

Medication and falls risk classification guide

The tables below have been adapted from the Medicines and Falls in hospital: Guidance Sheet produced by John Radcliffe Hospital, Oxford, March 2011.

Drugs acting on the brain (psychotropic drugs)

HIGH RISK OF FALLS EITHER ALONE OR IN COMBINATION		
MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Sedatives: Benzodiazepines	Temazepam, nitrazepam, diazepam, lorazepam, clonazepam, chlordiazepoxide, flurazepam, oxazepam, lorazepam, oxazepam, clonazepam	<ul style="list-style-type: none"> • Drowsiness, slow reactions, impaired balance. • Caution in patients who have been taking them long term.
Sedatives: "Zs"	Zopiclone, zolpidem	<ul style="list-style-type: none"> • Drowsiness, slow reactions, impaired balance.
Sedating antidepressants (tricyclics and related drugs)	Amitriptyline, dosulepin, imipramine, doxepin, clomipramine, lofepramine, nortriptyline, trimipramine, mirtazapine, mianserin, trazodone	<ul style="list-style-type: none"> • All have some alpha blocking activity and can cause orthostatic hypotension. • Antidepressants can cause drowsiness, impaired balance and slow reaction times. • Doubles the rate of falling.
Monoamine oxidase inhibitors (MAOIs)	Phenelzine, isocarboxazid, tranylcypromine	<ul style="list-style-type: none"> • MAOIs are now rarely used; all (except moclobemide) cause severe orthostatic hypotension.
Drugs for psychosis and agitation	Chlorpromazine, haloperidol, fluphenazine, risperidone, quetiapine, olanzapine	<ul style="list-style-type: none"> • All have some alpha - receptor blocking activity and can cause orthostatic hypotension. • Sedation, slow reflexes, loss of balance.
Serotonin and norepinephrine reuptake inhibitor (SNRI) antidepressants	Venlafaxine, duloxetine	<ul style="list-style-type: none"> • As for selective serotonin reuptake inhibitor (SSRI) antidepressants (see table on page 2) but also commonly cause orthostatic hypotension (through noradrenaline re-uptake blockade).
Opiate analgesics	All opiate and related analgesics, e.g. codeine, morphine, tramadol	<ul style="list-style-type: none"> • Sedation, slow reactions, impair balance, cause delirium.
Anti-epileptics	Phenytoin	<ul style="list-style-type: none"> • Phenytoin may cause permanent cerebellar damage and unsteadiness in long term use at therapeutic dose. • Excess blood levels cause unsteadiness and ataxia.
	Carbamazepine, phenobarbitone	<ul style="list-style-type: none"> • Sedation, slow reactions. Excess blood levels cause unsteadiness and ataxia.
Parkinson's disease (PD): Dopamine agonists	Ropinirole, pramipexole	<ul style="list-style-type: none"> • May cause delirium and orthostatic hypotension.

HIGH RISK OF FALLS EITHER ALONE OR IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Parkinson's disease (PD): MAOI-B inhibitors	Selegiline	<ul style="list-style-type: none"> Causes orthostatic hypotension. The subject of drugs and falls in PD is difficult, as falls are so common, and orthostatic hypotension is part of the disease. In general only definite drug related orthostatic hypotension would lead to a change in medication.

MEDIUM RISK OF FALLS ESPECIALLY IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Selective serotonin reuptake inhibitor (SSRI) antidepressants	Sertraline, citalopram, paroxetine, fluoxetine	<ul style="list-style-type: none"> Cause falls as much as other antidepressants in population studies. Several population studies have shown that SSRIs are consistently associated with an increased rate of falls and fractures, but there are no prospective trials. The mechanism of such an effect is unknown. They cause orthostatic hypotension and bradycardia only rarely as an idiosyncratic side effect. They do not normally sedate. They impair sleep quality.
Muscle relaxants	Baclofen, dantrolene	<ul style="list-style-type: none"> Sedative. Reduced muscle tone. No falls data on muscle relaxants. Tend to be used in conditions associated with falls.
Anti-epileptics	Sodium valproate, gabapentin	<ul style="list-style-type: none"> Some data on falls association.

POSSIBLE RISK OF FALLS PARTICULARLY IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Anti-epileptics	Lamotrigine, pregabalin, levatiracetam, topiramate	<ul style="list-style-type: none"> Insufficient data to know if these newer agents cause falls.
Vestibular sedatives Phenothiazines	Prochlorperazine	<ul style="list-style-type: none"> Dopamine antagonist – may cause movement disorder in long term use. Also acts as an alpha receptor blocker and antihistamine.
Vestibular sedatives Antihistamines	Cinnarazine, betahistine	<ul style="list-style-type: none"> Sedating. No evidence of benefit in long term use.

POSSIBLE RISK OF FALLS PARTICULARLY IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Sedating antihistamines for allergy	Chlorphenamine, hydroxyzine, promethazine, trimeprazine	<ul style="list-style-type: none"> No data, but sedation likely to contribute to falls. Long half-lives.
Anticholinergics acting on the bladder	Oxybutinin, tolterodine, solifenacin	<ul style="list-style-type: none"> No data, but have known Central Nervous System (CNS) effects.

Drugs acting on the heart and circulation

HIGH RISK OF FALLS EITHER ALONE OR IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Alpha receptor blockers	Doxazosin, indoramin, prazosin, tamsulosin, terazosin, alfuzosin	<ul style="list-style-type: none"> Used for hypertension or for prostatism in men. They commonly cause severe orthostatic hypotension. Stopping them may precipitate urinary retention in men.
	Sedating antidepressants	<ul style="list-style-type: none"> See 'sedating antidepressants' in the 'drugs acting on the brain' table (page 1). Orthostatic hypotension.
	Drugs for psychosis and agitation	<ul style="list-style-type: none"> See 'drugs for psychosis and agitation' in the 'drugs acting on the brain' table (page 1). Orthostatic hypotension.
Centrally acting alpha 2 receptor agonists	Clonidine, moxonidine	<ul style="list-style-type: none"> May cause severe orthostatic hypotension. Sedating.
Thiazide diuretics	Bendroflumethiazide, chlorthalidone, metolazone	<ul style="list-style-type: none"> Cause orthostatic hypotension, weakness (muscle and general) due to low potassium. Hyponatraemia.
Angiotensin converting enzyme inhibitors (ACEIs)	Lisinopril, ramipril, enalapril, captopril, perindopril	<ul style="list-style-type: none"> These drugs rely almost entirely on the kidney for their elimination and can accumulate in dehydration or renal failure.
	Fosinopril, trandolapril, quinapril	<ul style="list-style-type: none"> Excreted by liver and kidney.
Beta blockers	Atenolol, sotalol (renally excreted, may accumulate)	<ul style="list-style-type: none"> Can cause bradycardia, hypotension, carotid sinus hypersensitivity, orthostatic hypotension and vasovagal syndrome.
	Bisoprolol, metoprolol, propranolol, carvedilol, timolol eye drops	<ul style="list-style-type: none"> Can cause bradycardia, hypotension, carotid sinus hypersensitivity, orthostatic hypotension and vasovagal syndrome.

HIGH RISK OF FALLS EITHER ALONE OR IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Antianginals	Glyceryl trinitrate (GTN)	<ul style="list-style-type: none"> • A common cause of syncope due to sudden drop in blood pressure.
	Isosorbide mononitrate, nicorandil	<ul style="list-style-type: none"> • Cause hypotension and paroxysmal hypotension.

MEDIUM RISK OF FALLS ESPECIALLY IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Loop diuretics	Furosemide, bumetanide	<ul style="list-style-type: none"> • Dehydration causes hypotension. Low potassium (which can cause fainting and general weakness) and low sodium (which can cause sluggishness and confusion).
Angiotensin receptor blockers (ARBs)	Losartan, candesartan, valsartan, irbesartan, olmesartan, telmisartan, eprosartan	<ul style="list-style-type: none"> • May cause less orthostatic hypotension than ACEIs. • Excreted by liver and kidney.
Calcium channel blockers that only reduce blood pressure	Amlodipine, felodipine, nifedipine, lercanidipine	<ul style="list-style-type: none"> • Cause hypotension and paroxysmal hypotension.
Calcium channel blockers which slow the pulse and reduce blood pressure	Diltiazem, verapamil	<ul style="list-style-type: none"> • May cause hypotension or bradycardia.
Other antidysrhythmics	Digoxin, amiodarone, flecainide	<ul style="list-style-type: none"> • May cause bradycardia and other arrhythmias. • Data on digoxin and falls probably spurious due to confounding by indication.

POSSIBLE RISK OF FALLS PARTICULARLY IN COMBINATION

MEDICATION GROUP	COMMONLY USED MEDICATIONS WITHIN THE GROUP	EFFECTS ON FALLS RISK
Acetylcholinesterase inhibitors (for dementia)	Donepezil, rivastigmine, galantamine	<ul style="list-style-type: none"> • Cause symptomatic bradycardia and syncope.

Note

The list is not meant to be fully comprehensive but intended to raise awareness of the types of drugs that can contribute to falls. There may be other drugs that increase the risk of falls in certain patients.