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A meta analysis of the impact of medications on falling in the elderly

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Background: There is increasing recognition that prescribed medications can contribute to falls in seniors. However, determining which medications contribute to falls and which do not remains a clinical challenge. The most recent meta-analysis of medications associated with falls only included studies to 1996 and did not consider all currently relevant drug classes. Therefore, this meta-analysis includes studies on a wide range of relevant drugs published through to 2007.

Methods: Studies were identified through a systematic search of English-Language articles collected from EBM, CINAHL, EMBASE and MEDLINE using the keywords: falls, accidents and accidental falls, aged or age factor, elderly, drug or drug therapy and therapeutic. Studies were limited to those with subjects >60 years exposed to one or more drug therapies and having an identified outcome of falling. Meta-analyses were completed on those drug classes with 4 or more published studies completed in the period 1996-2007. Bayesian methods allowed for the use of the results from Leipzig et al.'s (2000) meta-analysis which incorporated 40 articles published from 1966-1996. Leipzig's findings combined with newly available information were used to provide pooled odds ratio (OR) estimates and 95% credible intervals (95% CI)

Results: Of 1181 identified articles, 20 met our inclusion criteria and were used in our meta-analysis. Meta-analyses were completed on 9 unique drug classes including 75,792 subjects. For each of the classes the following Bayesian OR point estimates (95% CI) were found: Anti-hypertensives: OR=1.16(0.92-1.14), Sedatives/hypnotics: OR=1.49, (1.35-1.63), Diuretics: OR=1.08, (1.02-1.16), Neuroleptics: OR=1.06, (1.34-1.89), Anti-depressants OR=1.69, (1.49-1.91), Beta-blockers OR=1.01, (0.85-1.19), Benzodiazepines: OR=1.53, (1.35-1.73), Narcotics: OR=0.95, (0.77-1.18), and NSAIDS OR=1.17, (0.99-1.40).

Conclusion: Diuretics, antidepressants, neuroleptics, sedatives/hypnotics, and benzodiazepines demonstrated a significant association with falls in seniors.