Geriatric Nursing 40 (2019) 590–596

Contents lists available at ScienceDirect

Geriatric Nursing

journal homepage: www.gnjournal.com

Feature Article

Outcomes of primary care-based Medicare annual wellness visits with older adults: A scoping review

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ARTICLE INFO

Article history:
Received 29 April 2019
Received in revised form 1 June 2019
Accepted 5 June 2019
Available online 27 June 2019

Keywords:
Aging
Health promotion
Healthy lifestyle
Nursing
Primary health care
Primary prevention
Quality of life
Risk reduction behavior

ABSTRACT

The increasing aging population creates many challenges for countries around the world. Keeping this population healthy to prevent frailty and functional decline requires a stronger focus on health promotion and disease prevention. Maximization of well-being and quality of life of older adults can occur if determinants of health are addressed and preventive behaviors are supported. Primary care-based preventive visits such as the Medicare annual wellness visit can be used with older adults to enhance health promotion efforts. A scoping review of studies was conducted to identify current evidence concerning the impact of this visit on preventive practices, risk reduction and lifestyle behavior changes for community-dwelling older adults. A total of 11 studies were included in this review. Preventive services use outcomes including vaccinations and screenings were most frequently reported. Visits such as these can provide a platform for development of strategies to provide ongoing support for health promotion efforts.

Introduction

The United Nations Population Division projects that globally the number of older adults will increase from 11% of the population in 2011, to 22% of the population in 2050, with the group aged 80 years plus increasing most dramatically.[1] This phenomenon is occurring in both developed and developing countries but is most rapid in developing (or newly industrialized) countries.[2,3] Unfortunately, the prevalence of non-communicable diseases, multiple co-morbid conditions, and clustering of risk factors are also increasing in this population, contributing to increased disability and frailty rates.[4] Globally, older adults account for 23% of the burden disease.[2,5] The negative impact of this increasing unhealthy population could be mitigated if adults reached old age healthier.[4,6] Well-being for older adults can be maximized by addressing social determinants, minimizing health risks, and better aligning health and social networks to improve support for health and well-being.

Health promotion and disease prevention strategies aimed at supporting adoption of healthy lifestyle behaviors improves quality of life for older adults, reducing the risk of cognitive and functional decline.[2,5,7,8] Health care systems, policy makers and providers must strengthen support for healthy aging by making preventive services a priority.[9–12] Annual preventive (wellness) visits, which serve solely to promote health, offer the opportunity to strengthen prevention efforts. These visits address unhealthy lifestyle behaviors and empower older adults to better manage their own health.[1,6,13] The development of prevention focused care plans based upon comprehensive assessments during these visits supports person-centered, integrated care, optimizing the capacity of older adults to do what they value most.[1] This type of multidimensional approach is more effective than the current disease specific focus that contributes to fragmented and disconnected services for older adults.[1]

Since 2011, an annual wellness visit has been available free of charge to Medicare beneficiaries (older adults 65 years or older) in the United States (US). This visit aims to improve the health of older adults and reduce costs by focusing on prevention and increasing access to preventive services.[14] This "hands off" visit (see Table 1) requires a comprehensive assessment including a health risk appraisal and culminates with collaborative development of a 5 to 10-year personalized prevention plan for the participant. This plan identifies needed preventive services or screenings and recommends lifestyle behavior changes and risk reduction strategies.[9,15]

Currently, published evidence on outcomes related to these types of preventive visits is minimal[16,17] and limited mostly to non-experimental or quasi-experimental designs. A preliminary search for existing reviews on this topic was conducted, and no such reviews were found. This manuscript uses a scoping review to answer the

Declarations of interest: None.

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https://doi.org/10.1016/j.gerinurse.2019.06.001
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Table 1
Overview of annual wellness visit components.

Required action	*Elements*
Complete a health risk appraisal	Self-report information should include: • Demographic data • Self-assessment of health status • Psychosocial and behavioral risks • Activities/Instrumental activities of daily living
Obtain a medical and family history	Include: • Medical events of family members that place beneficiary at risk • Past medical/surgical history • Use of/exposure to medications and supplements • History of opioid use disorders
Identify current providers/ suppliers	Include all who provide regular medical care
Obtain measures	Measure: • Height, weight, body mass index, blood pressure • Other measures deemed relevant based on risks
Assess cognitive status	Evaluate for cognitive impairment through: • Direct observation of behavior • Information provided by family, friends, caregivers • Use of a brief, validated cognitive assessment tool
Review potential risk factors for depression	Evaluate for actual/potential depression (including past or current experience with depression or mood disorders) through use of a validated depression screening tool
Review functional ability and level of safety:	Directly observe or use a standardized screening questionnaire to evaluate: • Ability to complete activities of daily living • Fall risk • Home safety • Hearing impairment
Establish personalized prevention plan	Include: • Written screening schedule for next 5–10 years • List of risk factors for which interventions are underway • Personalized health advice and appropriate referrals to reduce risks and promote wellness

researchers' questions concerning the impact of the annual wellness visit on short-term outcomes related to preventive practices such as screenings and vaccinations, and long-term outcomes including acute care services use, lifestyle behavior changes (related to tobacco use, physical activity, nutrition, etc.), and implementation of risk-reduction strategies.

Additionally, this review sought to find evidence concerning interventions conducted during the visit including required elements such as screening for cognitive decline and depression, collaborative development of a personalized prevention plan, and discussion of health promotion and disease prevention recommendations. It is important to determine if this free benefit is enhancing wellness, reducing the risk of cognitive and physical decline, and helping older adults live productive lives. This review will provide researchers with the status of current evidence and help identify gaps and areas for future research.

Methods

Scoping review methodology as described by Arksey and O'Malley (2005)[18] was used for this review. A scoping review allows identification and inclusion of studies with many different designs, providing for a broader view of the topic and helping to identify research gaps. This process includes several steps: (1) identification of the research question (identified in previous section); (2) identification of relevant studies; (3) study selection; (4) charting the data; and (5) collating, summarizing and reporting results.

Identifying relevant studies

This scoping review of the literature focused upon available literature including grey literature published from 2011 (when cost barriers to the visit were removed) to 2018. Several academic databases were used in this search including MedLine, AgeLine, CINAHL, PsycInfo, and Web of Science. Search terms included *Medicare + Annual Wellness Visit* and *Medicare + Preventive Exam.*

Inclusion criteria

Articles were included if they described outcomes related to primary care-based Medicare annual wellness visits with eligible Medicare beneficiaries 65 years-of-age or older.

Exclusion criteria

Manuscripts were excluded if they were focused only upon visit requirements, how best to implement the visit, or who is/is not utilizing the annual wellness visit. Manuscripts were also excluded if the preventive wellness visit was not an annual wellness visit as described in Medicare regulations and guidelines.

Study selection

All titles and abstracts were initially reviewed by the first author using the inclusion and exclusion criteria. References were also reviewed to identify any additional relevant articles. An initial full review of all retained manuscripts was completed by the first author for relevance; followed by review by the second author. Discrepancies in articles identified for inclusion were discussed further by both authors to reach a decision concerning retention in this review. Manuscripts were retained for the review regardless of methodological rigor and quality.

Data extraction and analysis

Data were extracted and charted for review. Chart information included author, year of publication, aims of the study, methodology, outcome measures, and important results.[18] This chart was used to identify similar categories or themes to describe outcomes and results (see Table 2).

Quality assessment

The *Critical Appraisal Skills Programme*[19] checklist for cohort studies was used to evaluate the quality of the included studies since these studies all used retrospective analysis of cohorts. One researcher evaluated each study using the tool's 12 questions.

Results

After review of titles and abstracts, 75 manuscripts were retained for full review. After full review, 24 were deemed relevant to the research question and were reviewed using the inclusion criteria by both authors. Of these, 11 were retained and are included in this review (see Fig. 1). Retained studies were published between 2014 and 2018. The majority of the studies involved retrospective Medicare claims data or electronic health record (chart) analysis which supports longitudinal observation of outcomes after the annual wellness visit. These studies generally included large nationally representative samples with services provided by many different providers in

Table 2
Overview of included studies.

Author/Year	Sample	Study aims	Methodology	Outcomes/important results
Camacho et al. (2017)[20]	Medicare fee-for-service beneficiaries (n = 659,150)	Examine effect of AWVs on preventive services use	Retrospective observational analysis using Medicare claims data analysis	Recipients of AWVs were significantly more likely to receive any of seven preventive services than nonrecipients (prostate, bone mass, diabetes, breast, colorectal cancer, and cardiovascular disease screening and vaccines).
Fowler et al. (2018)[21]	Medicare fee-for-service beneficiaries (n = 471,415)	Assess AWV impact on early detection of cognitive impairment, cognitive testing, and anticholinergic use	Retrospective matched cohort analysis using Medicare claims data	No significant differences related to ADRD diagnoses/medications; Increased ADRD related lab tests (TSH, B12, folate, and neurobehavioral) with AWV group.
Galvin et al. (2017)[22]	Medicare beneficiaries (n = 500)	Examine effectiveness of team-based AWVs on preventive services use	Retrospective EHR and claims data analysis	AWV utilization rates increased with significant improvements in adherence with needed preventive services.
Jiang et al. (2018)[23]	Medicare Part A & B recipients (n = 381,934)	Assess effect of AWV on the annual rate of 8 preventive services	Retrospective matched cohort analysis using Medicare claims data	AWV associated with increased preventive health services (breast, cervical, bone mass, colon, prostate cancer screenings and influenza vaccine).
Pfoh et al. (2015)[24]	Medicare Part B beneficiaries (n = 4245)	Assess if patients with AWVs were more likely to have depression screening than patients receiving primary care visit	Retrospective cross-sectional analysis via chart review	No significant difference in depression screening rates between the two groups.
Sewell et al. (2016)[25]	Medicare beneficiaries (n = 108)	Compare a composite of interventions, screenings, and revenue from AWVs by provider (pharmacists or physicians)	Retrospective cohort analysis via chart review	AWVs delivered by pharmacists are comparable to those provided by physicians. More health advice, vaccine recommendations, and screenings were provided by pharmacists; more lab tests were ordered by physicians.
Shen et al. (2016)[26]	Medicare Part B fee-for-service beneficiaries (n = 31,351,632–31,810,701)	Assess and seasonal influenza and pneumococcal conjugate vaccination utilization over time	Retrospective cohort analysis using Medicare claims data	Vaccination rates were higher among those who used the AWV benefit.
Tao (2018)[27]	Medicare FFS (n = 28,000,000)	Determine impact of AWV participation on use of other preventive services (depression screening, influenza vaccine, and sexually transmitted infection screening)	Retrospective analysis using Medicare claims data	AWV participants had a higher percentage of these services than nonparticipants.
Tetuan et al. (2014)[28]	Medicare beneficiaries (n = 170)	Assess effectiveness of nurse-administered AWVs in improving adherence to colonoscopy and mammogram screenings	Nonexperimental comparative study via chart audits	Patients in a nurse-run clinic who received AWV were more adherent to mammography screening recommendations; no statistical significance found with colonoscopy screenings.
Warshany et al. (2014)[29]	Medicare beneficiaries (n = 98)	Identify results of clinical pharmacist delivered Medicare AWVs in an internal medicine practice	Descriptive study using retrospective chart review	AWVs conducted by a clinical pharmacist provide reimbursable interventions including referrals, education, lab tests and procedures, vaccines, and medications.
Woodall et al. (2017)[30]	Medicare high-risk beneficiaries (n = 53)	Assess effectiveness of pharmacist-led AWVs with comprehensive medication management	Descriptive study using EHR document analysis	Medication-related problems were identified in 90.6% of participants; no significant change in before and after visit.

a variety of health care settings. The retrospective chart reviews included much smaller samples often confined to one setting or specific type of provider. These reviews occurred after implementation of strategies designed to implement the annual wellness visit and enhance preventive services utilization. In most of the studies a physician provided the visit, however research concerning team-based and pharmacist or nurse-led annual visits were also found in the literature and are included in this review.

The 11 studies described outcomes in the following categories: (1) preventive services use (including vaccines and screenings); (2) the impact of the visit on hospitalization and emergency department use rates; (3) completion of specific required elements of the annual wellness visit during the visit; and (4) recommendations/health advice/referrals/educational interventions provided during the visit. These are summarized according to the intended outcomes for this review.

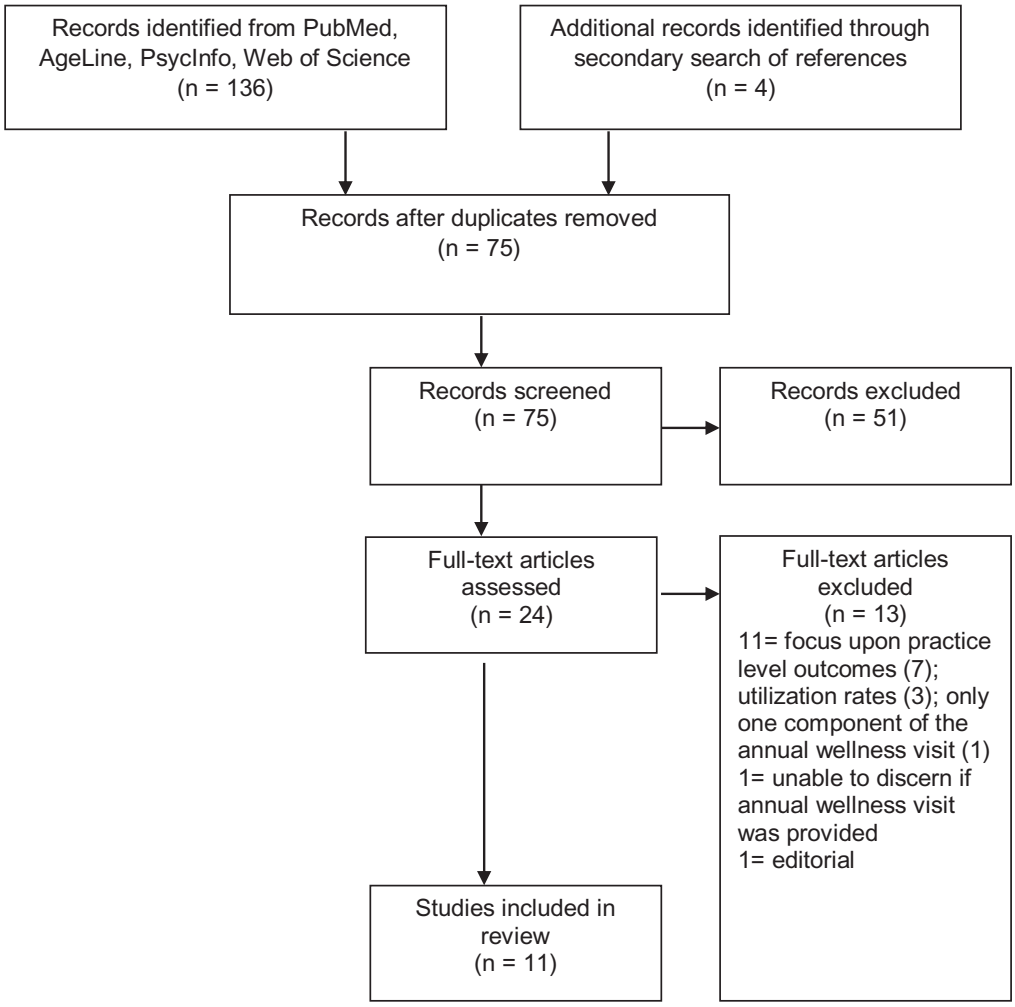

Fig. 1. Flow diagram for selection and inclusion of studies.

Short-term outcomes

Eight manuscripts reported results related to preventive services utilization. Five studies evaluated the impact of the annual wellness visit on a broad range of preventive services and referrals (with some using a composite score to reflect utilization of a set of predefined services), while 3 studies evaluated uptake of only one or two specific services (see Table 3). Preventive services outcomes were compared between those who received an annual wellness visit and those who did not in 5 out of the 8 studies.[20,23,26,28] In the 3 remaining studies, no comparison groups were used. In the no comparison group studies, Galvin et al. (2017)[22] compared the percentage of patients who were up to date with all recommended preventive services at the time of the annual wellness visit to the percentage 6-months post annual wellness visit. The focus by Shen et al. (2017)[26] was upon comparison of annual wellness visit outcomes when the annual wellness visit was provided by different providers (pharmacist versus physician), while Warshaney et al. (2014)[29] evaluated clinical outcomes of pharmacist provided annual wellness visits. The most commonly studied outcomes included influenza and pneumonia vaccination rates as well as breast cancer, colon cancer, and bone mass/density screening.

Overall, the included studies reported that the annual wellness visit increased utilization of or referrals to the preventive services being evaluated. Vaccines often were obtained the same day as the annual wellness visit. However, some of the studies indicated that despite the increase in vaccine uptake secondary to the annual wellness visit, overall completion rates for recommended vaccines was low. One study also noted that beneficiaries who repeated the annual wellness visit on an annual basis were much more likely to follow-up with needed services. Researchers attributed the significant changes to various aspects of the annual wellness visit such as the comprehensive assessment and dedicated time for prevention-focused discussions. These collaborative discussions enhance the therapeutic relationship and the ability to address any factors affecting preventive services utilization, thereby increasing both access and adherence.

Long-term outcomes

Only one study discussed long-term outcomes. This study described outcomes related to the impact of annual wellness visits on hospitalization rates.[30] It included high risk patients taking five or more long-term medications, added comprehensive medication management by a pharmacist to the annual wellness visit to evaluate the impact on medication use or emergency department (ED) use.[30] Findings indicated no significant change in hospitalization or ED use rates comparing rates one year before and one year after the annual wellness visit. This was the only study retained in this review which evaluated these types of outcomes.

Interventions conducted during the annual wellness visit

As noted in Table 1, the annual wellness visit has several required activities which are to be completed during the visit; 5 of the studies

Table 3
Included preventive services by study.

Service/Study	Jiang et al. (2018)	Camacho et al. (2017)	Galvin et al. (2017)	Tao (2018)	Tetuan et al. (2014)	Shen et al. (2017)	Sewell et al. (2016)	Warshany et al. (2014)
Vaccines								
Flu	✓	✓	✓	✓		✓	✓	✓
Pneumonia	✓	✓	✓			✓	✓	✓
Zoster			✓				✓	
Tetanus/Diphtheria/Pertussis		✓	✓				✓	✓
Screenings								
Breast cancer	✓	✓	✓		✓		✓	✓
Prostate cancer	✓	✓	✓					
Colon cancer	✓	✓	✓		✓		✓	✓
Bone mass/density	✓	✓	✓				✓	✓
Cervical cancer	✓	✓	✓					
Cardiovascular disease								
Abdominal aortic aneurysm			✓					✓
Diabetes			✓					

evaluated completion of various activities by providers. Three of the studies specifically evaluated completion of screenings for depression or cognitive impairments. Pfoh et al. (2018)[24] found that the odds of depression screening during the annual wellness visit were not significantly different from the odds of depression screening during other primary care visits, while Tao (2018)[27] found a significantly higher percentage of depression screening in beneficiaries who had received an annual wellness visit versus those who did not receive an annual wellness visit. Another study also evaluated the odds of depression screening in those receiving an annual wellness visit as compared to those who did not receive an annual wellness visit as a secondary outcome, finding higher odds in the annual wellness visit group.[23] Tao (2018)[27] also noted that the overall proportion of beneficiaries receiving depression screening during the annual wellness visit was low.

Fowler et al. (2018)[21] reported a similar finding related to screening for cognitive impairment (including Alzheimer's disease and related dementia) as well as for medications and cognitive-care related Alzheimer's disease and related dementia diagnostic exams. This study reported no clinically relevant differences in the rate of Alzheimer's disease and related dementia diagnosis or initiation of medications between a control group and a group that received annual wellness visits. The study did however find differences in rates of testing for reversible causes of cognitive impairment including TSH, B12, and folate as well as increased rates of neuropsychological testing.

Implementation of all required annual wellness visit components by the provider was evaluated in 2 of the studies. Woodall et al. (2017)[30] found that all components of the annual wellness visit were documented as complete in all patients who received the visit. Galvin et al.[22] also evaluated receipt of all annual wellness visit required services including development of the personalized prevention plan, finding that completion was documented for more than 98% of participants (2017).

Two studies focused specifically upon recommendations, health advice, and educational interventions provided during the annual wellness visit, including the type provided. Warshaney et al. (2014)[29] reported that the most common referrals were to nutrition specialists, physical therapists, and audiologists, while home safety, advanced directives, and smoking cessation were the primary focus of educational interventions. This study also identified the most frequent lab tests ordered during the visit. These included glycated hemoglobin (Hgb), lipid panels, and dual x-ray absorptiometry. Other tests ordered included screenings for abdominal aortic aneurysms (for those identified as at risk), colon cancer, and breast cancer, and a chemistry panel. Sewell et al. (2016)[25] also reported recommendations and interventions made during the annual wellness visit, however they compared these based upon provider type (physician versus pharmacist). Overall for both types of providers, most health advice focused upon diet, physical activity, and vaccines. Pharmacists were found more likely to offer health advice, vaccine recommendations and screenings than physicians who were significantly more likely to offer laboratory tests. Finally, as a secondary outcome, Jiang et al. (2018)[23] evaluated the provision of behavioral counseling interventions for alcohol misuse, finding that the odds of receiving this counseling were significantly higher in the annual wellness visit group.

Quality assessment results

All 11 studies were retrospective analyses of claims, chart, or electronic health record data. However, in 2 of the studies[29,30] these analyses followed an intervention (the annual wellness visit). In both of these studies, random number processes were used to generate the sample for inclusion thus decreasing the possibility of selection bias. In their retrospective claims and chart analyses, Galvin et al. (2017) and Fowler et al. (2018), also reported the use of a random sampling procedure to create their sample for study to decrease the possibility of selection bias.[21,22] Of the remaining retrospective analyses, two studies[26,27] reviewed all Medicare claims data for a several year period, while the remainder used either a convenience sample[28] or non-random sampling[24,25] thus introducing possible selection bias. Three studies described the procedures used to control for possible confounding bias.[20,21,23]

Discussion

The 11 manuscripts included in this review provide support for preventive primary care visits such as the annual wellness visit as a strategy to enhance health promotion and disease prevention efforts with older adults. Several short-term outcomes were identified by these studies including increased utilization of preventive services for those who received an annual wellness visit when compared to those who did not. Specifically, completion of the influenza and pneumonia vaccines and screenings for breast cancer, colon cancer, and bone mass/density were significantly higher in the year following an annual wellness visit. One study also noted that preventive service utilization was even higher after repeat annual wellness visits.

Only one study identified long-term outcomes secondary to this visit, limiting it to research concerning the impact on rates of hospitalization and ED use. The remainder of the studies focused upon activities which occurred during the visit itself including required elements and screenings for issues which may occur with advancing age such as cognitive impairment and depression. These screenings were more likely to be completed during an annual wellness visit versus routine primary care visits. Several studies also indicated effectiveness of annual

wellness visits in relation to provision of health advice, recommendations and referrals concerning necessary lifestyle behavior changes (diet, physical activity) and risk reduction strategies (smoking, alcohol use). However, these studies did not evaluate participant follow-through with all recommendations or advice.

While these are positive findings, there is a need to design studies to capture data reflecting potential long-term outcomes secondary to this visit including lifestyle behavior changes and implementation of risk reduction strategies. Evidence has supported the impact that healthy diets and regular physical activity can have on health; determining the impact of preventive visits on implementation of healthy lifestyle behaviors could strengthen support for these visits. Unfortunately, the studies included in this scoping review were all based upon Medicare claims data or EHR analysis; these approaches limit access to this type of data. Outcomes such as completion of screenings and vaccines are only one piece of the prevention puzzle-adoption of healthy lifestyle behaviors and reduction of risks are vitally important to improving the health and quality of life of older adults.

The research described in these studies focused upon the annual wellness visit itself as the sole intervention. While a few of the studies compared outcomes when the visit was provided by different providers or using a team approach, none of the studies discussed any follow-up or support once the patient left the visit. While the studies did demonstrate that annual wellness visits alone may be enough to spur some beneficiaries to complete recommended preventive screenings or services, utilization of the visit to its full potential is limited and overall uptake of preventive services in this age group is low. Studies designed to identify barriers or challenges to adherence with recommendations could support development of strategies to enhance the visit process. Additionally, only one study mentioned the impact of repeat annual wellness visits; given that the visit has now been available for almost 8 years, research concerning outcomes for those who repeat these visits may provider further evidence concerning effectiveness.

Even though the visit appeared to encourage providers to have clearer discussions with beneficiaries concerning needed lifestyle behavior changes and risk reduction strategies; some of the studies identified practice and provider variations related to visit implementation. Practice and provider variations and inconsistencies are important to understand and address. If all elements of the annual wellness visit are not completed, the ability to develop a personalized prevention plan is impacted thereby diluting effectiveness. These inconsistencies also affect the ability to obtain valid and reliable research outcomes. In the case of Medicare's annual wellness visit, visit requirements and recommendations are guided by evidence. All elements are necessary to comprehensively identify the factors and determinants affecting the health of older adults, particularly for those experiencing racial or ethnic disparities.

Despite the paucity of studies on annual wellness visit outcomes, this scoping review did identify evidence that these visits can result in several positive outcomes, particularly in relation to preventive services including vaccines and screenings. These findings are significant given that currently less than 20% of eligible beneficiaries participate in this free benefit;[16] an issue related to barriers and challenges for both beneficiaries and providers.[31] Addressing the research gaps identified in this review may help provide support for such visits and supplement evidence generated by large randomized control trials conducted in the past decade in the US, Europe and the United Kingdom. These studies focused upon the use of health risk appraisals (a required element of the annual wellness visit) to reduce risks, enhance lifestyle behavior changes, and increase participation in preventive care. A Senior Risk Reduction Demonstration Project in the US carried out from 2009 to 2012 used health coaches to support participants using recommendations based upon health risk appraisal data.[32] This study found that participants had lower overall risks and higher self-rated health status than nonparticipants.[33] In the European and United Kingdom studies, researchers collaborated with primary care practices to administer health risk appraisals with site specific reinforcement interventions. These studies documented significant increases in some of the preventive services and healthy lifestyle behaviors evaluated as outcomes.[34–36] It is important to build upon this evidence to conduct prospective studies which will help identify effective strategies to support and maintain patient motivation to adhere to preventive recommendations once they leave the provider's office.

This review has strengths and limitations. The review followed the process as described by Arksey and O'Malley (2005)[18] and involved two reviewers. Most of the included studies had large sample sizes and offered the opportunity to follow the study population longitudinally over a span of time. However, retrospective claims data analysis and electronic health record review provide data that is observational in nature and does not offer the opportunity for any clarification or direct participant follow-up. Some of the included studies only reviewed claims for patients enrolled in a specific Medicare plan such as fee-for-service or for those served by a single health care system, thus limiting generalizability. For those studies that used electronic health record review, data may not have been captured if participants obtained preventive services outside of that specific health care system. Finally, inconsistent annual wellness visit implementation and practice and provider differences may have adversely affected outcomes.

Conclusions

Prevention is a priority for older populations worldwide. This scoping review provides preliminary evidence that wellness visits with older adults can support health promotion initiatives. These visits provide a "strategic touchpoint" in the health care system,[25] allowing identification of factors and determinants which contribute to cognitive and functional decline- particularly important for vulnerable and disparate populations. Preventive efforts can and should involve a variety of providers, including nurses. Either as direct care providers or members of an interprofessional team, nurses are vital to these efforts.[31] Future research needs to continue to build upon preliminary evidence of effectiveness, broadening the scope to include studies focused upon lifestyle behavior and risk reduction outcomes. Findings may help health care providers and patients see the value of investing in prevention, and the impact that such an investment can have on health outcomes and quality-of-life.

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