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## Drug Safety News: Drugs and the Risk of Falling (2009-03)

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Falls are a major cause of morbidity and mortality in the elderly population around the world. While many factors can contribute to the risk of falling, drugs are one of those risk factors, increasing that risk by 50-100%. A new document describing an approach to prevent medication-related falls has been created in British Columbia by the BC Falls and Injury Prevention Coalition (see below). This document is evidence-based and goes beyond providing a list of “risky” drugs, since for many drugs there is only minimal scientific evidence of their impact on falls. An individualized approach is emphasized, focusing on potential adverse drug reactions, notably drowsiness and dizziness, that increase the falls risk.

Note that it is not just a matter of reducing the chance of the patient falling; some medications such as warfarin do not increase the risk of falling, but can lead to serious outcomes such as cerebral hemorrhage if a patient does fall. Ideally, this document can form the basis of a medication review both before a patient falls, and in patients who have fallen. For further information on Falls Prevention, see the BC Injury Research and Prevention Unit website at [www.injuryresearch.bc.ca](http://www.injuryresearch.bc.ca).

## Examples of drugs that can increase the risk of falling, or of a serious outcome if a fall occurs (and possible mechanisms)

Falls are often caused by multiple factors. This list should be used in conjunction with other fall prevention strategies. A patient should not be denied beneficial or necessary drug therapy based on this list.

<p><b><u>ACE Inhibitors</u></b> (3) Benazepril Captopril Cilazapril Enalapril/enalaprilat Fosinopril Lisinopril Perindopril Quinapril Ramipril Trandolapril</p> <p><b><u>Alcohol</u></b> (1,5)</p> <p><b><u>Alpha Receptor Blockers</u></b> (2,3, especially initial doses) Alfuzosin Doxazosin Prazosin Tamsulosin Terazosin</p> <p><b><u>Anticoagulants</u></b> (8) Dalteparin Danaparoid Enoxaparin Heparin Nadroparin Nicoumalone Tinzaparin Warfarin</p> <p><b><u>Anticonvulsants</u></b> (1,2,5,6,7) Carbamazepine (1,2,6) Ethosuximide (1,2,5) Fosphenytoin (1,2,5,7) Gabapentin (1,2,5,6) Lamotrigine (1,2,6) Levetiracetam (1,2,5)</p>	<p>Methsuximide (1,2,5) Oxcarbazepine (1,2,5,6) Phenobarbital (1,2) Phenytoin (1,2,5,7) Primidone (1,2) Topiramate (1,2) Valproic acid (1,2,5) Vigabatrin (1,2)</p> <p><b><u>Antidepressants</u></b> (1,2,3,6) Amitriptyline Bupropion Citalopram Clomipramine Desipramine Doxepin Escitalopram Fluoxetine Fluvoxamine Imipramine Maprotiline Mirtazapine Moclobemide Nortriptyline Paroxetine Phenelzine 1,2,3 Sertraline Tranylcypromine 2,3 Trazodone Trimipramine Venlafaxine</p> <p><b><u>Antihistamines, sedating</u></b> (1) <b><u>Cold Medications that contain sedating antihistamines</u></b> (1) Azatadine Brompheniramine Cetirizine</p>	<p>Chlorpheniramine Clemastine Cyproheptadine Diphenhydramine Hydroxyzine Meclizine Promethazine Trimeprazine</p> <p><b><u>Antipsychotics</u></b> (1,3,4) Chlorpromazine Clozapine Flupenthixol Fluphenazine Haloperidol Loxapine Methotrimeprazine Olanzapine Paliperidone Perphenazine Pimozide Piprotiazine Prochlorperazine Quetiapine Risperidone Thiopropazine Thiothixene Trifluoperazine Zuclopenthixol</p> <p><b><u>Corticosteroids, oral</u></b> (7) <b><u>Corticosteroids, inhaled, high-dose</u></b> (7) Beclomethasone Betamethasone Budesonide Cortisone Dexamethasone Fludrocortisone Fluticasone Hydrocortisone</p>	<p>Methylprednisolone Prednisolone Prednisone Triamcinolone</p> <p><b><u>Digoxin</u></b> (mechanism unknown)</p> <p><b><u>Eye drops</u></b> (6)</p> <p><b><u>Herbal and Natural health products</u></b> <b><u>Natural sleep aids</u></b> <b><u>Natural products for sexual enhancement</u></b> (possible adulteration with undeclared drugs) <b><u>Metoclopramide</u></b> (1,2,4)</p> <p><b><u>Muscle Relaxants</u></b> (1,2) Baclofen Carisoprodol Chlorzoxazone Cyclobenzaprine Dantrolene Methocarbamol Orphenadrine Tizanidine</p> <p><b><u>Nitrates</u></b> (2,3) Isosorbide dinitrate Isosorbide mononitrate Nitroglycerin</p> <p><b><u>NSAIDs</u></b> ASA/acetylsalicylic acid (8)</p>	<p><b><u>Opiates/narcotics</u></b> (1,2,3) Alfentanil Butorphanol Codeine Fentanyl Hydromorphone Meperidine Morphine Morphine Oxycodone Oxymorphone Nalbuphine Pentazocine Propoxyphene Sufentanil</p> <p><b><u>Sedative/hypnotics</u></b> <b><u>Benzodiazepines</u></b> <b><u>Barbiturates</u></b> (1,2,5) Alprazolam Bromazepam Chloral hydrate Clorazepate Diazepam Diphenhydramine Doxylamine Flurazepam Lorazepam Midazolam Nitrazepam Oxazepam Pentobarbital Phenobarbital Temazepam Triazolam Zopiclone</p> <p><b><u>Thiazolidinediones</u></b> (7) Pioglitazone Rosiglitazone</p>
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**Possible mechanisms (often unclear):** (1) Drowsiness; (2) Dizziness; (3) Hypotension; (4) Parkinsonian effects; (5) Ataxia/gait disturbance; (6) Vision disturbance; (7) Osteoporosis or reduced bone mineral density increases the fracture risk if a fall occurs; (8) Risk of serious bleeding if a fall occurs.

Drugs are listed by generic (chemical) name under each drug group. For Brand (manufacturer's) names, check in the CPS to find the generic name.

This list includes only those drugs for which there is evidence of increased risk of falls or their consequences. There may be other drugs that increase this risk in certain patients.