



Effective Health Care Comprehensive Eye Exams and Falls Prevention in Older Adults

Results of Topic Selection Process & Next Steps

The nominator, The American Optometric Association, is interested in a new evidence review on the incorporation of comprehensive eye exams into a falls prevention protocol. A review would be used to inform health education among their members and would be considered during an update of their guidelines.

Because limited original research addresses the nomination, a new review is not feasible at this time. No further activity on this nomination will be undertaken by the Effective Health Care (EHC) Program.

Topic Brief

Topic Number and Name: 0793 Comprehensive Eye Exams and Falls Prevention in Older Adults

Nomination Date: 06/25/2018

Topic Brief Date: 09/27/2018

Authors

Kara Winchell, MA
Rose Relevo, MLIS

Conflict of Interest: None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

Background

In the United States more than one out of four older adults will suffer a fall.¹ Approximately 17% of older Americans between the ages of 65 and 74 self-reported vision loss of some form.² As greater numbers of the population reach older adulthood, the number of falls annually is expected to increase. The Centers for Disease Control and Prevention (CDC) recommends that older adults have their eyes examined by an eye doctor annually to help decrease the likelihood of a fall.³ AOA guidelines recommend eye exams every year after the age of 60,² and AAO guidelines recommend eye exams every 1-2 years, even in the absence of symptoms, of adults 65 and older.⁴

The AOA and AAO define comprehensive eye exams separately, but the eye exams cover the same aspects.

- Comprehensive eye exam defined by AOA as: “includes medical and eye history, general eye medical observation, gross visual fields, pupil responses, external evaluation of lids and lashes, biomicroscope examination of the anterior eye, intraocular pressure by tonometry, internal ophthalmoscopic and dilated stereoscopic fundus examinations. It often includes, as indicated: sensorimotor examination. It always includes initiation of diagnostic and treatment and prescription for corrective lenses programs.”²
- Comprehensive eye exam defined by AAO: “medical history, visual acuity, pupillary reaction, peripheral vision, prescription for corrective lenses, eye pressure, and visual examination of from part of the eye, retina, and optic nerve.”⁴

Many studies over the past 20 years have described a correlation between declining vision and an increase in falls among older adults.⁵⁻⁸ Concurrently, organizations and government programs worldwide have developed protocols and guidance to address the increasingly aging population and their fall risk.^{2,9,10} However, while many of these protocols include guidance about multifactorial interventions (eg, vision testing and home hazard assessments) to reduce the risk of falls, basic vision testing (eg, visual acuity from eye charts) as part of these protocols has been included as a suggestion,^{2,9,10} rather than a stand-alone recommendation within a falls prevention protocol. In addition, comprehensive eye exams, like those given by optometrists or ophthalmologists, are not as heavily considered in these falls protocols.

Nominator and Stakeholder Engagement

The nominator was involved in refining the scope of the nomination through email communication. The nominator’s primary reason for this review is to educate health care professionals who work with older patients. In addition, an Agency for Healthcare Research and Quality (AHRQ) systematic review would be taken into consideration during their next scheduled update of their guidelines

Key Questions and PICOs

The key questions for this nomination are:

1. Do regular comprehensive eye exams reduce the risk of falls?
2. What are the benefits and risks of including comprehensive eye exams into a falls prevention protocol?
3. What are the benefits and harms of interventions related to vision for reducing the risk of falls:
 - a. Provided by an optometrist

- b. Provided by an ophthalmologist
- c. Provided by a primary care physician (Medical Doctor [MD], Doctor of Osteopathy [DO], Nurse Practitioner [NP], Physician's Assistant [PA])

To define the inclusion criteria for the key questions, we specify the population, interventions, comparators, and outcomes (PICO) of interest (Table 1).

Table 1. Key Questions and PICOs

Key Questions	1. Do regular [^] comprehensive eye exams reduce the risk of falls?	2. What are the benefits and risks of including regular [^] comprehensive eye exams ⁺ into a falls prevention protocol?	3a. What are the benefits and harms of interventions related to vision, provided by an optometrist , for reducing the risk of falls? 3b. What are the benefits and harms of interventions related to vision, provided by an ophthalmologist , for reducing the risk of falls? 3c. What are the benefits and harms of interventions related to vision, provided by a primary care physician (MD, DO, NP, PA) , for reducing the risk of falls?
Population	Older Adults (60+), with or without eye- or vision-related symptoms	Older Adults (60+), with or without eye- or vision-related symptoms at risk of falls	Older Adults (60+), with or without eye- or vision-related symptoms at risk of falls
Interventions	Comprehensive eye exams as defined by AAO or AOA every 1-2 years [^] provided by an optometrist or ophthalmologist	Comprehensive eye exams as defined by AAO or AOA every 1-2 years provided by an optometrist or ophthalmologist <u>as part of a</u> multicomponent falls prevention protocol	<i>Direct interventions:</i> all vision correction interventions, vision rehabilitation, vision therapy <i>Other:</i> education on environmental interventions (eg, adequate lighting), referral to specialists (eg, occupational therapist for home hazard assessment), any other intervention in combination with visual assessment
Comparators	No exam, exams less frequently (than every 1-2 years), basic vision screening (visual acuity only)	No exam, exams less frequently (than every 1-2 years), basic vision screening (visual acuity only), comprehensive eye exams alone	No comparator, any comparator
Outcomes	<ul style="list-style-type: none"> Incidence of falls Hospital admission/readmission due to fall 	<ul style="list-style-type: none"> Incidence of falls Hospital admission/readmission due to fall Quality of life (including vision-related self-efficacy of mobility) Morbidity and mortality 	<ul style="list-style-type: none"> Incidence of falls Hospital admission/readmission due to fall Quality of life (including vision-related self-efficacy of mobility) Morbidity and mortality

Abbreviations: AAO=American Academy of Ophthalmology; AOA=American Optometric Association; DO=Doctor of Osteopathy; MD=Medical Doctor; NP=Nurse Practitioner; PA=Physician's Assistant
^The AOA and AAO have different time recommendations. For the purposes of this nomination, we will accept either timeframes (AOA: every year; AAO: every 1-2 years).

Methods

We assessed nomination 0793 *Comprehensive Eye Exams and Falls Prevention in Older Adults* for priority for a systematic review or other AHRQ EHC report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix A for detailed description of the criteria.

1. Determine the *appropriateness* of the nominated topic for inclusion in the EHC program.
2. Establish the overall *importance* of a potential topic as representing a health or healthcare issue in the United States.
3. Determine the *desirability of new evidence review* by examining whether a new systematic review or other AHRQ product would be duplicative.
4. Assess the *potential impact* a new systematic review or other AHRQ product.
5. Assess whether the *current state of the evidence* allows for a systematic review or other AHRQ product (feasibility).
6. Determine the *potential value* of a new systematic review or other AHRQ product.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Desirability of New Review/Duplication

We searched for high-quality, completed or in-process evidence reviews published in the last three years on the key questions of the nomination. See Appendix B for sources searched.

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Feasibility of a New Evidence Review

We conducted a literature search in PubMed from September 2013 to September 2018. Please see Appendix C for the PubMed search strategy and links to the ClinicalTrials.gov search.

We reviewed all identified titles and abstracts for inclusion and classified identified studies by key question and study design to assess the size and scope of a potential evidence review. Full texts of 11 studies were reviewed, as the deliverer of the intervention (optometrist, ophthalmologist, nurse, etc.) was unclear from the abstract.

Results

See Appendix A for detailed assessments of all EPC selection criteria.

Appropriateness and Importance

This is an appropriate and important topic. Poor vision and dangerous falls affect a substantial proportion of older adults in the United States. Poor vision is often listed as a risk factor for falls, and addressing this problem may prevent injury to many older adults.

Desirability of a New Review/Duplication

A new evidence review would be partly duplicative of an existing product. We identified two systematic reviews,^{11,12} one network meta-analysis,¹³ and two protocols^{14,15} which briefly evaluate a few, but not all, interventions and outcomes of the key questions. The 2016 United States Preventive Services Task Force (USPSTF) systematic review, titled “Screening for Impaired Visual Acuity in Older Adults” (an update to a 2009 USPSTF review)¹¹ identified a few vision-related interventions with fall risk as an outcome (KQ 3a-b), all of which were from the original 2009 review.¹¹ The 2018 USPSTF systematic review¹² titled “Interventions to Prevent Falls in Community-Dwelling Older Adults” examined interventions delivered in primary care settings to reduce falls. Some of these interventions were multifactorial and included an initial geriatric assessment (e.g., vision assessment and other assessments of risk factors) combined with an intervention to address the specific risk factor identified. The review examined outcomes of falls, hospitalizations, and quality of life.

One PROSPERO protocol for a systematic review and meta-analysis aims to examine an association between visual impairment and all-cause mortality, with falls being one of the mediators of interest (KQ 1).¹⁴ It does not plan to examine hospital admissions. A network meta-analysis evaluated the efficacy of ophthalmologic intervention (including examinations) on falls risk in older adults (KQ 1), but also did not examine hospital admission rates.¹³ This meta-analysis also looked at other ophthalmologic interventions (KQ 3b) (including vision interventions alone (which included ophthalmologic examination, prescription glasses and cataract surgery), vision plus exercise, vision plus home hazard intervention, or vision plus exercise plus home hazard intervention) on incidence of falls, but did not examine these interventions of hospital admissions, quality of life, or morbidity/mortality.¹³ Of note, this network meta-analysis included only studies with subjects older than 65. Another PROSPERO protocol aims to be an “umbrella review of reviews” looking at interventions, including those to improve vision, to prevent falls and reduce mortality due to falls (KQ 3a).¹⁵ It is unknown how widely inclusive this review plans to be regarding the interventions of interest. We identified no systematic reviews or protocols for reviews examining the benefits and risks of including regular comprehensive eye exams into falls prevention protocols (KQ 2).

2016 USPSTF Systematic Review on Vision Screening

For KQ 3a (optometrists), the 2016 USPSTF review found “no new randomized trials or controlled observational studies on treatment versus no treatment for mild uncorrected refractive errors on improved morbidity or mortality or quality of life,” and relied mostly upon studies found for the original 2009 USPSTF review. The review also reiterated the findings from the 2009 review, which identified one 2007 study⁸ which showed an increased risk of falls and a trend toward increased risk of fractures among frail older adults who underwent vision screening by an optometrist versus usual care. The reason for increased falls risk was unclear. In addition, the 2009 review identified a prospective study from 2002,¹⁶ which found that multifocal lenses were associated with a high risk of falls in older adults when compared to unifocal lenses.

For KQ 3b (ophthalmologists), the 2016 USPSTF review found three studies that evaluated cataract surgery on falls risk or vision-related mobility self-efficacy. One study evaluated nursing

home patients (over the age of 55) and found no differences between cataract surgery and no cataract surgery in function and cognition after four months of follow up (measures used: Functional Independence Measure, Survey of Activities and Fear of Falling, Nursing Home Life-Space Diameter, and the Mini-Mental State Examination). However there was an improvement in visual acuity in the cataract surgery group.¹⁷ As reported by the 2016 USPSTF review, the original 2009 USPSTF also found one 2005 trial where immediate cataract surgery was associated with a decreased risk of a second (but not first) fall, resulting in a lower overall risk of falls.¹⁸ A 2006 study, identified by the 2009 review, found no effect of immediate second-eye cataract surgery on risk of falls or fracture risk.¹⁹

2018 USPSTF Systematic Review on Falls Prevention

For KQ3c, the 2018 USPSTF review found 26 RCTs assessing interventions delivered in primary care settings to prevent falls among older adults. A subset of these interventions were multifactorial and involved: 1) an assessment of modifiable risk fall factors (including vision and other factors like balance, gait, cardiovascular health, medication, environment, cognition and psychological health) and 2) a targeted intervention to address the risk factors that were identified. In general, primary care providers did not directly deliver the screening or intervention, which were for the most part delivered by nurses and specialists depending on the needs identified. These studies demonstrated that multifactorial interventions are associated with lower rates of falls, but have no effects on mortality or hospitalization, and limited effects on quality of life. However, these results represent the pooled effects of all multi-factorial interventions, some of which were not vision related.

See Table 2, Duplication column.

Impact of a New Evidence Review

A new systematic review may have great impact. While many systematic reviews and fall prevention protocols address the risk factors for falls, including vision problems, very few give evidence or guidance on addressing vision as a primary problem. There is myriad evidence linking poor vision to an increase in falls,⁵⁻⁸ however the literature examining the use of comprehensive eye exams as a way to prevent falls is not well represented in the falls prevention guidelines. A review on ways to address vision as a primary problem, instead of as a component of multifactorial interventions, may address the implementation gap that exists.

Feasibility of a New Evidence Review

A new evidence review is not feasible. We identified only seven studies that meet criteria,²⁰⁻²⁶ published in the last five years. We identified studies relevant to Key Questions 1,²⁰ 3b,²¹⁻²⁵ and 3c.²⁶ We found no relevant published studies to Key Questions 2 or 3a. We also identified two recruiting clinical trials relevant to Key Question 3c.^{27,28} It is important to note that even though these seven studies technically meet selection criteria, they do not address the core of nominator's questions and an evidence product using these studies would be unlikely to answer the meet the nominator's evidence needs.

We identified one study relevant to Key Question 1. One case control study examined the correlation between visual impairment and hip fractures in older adults.²⁰ While this study did not directly evaluate the effect of comprehensive eye exams on the risk of falls, study authors concluded that systematic screening may lead to early management of vision loss, and therefore regular ophthalmologic exams would be essential to preventing falls and hip fractures in older adults.²⁰

We identified five studies relevant to Key Question 3b (interventions provided by ophthalmologists that can reduce the risk of falls). All five of these studies (three prospective cohort,^{21,23,24} one longitudinal cohort,²⁵ and one retrospective cohort study²²) examined the effects of cataract surgeries. These studies have conflicting conclusions. One prospective cohort study reported a decrease in falls risk among those who received first- and second-eye cataract surgeries,²¹ and another retrospective cohort study reported additional risk of falls after first- and second-eye cataract surgeries.²² A retrospective cohort study reported fewer falls after first-eye cataract surgery.²³ The third prospective cohort study tentatively speculated that multifocal intraocular lenses would carry no additional fall risk, based on study data of no significant falls risk from monofocal intraocular lenses.²⁴ A longitudinal cohort study from Vietnam found that cataract surgery reduced the number of falls and other injuries. (Note: this study in Vietnam included patients over the age of 50. Only 20% of the total number of participants were below the age of 60 [our population age of interest].)

We identified one randomized controlled trial (RCT) relevant to Key Question 3c (interventions provided by primary care deliverers that can reduce the risk of falls). This RCT²⁶ examined the feasibility of a home hazard and home exercise program in older adults with sight impairment on the incidence of falls. A primary care physician referred patients to an occupational therapist, who then provided the intervention. There were no significant differences in falls between the control and intervention groups (though as a feasibility study, it was not powered to detect a difference and additional studies are necessary to examine efficacy).²⁶

Also relevant to Key Question 3c, we identified two clinical trials that are currently recruiting. These trials aim to examine the efficacy of home hazards programs on risk of falls²⁷ and falls efficacy.²⁸ They are provided by an occupational therapist, but referred to by a primary care provider.

See Table 2, Feasibility column.

Table 2. Key Questions and Results for Duplication and Feasibility

Key Question	Duplication (1/2015-9/2018)	Feasibility (9/2013-9/2018)
KQ 1: do regular comprehensive eye exams reduce the risk of falls?	Total number of identified systematic reviews or meta-analyses: 1 <ul style="list-style-type: none"> PROSPERO Protocol: 1¹⁴ 	<u>Size/scope of review</u> Relevant Studies Identified: 1 <ul style="list-style-type: none"> Case Control: 1²⁰ Clinicaltrials.gov None identified.
KQ 2: what are the benefits and risks of implementation of comprehensive eye exams into a falls prevention protocol?	Total number of identified systematic reviews or meta-analyses: 0	<u>Size/scope of review</u> Relevant Studies Identified: 0 Clinicaltrials.gov None identified.
KQ 3a: what are the benefits and harms of interventions related to vision, <i>provided by an optometrist</i> , for reducing the risk of falls?	Total number of identified systematic reviews or meta-analyses: 3 <ul style="list-style-type: none"> USPSTF: 1¹¹ Network Meta-Analysis: 1¹³ PROSPERO Protocol: 1¹⁵ 	<u>Size/scope of review</u> Relevant Studies Identified: 0 Clinicaltrials.gov None identified.

Key Question	Duplication (1/2015-9/2018)	Feasibility (9/2013-9/2018)
KQ 3b: what are the benefits and harms of interventions related to vision, <i>provided by an ophthalmologist</i> , for reducing the risk of falls?	Total number of identified systematic reviews or meta-analyses: 2 <ul style="list-style-type: none"> USPSTF: 1¹¹ Network Meta-Analysis: 1¹³ 	<u>Size/scope of review</u> Relevant Studies Identified: 5 <ul style="list-style-type: none"> Prospective Cohort: 3^{21,23,24} Longitudinal Cohort: 1²⁵ Retrospective Cohort: 1²² <u>Clinicaltrials.gov</u> None identified.
KQ 3c: What are the benefits and harms of interventions related to vision, <i>provided by a primary care physician (MD, DO, NP, PA)</i> , for reducing the risk of falls?	Total number of identified systematic reviews or meta-analyses: 1 ¹²	<u>Size/scope of review</u> Relevant Studies Identified: 1 <ul style="list-style-type: none"> RCT: 1²⁶ <u>Clinicaltrials.gov</u> <ul style="list-style-type: none"> Recruiting: 2^{27,28}

Abbreviations: DO=Doctor of Osteopathy; KQ=Key Question; MD=Medical Doctor; NP=Nurse Practitioner; PA=Physician's Assistant; RCT=Randomized Controlled Trials; USPSTF=United States Preventive Services Task Force

Summary of Findings

- Appropriateness and importance: The topic is both appropriate and important.
- Duplication: A new review would be somewhat duplicative. We identified three published reviews and two protocols. The three published reviews contain a few, but not all, interventions and outcomes of interest to the nominator.
- Impact: A new systematic review has high impact potential.
- Feasibility: A new review is not feasible. We identified only seven studies published in the last five years relevant to the key questions. We also identified two recruiting clinical trials. When considering a synthesis of these studies, the result is unlikely to meet the nominator's needs.

References

1. Bergen G, Stevens MR, Burns ER. Falls and Fall Injuries Among Adults Aged ≥ 65 Years - United States, 2014. *MMWR Morbidity and mortality weekly report*. 2016;65(37):993-998. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=27656914>.
2. American Optometric Association. Comprehensive Adult Eye and Visual Examination. Clinical Practice Guidelines. Available from: <http://aoa.uberflip.com/i/578152-aoa-clinical-practice-guidelines-adult-eye-exam>. 2015.
3. Centers for Disease Control and Prevention. Important Facts about Falls. 2018. Available from: <https://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html>.
4. American Academy of Ophthalmology. Hoskins Center for Quality Eye Care. Frequency of Ocular Examinations. Available from: <https://www.aao.org/clinical-statement/frequency-of-ocular-examinations>. 2015.
5. Ivers RQ, Cumming RG, Mitchell P, Attebo K. Visual impairment and falls in older adults: the Blue Mountains Eye Study. *Journal of the American Geriatrics Society*. 1998;46(1):58-64. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/9434666>.
6. Freeman EE, Munoz B, Rubin G, West SK. Visual field loss increases the risk of falls in older adults: the Salisbury eye evaluation. *Investigative ophthalmology & visual science*.

- 2007;48(10):4445-4450. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/?term=17898264>.
7. Patino CM, McKean-Cowdin R, Azen SP, Allison JC, Choudhury F, Varma R. Central and peripheral visual impairment and the risk of falls and falls with injury. *Ophthalmology*. 2010;117(2):199-206 e191. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/20031225>.
 8. Cumming RG, Ivers R, Clemson L, et al. Improving vision to prevent falls in frail older people: a randomized trial. *Journal of the American Geriatrics Society*. 2007;55(2):175-181. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=17302652>.
 9. US Preventive Services Task Force. Final Recommendation Statement. Falls Prevention in Community-Dwelling Older Adults: Interventions. Available from:
<https://www.uspreventiveservicestaskforce.org/Page/Document/RecommendationStatementFinal/falls-prevention-in-older-adults-interventions1>. 2018.
 10. *Falls: Assessment and Prevention of Falls in Older People*. London: National Institute for Health and Care Excellence.; 2013. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/25506960>.
 11. Chou R, Dana T, Bougatsos C, Grusing S, Blazina I. *Screening for Impaired Visual Acuity in Older Adults: A Systematic Review to Update the 2009 U.S. Preventive Services Task Force Recommendation*. Rockville MD 2016. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/27010054>.
 12. Guirguis-Blake JM, Michael YL, Perdue LA, Coppola EL, Beil TL, Thompson JH. U.S. Preventive Services Task Force Evidence Syntheses, formerly Systematic Evidence Reviews. In: *Interventions to Prevent Falls in Community-Dwelling Older Adults: A Systematic Review for the U.S. Preventive Services Task Force*. Rockville, MD: Agency for Healthcare Research and Quality (US); 2018. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/30234932>.
 13. Zhang XY, Shuai J, Li LP. Vision and Relevant Risk Factor Interventions for Preventing Falls among Older People: A Network Meta-analysis. *Scientific reports*. 2015;5:10559. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=26020415>.
 14. Hong K, Khaw K-T, Yip J, Pershing S, Mercado C. Visual impairment and all-cause mortality: a systematic review and meta-analysis. *PROSPERO CRD42016033819* Available from:
http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42016033819. 2016.
 15. Dherani M, Buckner S, Pope D, Lafortune L, Bruce N. Preventing falls and associated mortality in older people: an umbrella review of systematic reviews. *PROSPERO CRD42015010571* Available from:
http://www.crd.york.ac.uk/PROSPERO/display_record.php?ID=CRD42015010571. 2015.
 16. Lord SR, Dayhew J, Howland A. Multifocal glasses impair edge-contrast sensitivity and depth perception and increase the risk of falls in older people. *Journal of the American Geriatrics Society*. 2002;50(11):1760-1766. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/?term=12410892>.
 17. Elliott AF, McGwin G, Jr., Owsley C. Vision-enhancing interventions in nursing home residents and their short-term effect on physical and cognitive function. *Journal of the American Geriatrics Society*. 2009;57(2):202-208. Available from:
<https://www.ncbi.nlm.nih.gov/pubmed/?term=19170783>.
 18. Hall TA, McGwin G, Jr., Owsley C. Effect of cataract surgery on cognitive function in older adults. *Journal of the American Geriatrics Society*. 2005;53(12):2140-2144. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/16398899>.
 19. Foss AJ, Harwood RH, Osborn F, Gregson RM, Zaman A, Masud T. Falls and health status in elderly women following second eye cataract surgery: a randomised controlled

- trial. *Age and ageing*. 2006;35(1):66-71. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=16364936>.
20. Loriaut P, Loriaut P, Boyer P, Massin P, Cochereau I. Visual impairment and hip fractures: a case-control study in elderly patients. *Ophthalmic research*. 2014;52(4):212-216. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/25378036>.
 21. Feng YR, Meulenens LB, Fraser ML, Brameld KJ, Agramunt S. The impact of first and second eye cataract surgeries on falls: a prospective cohort study. *Clinical interventions in aging*. 2018;13:1457-1464. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/30197507>.
 22. Meulenens LB, Fraser ML, Ng J, Morlet N. The impact of first- and second-eye cataract surgery on injurious falls that require hospitalisation: a whole-population study. *Age and ageing*. 2014;43(3):341-346. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=24192250>.
 23. Palagyi A, Morlet N, McCluskey P, et al. Visual and refractive associations with falls after first-eye cataract surgery. *Journal of cataract and refractive surgery*. 2017;43(10):1313-1321. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=29056303>.
 24. Renz E, Hackney M, Hall C. Foot clearance and variability in mono- and multifocal intraocular lens users during stair navigation. *Journal of rehabilitation research and development*. 2016;53(6):933-944. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=28475200>.
 25. To KG, Meulenens L, Bulsara M, et al. A longitudinal cohort study of the impact of first- and both-eye cataract surgery on falls and other injuries in Vietnam. *Clinical interventions in aging*. 2014;9:743-751. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=24812501>.
 26. Waterman H, Ballinger C, Brundle C, et al. A feasibility study to prevent falls in older people who are sight impaired: the VIP2UK randomised controlled trial. *Trials*. 2016;17(1):464. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/?term=27671540>.
 27. Johns Hopkins University. Preventing Falls Among Older Fallers to Test the Effect of LIVE-LiFE, a Home-Based, Tailored Fall Prevention Program (LIVE-LiFE). Available from: <https://clinicaltrials.gov/ct2/show/NCT03351413?term=NCT03351413&rank=1>. 2017.
 28. Rush University Medical Center. An Occupational Therapist Fall Prevention Intervention in a Geriatric Primary Care Setting. Available from: <https://clinicaltrials.gov/ct2/show/NCT03294447?term=NCT03294447&rank=1>. 2017.

Appendix A. Selection Criteria Assessment

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the U.S.?	Yes, this nomination represents a health care intervention that is available in the United States.
1b. Is the nomination a request for a systematic review?	Yes, this nomination is a request for a systematic review.
1c. Is the focus on effectiveness or comparative effectiveness?	Yes, this nomination is focused on the effectiveness of interventions.
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Yes, this nomination's focus is supported by biological plausibility and is consistent and coherent with what is known about the topic.
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	Yes, this topic represents a significant disease burden to a large proportion of the population. In the United States alone, more than one out of four older adults will suffer a fall. ¹ Approximately 17% of older Americans between the ages of 65 and 74 self-reported vision loss of some form. ²
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population	Yes, this topic is of high public interest and affects health care decision making. It is also a high-cost problem to a vulnerable population.
2c. Represents important uncertainty for decision makers	Yes, this topic represents important uncertainty for decision makers.
2d. Incorporates issues around both clinical benefits and potential clinical harms	Yes, this topic incorporates both clinical benefits and harms.
2e. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Yes, this topic represents high costs due for patients, health care systems, and payers.
3. Desirability of a New Evidence Review/Duplication	
3. Would not be redundant (i.e., the proposed topic is not already covered by available or soon-to-be available high-quality systematic review by AHRQ or others)	<p>A new review would be somewhat duplicative of existing reviews. We identified two systematic reviews,^{11,12} one network meta-analysis,¹³ and two protocols^{14,15} which briefly touch on a few, but not all, interventions and outcomes of the key questions.</p> <p>The major network meta-analysis used only studies that examined subjects 65 and older, rather than 60 and older.</p> <p>We identified no systematic reviews or protocols for reviews examining the benefits and risks of including regular comprehensive eye exams into falls prevention protocols (KQ 2).</p>
4. Impact of a New Evidence Review	

4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?	The standard of care as dictated by guidelines are clear, in that poor vision is often cited as a risk factor for falls. However, the use of comprehensive eye exams is not well represented in guidelines.
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	There is practice variation on the use of annual comprehensive eye exams.
5. Primary Research	
5. Effectively utilizes existing research and knowledge by considering: - Adequacy (type and volume) of research for conducting a systematic review - Newly available evidence (particularly for updates or new technologies)	We identified seven studies and two recruiting clinical trials. One study was relevant to KQ 1, five were relevant to KQ 3b, and one was relevant to KQ 3c. Both clinical trials were relevant to KQ 3c. There is not adequate volume or content of literature to make a systematic review feasible.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; KQ=Key Question

Appendix B. Search for Evidence Reviews (Duplication)

Listed below are the sources searched, hierarchically.

Primary Search
AHRQ: Evidence reports and technology assessments https://effectivehealthcare.ahrq.gov/ ; https://www.ahrq.gov/research/findings/ta/index.html ; https://www.ahrq.gov/research/findings/evidence-based-reports/search.html
VA Products: PBM, and HSR&D (ESP) publications, and VA/DoD EBCPG Program https://www.hsrp.research.va.gov/publications/esp/
Cochrane Systematic Reviews http://www.cochranelibrary.com/
HTA (CRD database): Health Technology Assessments http://www.crd.york.ac.uk/crdweb/
PubMed Health http://www.ncbi.nlm.nih.gov/pubmedhealth/
Secondary Search
AHRQ Products in development https://effectivehealthcare.ahrq.gov/
VA Products in development https://www.hsrp.research.va.gov/publications/esp/
Cochrane Protocols http://www.cochranelibrary.com/
PROSPERO Database (international prospective register of systematic reviews and protocols) http://www.crd.york.ac.uk/prosperto/
Tertiary Search
PubMed https://www.ncbi.nlm.nih.gov/pubmed/

Listed below are additional the topic-specific sources, searched when appropriate.

Nursing or Allied Healthcare
CINAHL (Cumulative Index of Nursing and Allied Health) https://www.ebscohost.com/nursing/products/cinahl-databases/cinahl-complete

Appendix C. Search Strategy & Results (Feasibility)

	Feasibility
MEDLINE(PubMed) searched on September 19, 2018	
Concept	Search String
Vision	(((((("Vision Screening"[Mesh]) OR "Vision, Ocular"[Mesh]) OR "Visual Perception"[Mesh]) OR "Vision Tests"[Mesh])) OR ((vision[Title] OR sight[Title] OR eye[Title]))
AND	
Falls	("Accidental Falls"[Mesh]) OR falls[Title]
Limits: Last 5 Years, English	published in the last 5 years, English
N=104	
clinicalTrials.gov N=20	20 Studies found for: Accidental Falls eye OR vision OR sight Adult, Older Adult Start date from 01/01/2015 to 01/01/3000 URL: https://clinicaltrials.gov/ct2/results?cond=Accidental+Falls&intr=eye+OR+vision+OR+sight&age=12&strd_s=01%2F01%2F2015&strd_e=01%2F01%2F3000