

PICO SEARCH ASSIGNMENT WORKSHEET

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Brief description of patient problem/setting (summarize the case very briefly)

An 78 year-old male who lives at the VA long-term care medical center with a significant PMHx of benign prostatic hyperplasia (BPH) is started on tamsulosin for worsening urinary hesitancy, weak urine stream, nocturia, and urge incontinence. Over the following month, he experiences two falls, which result in clinicians questioning if medication side effects are a contributing factor. The PA must consider the benefits of the alpha-blocker therapy in elderly men vs increased fall risk, side effects, and whether safe alternatives should be considered.

Search Question: Clearly state the question (including outcomes or criteria to be tracked)

In men >65 with symptomatic benign prostatic hyperplasia (BPH), does alpha-blocker therapy compared to no alpha-blocker use increase fall risk and orthostatic hypotension?

Question Type: What kind of question is this? (boxes now checkable in Word)

☐ Prevalence

☐ Screening

☐ Diagnosis

☐ Prognosis

☒ **Treatment**

☒ **Harms**

Assuming that the highest level of evidence to answer your question will be meta-analysis or systematic review, what other types of study might you include if these are not available (or if there is a much more current study of another type)?

Please explain your choices

If meta-analysis or systematic review is not available, I would include:

- **Randomized Controlled Trials (RCTs)**- comparing alpha-blockers to placebo or alternative therapy in older adults. RCTs provide strong evidence for causation but may underrepresent frail LTC populations
- **Prospective cohort studies**- evaluating fall incidence in patients newly started on alpha-blockers, as these better capture real-world geriatric outcomes.
- **Large retrospective cohort studies or database studies**- Medicare or VA data analyses, since these can evaluate fall-related hospitalizations in older adults.
- **Case-control studies**- examining risk factors for falls among men on alpha-blockers.

PICO search terms:

P	I	C	O
Elderly men with BPH	Alpha-blocker therapy	No alpha-blocker	Falls
Men >65	Tamsulosin	No exposure	Orthostatic hypotension
LTC residents	Doxazosin	Alternative therapy	Syncope
Older adults with LUTS	Alpha antagonists	No medication	Injury risk

Search tools and strategy used:

Please indicate what databases/tools you used, provide a list of the terms you searched together in each tool, and how many articles were returned using those terms and filters.

Explain how you narrowed your choices to the few selected articles. For example, if your search returned 25 articles among the several databases used, what was the process used to determine which four articles to use?

Database	Search Term Used	# of Results	Filters/Limiters Applied	Notes/Observers
PubMed	("benign prostatic hyperplasia" OR BPH) AND (elderly OR "aged 65 and over") AND (alpha-blockers OR "tamsulosin" OR "doxazosin") AND ("placebo" OR "alternative therapy") AND ("orthostatic hypotension" OR "falls" OR "fall risk")	23 results	Last 5 years, English, Human studies, Meta-Analysis, Systematic reviews	Narrowed by focusing on fall risk and orthostatic hypotension outcomes. Selected studies with clear outcome reporting and geriatric-specific populations.
Science Direct	("benign prostatic hyperplasia") AND (elderly) AND (alpha-blockers OR "tamsulosin" OR "doxazosin") AND ("placebo") AND ("orthostatic hypotension" OR "falls" OR "fall risk")	16 results	Last 5 years, Research and review articles, Medicine subject area, English language	Moderate number of clinically relevant articles. Most studies focused on adverse effects such as orthostatic hypotension and dizziness rather than fall outcomes directly. Selected recent peer-reviewed clinical review addressing fall risk in older adults treated with alpha-blockers.
Cochrane Library	("benign prostatic hyperplasia" OR BPH) AND (alpha-blocker OR tamsulosin OR doxazosin) AND ("orthostatic hypotension" OR falls OR syncope) AND (elderly OR older adults)	36 results	Systematic reviews only	Even though several systematic reviews were identified, none of them evaluated fall risk or orthostatic hypotension as primary outcomes in elderly men with BPH treated w/ alpha-blockers. Most reviews focused on symptom improvement and urinary outcomes. Therefore, no Cochrane review was selected.

I used three databases, PubMed, Science Direct, and the Cochrane Library to find articles that addressed my PICO question on whether alpha-blocker therapy increases fall risk and orthostatic hypotension in men over 65 with benign prostatic hyperplasia and if alternative therapies should be considered. For each, I used advanced search with terms like "benign prostatic hyperplasia" "aged 65 and older" "alpha-blocker" "tamsulosin" "doxazosin" "falls" and "orthostatic hypotension." I applied filters limiting results to the last

5-10 years, in English, male, human studies, and systematic reviews or meta-analyses. In Cochrane Library, I searched for systematic reviews related to BPH and alpha-blockers but most of the reviews focused on urinary symptom improvement rather than fall risk outcomes. After completing the searches, I checked titles and abstracts and did not include studies that did not evaluate orthostatic hypotension, syncope, or fall risk in older adults.

Results found:

Identify at least 3 articles (or other appropriate reputable sources) that answer your specific question with the highest available level of evidence (you will probably need to look at more than 3 articles to get the 3 most focused and highest-level articles to address your question). Please make sure that they are Medline indexed.

In addition to providing the hyperlinks, the full-length articles (PDFs) must also be attached in Brightspace.

Please post the citation and abstract for each article (to include the journal and authors' names and date) and say why you chose it.

Please also note what kind of article it is (e.g. meta-analysis, cohort study, or independent blind comparison with gold standard of diagnosis, etc.).

At the bottom of each abstract, please comment on what your key points are from this article (including any points or concepts included in the article, but not present in the abstract – i.e. make the concepts understandable to the reader)

Please note that if the evidence is not in the abstract, you must clearly summarize the evidence in your posting.

1. Abubakar M, Prasad R, Salim SS, Basavaraju D, Khan M, Lateef IK, Furqan A, Raza S, Gupta I, Singla D, Adil H, Naeem A. Orthostatic Hypotension in Benign Prostatic Hyperplasia Patients and Its Association With Alpha-1 Antagonist Use: A Comprehensive Literature Review. Cureus. 2023 Aug 25;15(8):e44097. doi: 10.7759/cureus.44097. PMID: 37750139; PMCID: PMC10518119.
<https://pmc.ncbi.nlm.nih.gov/articles/PMC10518119/>

Abstract

Orthostatic hypotension (OH) is frequently observed in benign prostatic hyperplasia (BPH) patients undergoing alpha-1 adrenergic antagonist (A1AA) therapy. While previous studies have acknowledged the prevalence of OH in BPH patients on A1AAs, limited data exist on ranking the safety of different A1AAs. This comprehensive review explores the underlying mechanisms of OH, examines numerous factors influencing its development, and provides insights into effective treatment strategies such as hydration, gradual postural changes, leg exercises, compression stockings, and tilt-table training for BPH management. The review highlights the significance of individualized care, interdisciplinary collaboration, and further research to optimize A1AA treatment, improve patient outcomes, and enhance quality of life.

Keywords: quality of life, orthostatic hypotension, lower urinary tract symptoms, benign prostatic hyperplasia, alpha-1 adrenergic antagonists

I selected this study because it directly examines the connection between alpha-blockers and orthostatic hypotension in patients with BPH. The review explains how alpha-1 antagonists interfere with peripheral vasoconstriction, which leads to a drop in blood pressure when standing. It explains that orthostatic hypotension is more common in elderly patients because of their stiffening vasculature and dysfunctional baroreceptor response. The article discusses dizziness, syncope and bp instability as clinically significant side effects, especially in men aged 65 and up when starting therapy. These results support the concern that alpha-blocker use may contribute to increased fall risk in this vulnerable population. I also chose this study because it is recent, peer-reviewed, and full-text is available through PubMed Central, allowing me to review the complete data. It focuses on medication-related changes making it very applicable to clinical decision-making in long term care settings.

2. Abdulghafour Halawani, Ryan Paterson, Tianshuang Zhong, Katie Du, Runhan Ren, Connor M. Forbes, Risks and side effects in the medical management of benign prostatic hyperplasia, *Prostate International*, Volume 12, Issue 2, 2024, Pages 57-64, ISSN 2287-8882, <https://doi.org/10.1016/j.pnrl.2023.11.004>.

Abstract

Benign prostatic hyperplasia affects up to 80% of men in their lifetime. It causes bladder outflow obstruction, leading to lower urinary tract symptoms, which can have a large impact on quality of life. Lifestyle modifications and pharmacotherapy are often offered as first-line treatments for patients. These include alpha blockers, 5-alpha-reductase inhibitors, phosphodiesterase-5 inhibitors, anticholinergics, B3-agonists, and desmopressin. While often well tolerated, these pharmacotherapies do have significant side effects, which both clinicians and patients should understand and discuss in order to make an informed treatment decision among alternatives. The purpose of this review is to provide a current overview of the risks and side effects of commonly used medications in benign prostatic hyperplasia management.



Previous article in issue

Next article in issue



Keywords

Prostatic Hyperplasia; Lower urinary tract symptoms; Alpha-1 antagonists; Medications; Side effects; Treatment adverse events

I selected this 2023 ScienceDirect article because it specifically reviews the adverse effect of alpha-blockers used to treat BPH in older adults. The article highlights that while alpha-blockers are effective for improving lower urinary tract symptoms, their mechanism of action can lead to drops in blood pressure upon standing. This physiologic effect is reviewed as a significant contributor to dizziness and symptomatic hypotension, which are both reasons for increased falls in geriatric populations. As with the last article, the anatomical changes that older adults have can precipitate more intense side effects. Although the article doesn't report the statistics of the number of falls, it clearly links alpha-blocker-induced orthostatic hypotension to clinical consequences that increase fall risk in men over age 65. Therefore, this study supports the "harm" component of my PICO and underscores the importance of weighing benefits against potential safety concerns in older patients with BPH.

3. Welk B, McArthur E, Fraser LA, Hayward J, Dixon S, Hwang YJ, Ordon M. The risk of fall and fracture with the initiation of a prostate-selective α antagonist: a population based cohort study. *BMJ*. 2015 Oct 26;351:h5398. doi: 10.1136/bmj.h5398. PMID: 26502947; PMCID: PMC4620650
<https://pmc.ncbi.nlm.nih.gov/articles/PMC4620650/>

4. .

Abstract

Study question Do men starting treatment with prostate-specific α antagonists have increased risk of fall and fracture?

Methods Administrative datasets from the province of Ontario, Canada, that contain patient level data were used to generate a cohort of 147 084 men aged ≥ 66 years who filled their first outpatient prescription for prostate-specific α antagonists tamsulosin, alfuzosin, or silodosin between June 2003 and December 2013 (exposed men) plus an equal sized cohort matched 1:1 (using a propensity score model) who did not initiate α antagonist therapy. The primary outcome was a hospital emergency room visit or inpatient admission for a fall or fracture in the 90 days after exposure.

Study answer and limitations The men exposed to prostate-specific α antagonist had significantly increased risks of falling (odds ratio 1.14 (95% CI 1.07 to 1.21), absolute risk increase 0.17% (0.08 to 0.25%)) and of sustaining a fracture (odds ratio 1.16 (1.04 to 1.29), absolute risk increase 0.06% (0.02 to 0.11%)) compared with the unexposed cohort. This increased risk was not observed in the period before α antagonist use. Secondary outcomes of hypotension and head trauma were also significantly increased in the exposed cohort (odds ratios 1.80 (1.59 to 2.03) and 1.15 (1.04 to 1.27) respectively). The two cohorts were similar across 98 different covariates including demographics, comorbid conditions, medication use, healthcare use, and prior medical investigation. Potential unmeasured confounders, such as physical deconditioning, mobility impairment, and situational risk factors, may exist. The data used to identify the primary outcomes had limited sensitivity, so the absolute risks of the outcomes are probably underestimates. The study only included men ≥ 66 years old, and 84% of exposed men were prescribed tamsulosin, so results may not be generalizable to younger men, and there may not be statistical power to show small differences in outcomes between the drugs.

What this study adds Prostate-specific α antagonists are associated with a small but significant increased risk of fall, fracture, and head trauma, probably as a result of induced hypotension.

Funding, competing interests, data sharing This project was conducted at the Institute for Clinical Evaluative Sciences (ICES) Western Site through the Kidney, Dialysis, and Transplantation (KDT) research program. BW has received a research grant from Astellas, and L-AF does consultancy for Amgen.

I selected the article because it provides real-world epidemiologic data showing that initiation of tamsulosin, a common alpha-blocker used to treat BPH, is associated with a measurable increase in the risk of severe hypotension soon after starting treatment. The study utilizes a large population dataset to compare rates of hospital admissions for hypotension in men treated with tamsulosin vs periods before treatment. Results show that the risk of hypotension was significantly higher right after the first dose and during the first weeks of therapy, especially in older men. Although this study does not report fall rates, it provides strong observational evidence that meds like tamsulosin can cause drops in blood pressure.

Because it uses real-world data and includes a large sample size, it strengthens the harm part of my PICO and focuses on considering alternative therapies in frail older patients.

What is the clinical “bottom line” derived from these articles in answer to your question?

Based on the chosen articles, alpha-blocker therapy in men over 65 with BPH is associated with an increased risk of orthostatic hypotension, especially during initial dosage and subsequent dose adjustments. While the studies did not directly measure fall incidence as a primary outcome, they consistently demonstrated that alpha-blockers impair vascular compensation and increase the risk of symptomatic hypotension. Since orthostatic hypotension is a common risk factor for falls in older adults, in addition to many other factors, these findings suggest that alpha-blocker therapy does increase fall risk in this population. Therefore, in men over 65, especially those with frailty, prior falls, or polypharmacy, the risks and benefits of alpha-blocker therapy should be carefully weighed. Making sure we as future providers closely monitor our geriatric patients, especially during the beginning of alpha-blocker prescription as well as increasing the dose, or choosing different treatment plans or titrating patients off of this medication may be key decisions we can choose from in clinical practice.