

# Clinical Hypertension Guidelines and Social Determinants of Health: A Systematic Scoping Review

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## Research article

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## **Abstract**

## **Background**

Social and economic factors impact hypertension risk and control. We examined the integration of social determinants of health (SDH) guidance into adult US hypertension guidelines to explore how existing hypertension guidelines reference social care activities.

## **Objective**

To explore how existing hypertension management guidelines reference social care activities.

## **Methods**

Systematic scoping review of clinical guidelines (guidelines, protocols, and professional organization statements) for adult hypertension management. We employed a PubMed search strategy to identify all hypertension guidelines and protocols published in the US between 1977 and 2019. We reviewed all titles to identify the most updated versions focused on non-pregnant adults with essential hypertension. We extracted instances where included guidelines referred to social determinants of health or social care. The primary outcome was how guidelines covered topics related to social care, defined using a framework adapted from the National Academies of Sciences, Engineering and Medicine (NASEM).

## **Results**

Search terms yielded 126 guidelines. Thirty-six guidelines met inclusion criteria. Of those 72% (26/36) recommended social care activities as part of hypertension management; 58% recommended clinicians change clinical care practice based on social risk information. These recommendations often lacked specific guidance around how to address SDH. When guidelines referred to specific social factors, patient financial security was the most common social determinant highlighted (n = 101). Ten guidelines (28%) did not reference social care activities.

## **Conclusion**

Information about social determinants of health is included in many adult hypertension management guidelines, but few guidelines provide clear guidance for clinicians on how to identify and address actionable social risk factors in the context of care delivery.

## **Background**

One third of US adults have hypertension, a major risk factor for mortality from heart disease and stroke(1). Despite the life threatening consequences of uncontrolled hypertension and numerous treatment guidelines for elevated blood pressure, hypertension control is achieved in only half of those diagnosed(1). Hypertension control in the US has improved over the last two decades (from 31.5% for 1999–2000 to 53.3% for 2009–2010), but significant disparities persist(2, 3). Lower income and absence of health insurance increase the risk of uncontrolled hypertension(4, 5). Disparities in blood pressure control likely contribute to higher cardiovascular morbidity and mortality among vulnerable and low socioeconomic groups(2, 6–8). Given the extent and consequences of uncontrolled disease, hypertension control is a central focus of public health, primary care, and several medical sub-specialties.

The rapidly evolving science around social determinants of health (SDH) is relevant to efforts to improve hypertension management. These SDH range from upstream political and social influences to more downstream, non-medical factors in patients' physical and social environments that influence the ability to prevent hypertension and adhere to treatment recommendations. As examples, financial resources affect a patient's ability to purchase medication and healthy food(5); housing stability and quality impact medication storage and access to primary and preventative care(9); restroom access may influence diuretic adherence(10); transportation availability improves clinic attendance(11–13); and both literacy and language can affect patients' understanding medication use(14). As a result, over the last decade the health care sector's interest in and activities around patients' social conditions have expanded(15). We conducted a scoping review of published guidelines on adult hypertension to explore if and how existing guidelines direct clinicians to ask about and to address patients' social conditions as part of hypertension management.

## Methods

### Data Sources and searches

We conducted a systematic scoping review of clinical guidelines and standards for essential hypertension management in adults. A systematic scoping review is the preferred review method “when a body of literature has not yet been comprehensively reviewed, or exhibits a large, complex, or heterogenous nature not amenable to a more precise systematic review,”(16) which is the case in this evolving area of SDH research. Our method was similar to prior scoping reviews (17,18), and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) recommendations.

We defined guidelines as published recommendations for the management of elevated blood pressure, typically in collaboration with a professional organization (for example, National Heart Lung and Blood Institute (NHLBI), American Heart Association (AHA), American College of Cardiology (ACC), American Society of Hypertension (ASH)). Our team worked with an academic medical librarian to develop our search protocol and solicit feedback from our research team. Protocol is available on request from the corresponding author. Using PubMed, we searched for publication type using: hypertension guidelines, clinical guidelines, and clinical recommendations published in the US including all dates up to our search

(see Appendix 1 for search strategy and flow sheet of search in Table 1). Since the National Guidelines Clearinghouse closed in July 2018, we utilized PubMed to abstract titles. We also included additional hypertension guidelines found by searching references from other articles or that were recommended by experts in the field.

### Study Selection

All guideline titles were reviewed to ensure they met inclusion criteria. We included all guidelines on adult hypertension diagnosis or management published between 1977, when the first Report of the Joint National Committee on Detection, Evaluation, and Treatment of High Blood Pressure was published, and 2019. Guidelines addressing non-essential hypertension (pulmonary hypertension, portal hypertension, renovascular hypertension, intra-abdominal hypertension, or intracranial hypertension) were excluded. Pediatric and pregnancy related hypertension guidelines were also excluded. We only included the most recent version of guidelines (same title and organizational authors) with one exception: both JNC7 and JNC8 were included given the differences in scope between the two guidelines.

### Data extraction and assessment

Guidelines meeting inclusion criteria were charted in full. Using natural language processing (NLP), we searched the text of a randomly selected 15 guidelines using SDH search terms developed for a previously published systematic review(18). One author (NR) compared search results with a detailed manual review of these 15 guidelines. We then iteratively added additional SDH search terms to the NLP strategy. After establishing a final list of terms, we applied the NLP search terms to the remaining guidelines to locate text referring to SDH topics (see Appendix 1).

We coded all guidelines using categories established in a recent National Academies of Sciences, Engineering, and Medicine (NASEM) framework(15). In that report, *Integrating Social Care into Health Care Delivery to Improve the Nation's Health*, the committee defined five social care activities foundational to improving care integration at both individual and population levels (5A Framework; see Table 2). To our knowledge, this is the only published framework to classify health care activities related to social care. The report's patient-oriented activities include: 1. Increasing care team *Awareness* of social conditions that influence health; 2. Making *Adjustments* to clinical decision-making based on contextual data; and 3. Providing *Assistance* in the health care setting to link patients with available social resources. The Committee also underscored two community-oriented activities: 4. Those that facilitate *Alignment* of resources between health and social services sectors; and 5. A complementary set of activities that engages the health care sector in *Advocacy* to improve community conditions. We added a sixth category, *Acknowledgement*, to capture guideline content in which the influence of socioeconomic status on health was described outside of the context of specific social care activities.

All SDH-relevant text in the guidelines was then charted by two members of the research team (NR and LG) using the enhanced NASEM definitions of health care activities (see Table 2). We held multiple sessions to address intercoder discrepancies and achieve agreement.

Race and socioeconomic status are often intertwined in the US. Since social care interventions in the NASEM report were not defined by race, for the purposes of this review we did not extract guideline text related to race. The 2019 Healthy People 2020 report similarly excludes race as an SDH category(19).

### Data synthesis and analysis

We summed types of recommendations by social care category. Additionally, within each social care category, we included the frequency of each type of SDH mentioned within guidelines (see Appendix 2).

## Results

We screened 126 titles and reviewed 120 guidelines after excluding 6 duplicates. Thirty-six guidelines met our inclusion criteria (see Table 1 for PRISMA diagram). Of the 36 guidelines reviewed, 10 guidelines (28%) included awareness activities. Twenty-one guidelines (58%) made adjustment recommendations. Six guidelines (17%) mentioned assistance strategies. Five (14%) guidelines mentioned alignment strategies, and eight guidelines (22%) included advocacy recommendations. One guideline acknowledged SDH without referencing any social care activities. Of all reviewed guidelines, 28% (n=10) neither acknowledged SDH nor referenced health activities related to SDH (See Table 2 for summary and Appendix 2 for breakdown of results). Guidelines published in 2019 were more likely to include multiple categories of social care activities than guidelines published in 1991 (the earliest guideline included).

### 1. Awareness

Ten guidelines (28%) recommended activities to identify or screen for social risks and assesses of defined patients and populations. This included screening for patients' ability to pay for medication, health literacy, food access, and transportation availability. As example, a 2004 guideline discussed screening for financial security, health literacy, and insurance status(20); a 1993 guideline on mild hypertension, suggested screening for health literacy(21); the 2017 *Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure* encouraged clinicians to inquire about care affordability(5). Only the 2019 *Clinical Performance and Quality Measures* report recommended the use of a standardized social risk screening tool(22).

### 2. Adjustment

Twenty-one guidelines (58%) recommended activities to adjust clinical care based on patients' social risks. The NASEM report underscores that these activities (to accommodate care to patients' social circumstances) differ from assistance interventions in that they do not intervene on the social risk itself, but instead change care planning based on the social risk. Of the total 63 specific care adjustments mentioned across the 21 guidelines, over half (57% n=36/63) focused on adjustments to accommodate patients' financial security. In these cases, authors acknowledged that cost is a barrier to medication adherence (and therefore hypertension control) and in various ways suggested changing care to reduce medication cost burdens(21,23). Specific examples included prescribing generic alternatives(5,24–27),

once daily dosages(5,25), combination pills(28), long-acting medication formulations(5,27), and increasing the number of pills dispensed in each prescription to minimize pharmacy visits and co-payments(5). The 2017 *Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure* also recommended providing patients with scored tablets or pill cutters to reduce costs(5).

Guidelines also included other strategies to accommodate access barriers. For instance, guidelines described efforts to limit the number and frequency of medical visits(29); increase telehealth(22); utilize electronic health record to tailor health advice to patients based on their social risk(22); use remote blood pressure monitoring(26,30,31); or offer medication home delivery(22). Two highlighted opportunities to minimize laboratory tests(23,31). Three others suggested addressing patients' transportation barriers through reducing frequency of office visits to minimize co-payments(5,31,32). A 2013 guideline recommended that emergency medicine physicians initiate blood pressure medications in asymptomatic patients when patients were in social circumstances that might prevent them from establishing primary care(33).

In addition to adjustments to reduce patient cost, several guidelines recommended adjusting care for patients based on education, literacy level, and cultural background(5,23). Specific examples included ensuring the presence of translators, improving providers' cultural competency, and increasing the availability of linguistically-appropriate educational materials(5,23,34).

A 2019 *Clinical Performance and Quality Measures* report highlighted that health systems can omit patients from the denominator of some hypertension quality metrics if patients have economic or access barriers to medication adherence(22).

### 3. Assistance

Six guidelines (17%) described assistance strategies for health care teams to improve patients' hypertension management by directly intervening on social risks themselves. These recommendations involved using clinic or community-based social service providers, e.g. community health workers, social workers, or case managers, to facilitate connections with community or government social services(22,29), including housing programs, food banks or other nutrition programs(23,35), insurance or medication access programs(35), or utility assistance programs(5).

### 4. Alignment

The 2019 NASEM framework also defined health care sector activities outside of clinical care related to strengthening community SDH resources and supports. Five (14%) guidelines raised topics related to alignment strategies. For example, a 2005 publication on cardiovascular disease and minority health recommended several community education strategies, such as dissemination of physical activity and nutrition information to marginalized communities(34). JNC7 and the 2017 *Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure* elevated community organizations as

liaisons to bridge cultural and language barriers and establish community-based HTN screening and referral programs(5,35). A 2019 report highlighted ways to strengthen community partnerships that provide healthy food and enroll individuals in federal nutrition assistance programs(22).

## 5. Advocacy

Eight guidelines (22%) described ways that health care organizations can promote policies or societal investments that increase the availability of social resources as part of a strategy for reducing hypertension prevalence and morbidity. Seven of these described ways health systems can work with insurers to improve incentives and/or lower costs of care. In the 2017 *Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure*, the authors wrote: “Greater attention is being paid to the influence of health insurance coverage and benefit designs focused on reducing patient copayments for antihypertensive medications”(5). Beyond copayments and coverage, several guidelines referenced specific activities that if reimburseable, could improve hypertension control, including obesity treatments(34) and home blood pressure monitors (HBPM)(36); one emphasized the importance of developing quality measures related to SDH to standardize blood pressure management(22).

Five guidelines surfaced the importance of healthy food access as a key area for societal interventions(5,34,35,37,38). These guidelines emphasized the need for policy changes to increase the availability of healthy foods and access to physical activity. A 2017 guideline called on food manufacturers to reduce “the amount of sodium in food processing, as well as in fast food and restaurant food preparation”(5). This echoes earlier guidelines’ suggestions to reduce marketing of “high-calorie, low-nutrient-density products to young children or people of color”(34) and to lobby the food industry “to progressively reduce the salt added to foods by 50% over the next 10 years”(38).

Four guidelines called for increased research funding to improve evidence on the social and economic aspects of blood pressure control(5,22,23,34). This included advocating for researchers, clinicians, and research subjects from diverse backgrounds(34) and increased focus on care in low socioeconomic settings(5).

## 6. Acknowledgement

Of the 36 guidelines, 10 did not reference social determinants of health or related search terms. Of the remaining 26, one guideline described the relevance of SDH to hypertension management but did not refer to any NASEM action categories (awareness, assistance, adjustment, alignment, or advocacy) in the rest of the guideline sections. Seventeen guidelines included text acknowledging that SDH influence hypertension management in sections that did not otherwise recommend a specific social care activity. In these seventeen guidelines, authors referred to at least one NASEM action category in another section. Economic constraints (described in 36 of the 84 references to acknowledgement activities) were the most common social domain mentioned without explicit social care recommendations. In these instances, financial status was generally linked with hypertension risk factors and care(5,21,22,26,29,34,35,39) or to

more specific hypertension treatment barriers, such as medication affordability(5,22–24,26,29,35,40), lack of health insurance coverage(5,23,29,34,41), or otherwise limited access to care(25–27,29,34,35,39). Beyond financial risk, multiple guidelines referred to language and education barriers to prevention and treatment (5,22,23,25,26,29,35), absence of safe space for physical activity(5,35), and lack of adequate healthy food(5,27,31,34,35,38).

## Conclusion

Across the US there is growing recognition that patients' social conditions affect disease risk, severity, and treatment. In hypertension, there is strong and compelling evidence that SDH such as education, financial stability, and access to healthcare impact blood pressure control and other cardiovascular disease(42). In this review of 36 adult hypertension management guidelines, 3/4 of guidelines acknowledged these associations between SDH and hypertension management and outcomes. Not surprisingly, references to SDH were more common in more recent publications. Nearly 1/3 of the guidelines, however, did not include recommendations for health care clinical teams or health care systems regarding actions to address SDH to improve hypertension prevention or treatment. When they were made, recommendations were inconsistent across different guidelines. Review findings suggest that there are ongoing translational gaps between the impact of social care on hypertension management and how equipped clinicians and health systems are to use that information to improve patient and population health.

What else do these findings tell us about hypertension-related social care? First, in cases where guidelines did make social care recommendations, there is an incongruence between screening and intervention recommendations. Of the 27 guidelines that recommended clinical care changes (whether adjustment or assistance) based on patients' social risk, only 10 recommended some form of social risk screening. Of those, only one suggested using a standardized social risk assessment tool(22). This may reflect the fact that more evidence is needed on social risk screening, including measure validity, implementation feasibility, and relevance for informing subsequent interventions(43). Prior research not limited to hypertension suggests patients find social risk screening acceptable(44,45) and that clinicians are unlikely to accurately gauge patients' social risks without those assessments(46). Without robust social risk assessments, targeting patients with hypertension who could benefit from social care programs will be more difficult and any effective interventions will be underutilized.

Second, though there are instances where adjustment and assistance recommendations were described in hypertension guidelines, there is little consistency or evidence-based information in the guidelines about how clinicians can intervene on social risk to improve hypertension outcomes. For instance, only nine of the 36 guidelines suggested changes to medication regimens to address hypertension treatment barriers for low-income patients(5,21,23,25,26,28,29,31,39). There is considerable evidence on this topic that could be reflected in future guideline development. One recent review found that use of brand name antihypertensive medications resulted in higher costs for patients and lowered adherence(47). Other studies found that combination pills, which include two or more medications in a single pill, improved

adherence, likely both because combination pills lower costs and reduce regimen complexity(48,49). Medication adherence decreases consistently with each additional antihypertensive medication prescribed(50). A multi-pronged approach to hypertension intended to decrease health disparities across Kaiser Permanente involved SDH-related adjustment strategies, including standardized treatment algorithms to encourage combination pills as first line treatment (therefore reducing the number of pills, frequency of dosing, and costs)(51–53). Several studies have documented improved blood pressure medication adherence with reduced co-payments(54–56).

Only five guidelines described SDH adjustment strategies related to care cost and coverage not specific to medications (this included recommending home blood pressure monitors, longer medication refills to reduce pharmacy trips, and increasing telehealth options). Similarly, future guidelines should review related evidence in this area. A review of international health systems found that having health insurance coverage, a regular physician, and minimal copayments improved hypertension management(57). In addition, a study offering free care to low-income individuals with hypertension improved diastolic blood pressure and reduced CVD risk(56,58). This evidence underscores that while low cost medications could improve hypertension control for all individuals, they are particularly important for vulnerable groups.

Other adjustment strategies that rarely appeared in the guidelines involve using multi-disciplinary care teams to provide care concordant with patients' language, literacy, and cultural norms or to bridge patients to community or government programs that provide social services. But here, too, there is a growing evidence base specific to hypertension on which to draw in future guideline development. For example, health education programs for patients with poor literacy have improved systolic blood pressure(14,59). Community health worker-delivered counseling and education around cardiovascular risk prevention improved both systolic and diastolic blood pressure(60–62). Peer education and increased workforce diversity both maximized language concordance between patients and providers and reduced hypertension disparities between different patient groups in Kaiser's southern California region(53). And a 2017 primary care based study found that social screening and assistance-type navigation services modestly improved blood pressure and lipid levels(63). Overall, future guidelines might better incorporate emerging, multi-disciplinary research on interventions that can mitigate the impacts of socioeconomic risks on blood pressure control and adherence(49,50,66,51,52,54–56,63–65)—including adjustments to medication, cost of care, and team-based care.

Finally, 22% of the treatment guidelines included advocacy recommendations as a strategy to improve hypertension care, but these recommendations were rarely accompanied by evidence about the effective roles for health care professionals in those advocacy activities. Since some health professionals are hesitant to embrace advocacy roles (67) and others lack skills and/or opportunities to participate in advocacy, operationalizing these recommendations is likely to require dedicated training and supports for health professionals(68).

Our study has several limitations. Given that the National Guideline Clearinghouse closed in 2018, it is difficult to ensure that we identified all relevant adult essential hypertension guidelines. We consulted

with a medical librarian to design our search strategy, however, and there is no reason that omitted guidelines should systematically differ from those included in the review. Our review also was limited to published guidelines in the United States. Countries with different health care infrastructure and payment models may better address patients' social contexts as part of care delivery. We did not include race in our SDH-related search strategy. Yet we recognize that race, racism, and discrimination are inextricably tied to SDH in the US. Future reviews should explore how hypertension guidelines acknowledge and recommend interventions related to race, racism, discrimination, and distrust. Lastly, in some cases, the guidelines did not provide sufficient detail to understand all aspects of a given recommendation. We used an iterative two-reviewer process to discuss recommendations that were challenging to categorize using the NASEM framework, but it is possible that some of the 243 references to SDH may have been miscategorized. We do not believe that this would change overall findings of this review.

Despite these limitations, to our knowledge, this is the first scoping review to use the NASEM framework on social care activities to gauge the translation of SDH science into clinical care disease guidelines. We found a wide range of social care recommendations in clinical guidelines on the prevention, treatment, and management of hypertension in adults. But the lack of consistency in these guidelines about social care signals that the evidence on these activities is not yet sufficiently developed or mainstream. More attention should be paid to strengthening research in this area, including efforts to assess patients' social risks and to intervene on identified risks to improve hypertension prevention and treatment. As this evidence grows, future guidelines will need to ensure both specificity and actionability of new recommendations about social care to facilitate implementation.

In a recent article highlighting gaps between hypertension guidelines and clinical practice, Jennifer DeVoe writes, "Where was the evidence-based guideline to answer [the patient's] questions about whether spending money to buy this medication was more important than buying the healthy foods [the care team] had also recommended?"(69) Our review underscores DeVoe's point: existing guidelines fail to provide clinicians with comprehensive, actionable, evidence-based guidance on how to integrate our growing knowledge about SDH into patient care. Attending to a patient's housing, financial situation, and food security should not leave clinicians feeling like they are providing suboptimal hypertension care. Improving hypertension outcomes and decreasing hypertension disparities will require that the health care delivery system more systematically incorporate SDH-related interventions into hypertension management; the what, when, and how of those interventions will need to be more explicitly incorporated into future guidelines to help scale effective programs.

## **Abbreviations**

SDH- Social Determinants of Health

NASEM- National Academies of Sciences, Engineering and Medicine

NHLBI- National Heart, Lung and Blood Institute

AHA- American Heart Association

ACC- American College of Cardiology

ASH- American Society of Hypertension

JNC- Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure

NLP- Natural Language Processing

## **Declarations**

### **Ethics approval and consent to participate:**

Not applicable

#### **Consent for publication:**

Not applicable

#### **Availability of data and material:**

No dataset was used for this manuscript. Included guidelines are available in appendix 2.

#### **Competing Interests:**

None

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### **Author contribution:**

NR and LG designed and conducted the analysis and writing of the manuscript. DH and KB contributed to the interpretation of data and critical revisions of the manuscript. All authors have approved the contents of this paper.

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## Appendix

- Search Strategy and Search Terms

(guideline[Publication Type] OR Practice Guideline [Publication Type] OR Clinical Guideline[Publication Type]) AND hypertension [Title] AND United States [PI]

<b>Financial security</b>	<b>Transportation &amp; Accessibility</b>	<b>Education &amp; literacy</b>	<b>Food security</b>	<b>Housing security</b>	<b>Other</b>
Cost	Transportation	Education	Insecure	Home/less	Social determinants
Poverty	Accessibility	Health literacy	Food	Homelessness	Resource constrained
Poor	Access	Language	Hunger	Housing	Resources
Financial	walkability	Training		Neighborhood	Disparities
Affordability					Socioeconomic
Discount					Socio-economic
Income					Sociodemographic
Employment					Primary Care
Debt					Health Coverage
Bill					Culture
Insurance					Cultural competency
Economic					Safety
Expense					Violence

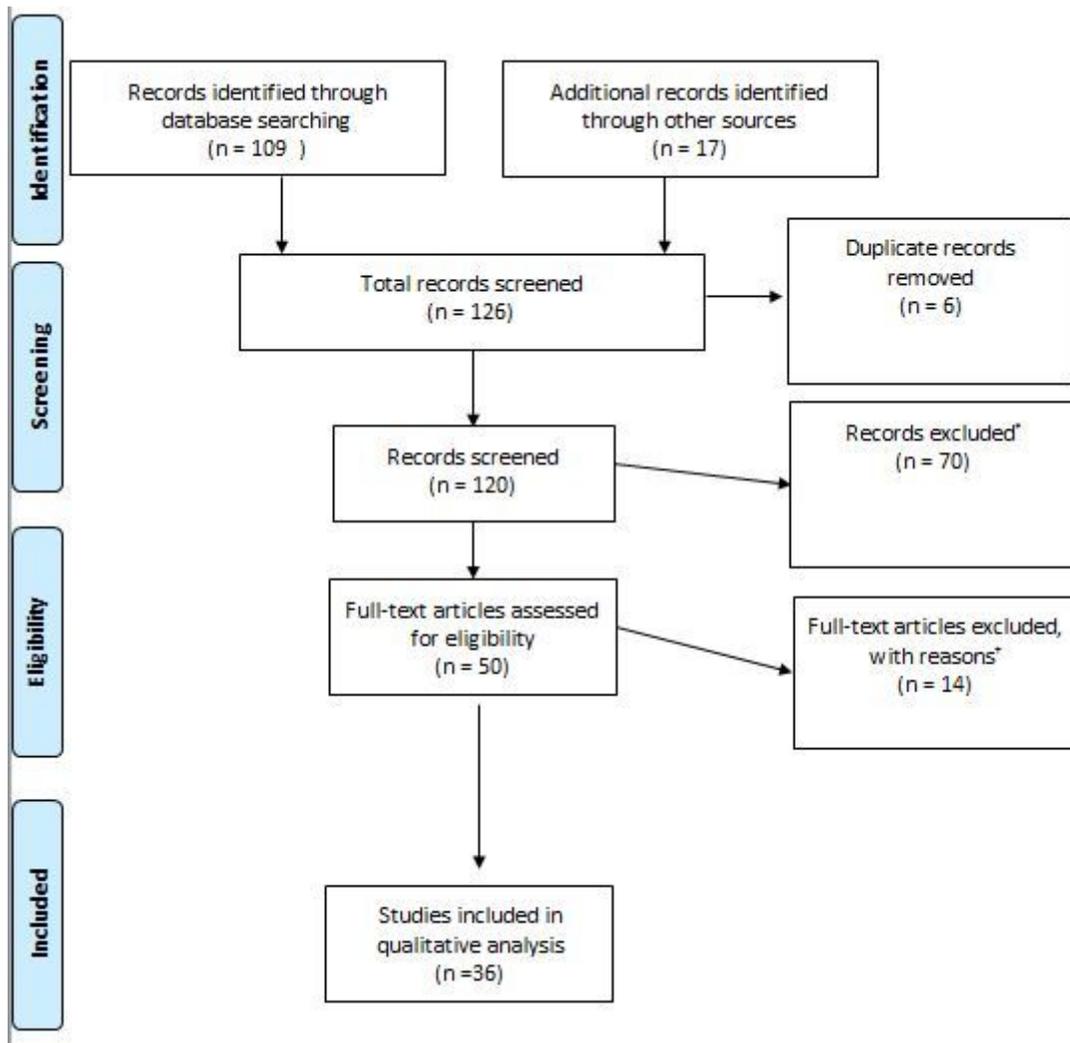
## Tables

Table 2: Definitions of health care system activities that strengthen social care integration and number of guidelines including health care activities related to social care, by category

Activity	Definition	Transportation related example	N=36 (%)	Selected Example
Awareness	Activities that identify the social risk and assets of defined patients and populations	Ask people about their access to transportation	10 (28)	<ul style="list-style-type: none"> <li>· “Learning how the patient financially supports and budgets for his or her medical care and medications offers the opportunity to share additional insight relating to cost reductions, including restructured payment plans”(5).</li> <li>· “Utilization of a standardized tool, such as the Accountable Health Communities Screening Tool to screen health-related social needs in clinical settings”(22).</li> </ul>
Adjustment	Activities that focus on altering clinical care to accommodate identified social barriers	Reduce the need for in-person appointments by using other options such as telehealth appointments or reduce frequency of appointments.	21 (58)	<ul style="list-style-type: none"> <li>· “Although higher-risk individuals should be treated pharmacologically, careful choice of drugs with increased emphasis on cost-effectiveness becomes particularly important with growing economic constraints”(21).</li> </ul>
Assistance	Activities that reduce social risk by connecting patients with relevant social care resources	Providing transportation vouchers so that patients can travel to health care appointments. Vouchers can be used for ride-sharing services or public transportation.	6 (17)	<ul style="list-style-type: none"> <li>· “Referral to other members of the team with appropriate expertise should be considered when encountering barriers to regimen adherence such as cost”(20).</li> </ul>
Alignment	Activities undertaken by health care systems to understand existing social care assets in the community, organize them to facilitate synergies, and invest in and	Invest in community ride-sharing programs; offer home visits by community health workers to monitor blood pressure	5 (14)	<ul style="list-style-type: none"> <li>· “Creation of partnerships with community organizations that provide healthy food and assist with enrollment in federal nutrition assistance programs”(22).</li> </ul>

	deploy them to positively affect health outcomes			
Advocacy	Activities in which health care organizations work with partner social care organizations to promote policies that facilitate the creation and redeployment of assets or resources to address health and social needs.	Work to promote policies that fundamentally change the transportation infrastructure within the community or the location of clinics to improve accessibility.	8 (22)	<ul style="list-style-type: none"> <li>· “Lobby the food and entertainment industries for standards of conduct that limit the aggressive targeting of advertising and marketing of high-calorie, low-nutrient-density products to young children or people of color”(34).</li> <li>· “The recent recommendations by the American Public Health Association and the NHBPEP Coordinating Committee that the food industry, including manufacturers and restaurants, reduce sodium in the food supply by 50 percent over the next decade is the type of approach which, if implemented, would reduce BP in the population”(35).</li> </ul>
Acknowledgement	Any mention the influence of socioeconomic status on health <i>without reference to specific social care integration activities.</i>	Mention that patients may face transportation barriers to reach their clinical appointments	18 (50)	<ul style="list-style-type: none"> <li>· “We are aware that there is great variability in access to medical care among communities”(27).</li> <li>· “The best treatments are of no use to a patient if he or she cannot access the healthcare system, has inadequate services, or obtains health care too late to change the outcome”(29).</li> </ul>
Acknowledge Only	Guidelines includes <i>only</i> acknowledgement activities		1 (3)	
None	No mention of any social care activity		10 (28)	

## Figures



**Figure 1**

PRISMA inclusion flow diagram. Reasons for exclusion: Pediatric n=13; Non-essential hypertension (pulmonary hypertension, intracranial hypertension, portal hypertension, radiology findings, renal hypertension, intraabdominal hypertension n=37; Outside of US guidelines n= 6; Pregnancy n= 10) ;4 were not guidelines. † Unable to locate 3 guidelines; 11 excluded because a more updated guideline existed.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [PRISMA ScR Fillable Checklist 10 Sept 2019.docx](#)
- [Appendix 2 HTN list Final 8.5.20.xlsx](#)