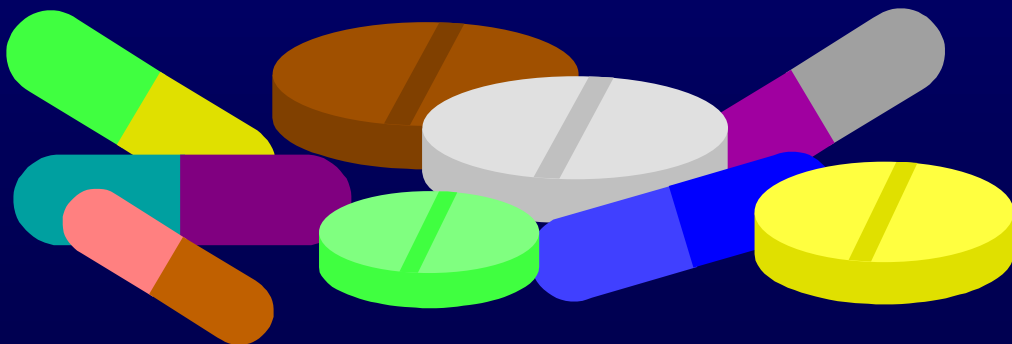
Golden rules

- Undertake regular review
- Identify all drugs taken
- Stop whatever can't be justified
- Start whatever is indicated
- “Start low, go slow”
- Monitor for effect & side-effect
- Identify potential drug drug interactions
- Assess compliance
- Consider cost
- Communicate changes



“But know also, man has an inborn craving for medicine. It really is one of the serious difficulties with which we have to contend”

Sir William Osler
1849-1919



SENSORY INPUT

- Peripheral neuropathy
 - phenytoin
 - nitrofurantoin
 - isoniazid
 - vincristine
- Vestibular impairment
 - aminoglycosides
 - ethacrynic acid
 - frusemide
 - aspirin
 - quinate
 - NSAIDs
- Visual impairment
 - anticholinergics
 - steroids
 - amiodarone
 - chloroquine



CENTRAL PROCESSING

- Sedation/confusion
 - hypnotics
 - BZP's
 - antipsychotics
 - antidepressants
 - anticonvulsants
 - antiparkinsonian drugs
 - antihistamines
 - alcohol
 - H2 antagonists
 - NSAIDs
- Parkinsonism
 - butyrophenones



MUSCLE WEAKNESS

- BZP's
- steroids
- dantrolene
- baclofen
- thyroxine



POSTURAL HYPOTENSION

- Antihypertensives
- Antidepressants
- Antiparkinsonian drugs
- Diuretics
- Antipsychotics
- Nitrates
- Antiemetics

