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Approaches to Hypertension Management in Patients Over Eighty Years Old

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Running Head: Approaches to Hypertension Management in Patients Over Eighty Years Old

Approaches to Hypertension Management in Patients Over Eighty Years Old

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PERMISSION

Title Hypertension Management in Patients Over Eighty Years Old

Department Nursing

Degree Master of Science

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Abstract

Updated hypertension guidelines released in 2017 by the American College of Cardiology (ACC) means more Americans than ever will be considered hypertensive. In the following case study, the patient presents a situation that is common for providers to encounter: hypertension in a person over eighty years old. This population lacks specific guidelines and expert agreement of how to best manage hypertension (Hansell, Mann, & Kirk, 2017). Major risk factors of treating octogenarians' and nonagenarians' hypertension in particular include frailty and polypharmacy. Providers and patients alike may fear adverse effects from medications used to treat hypertension. These include hypotension and decreased cerebral perfusion, which can lead to lightheadedness, confusion, cognitive impairment, and falls among other side effects (Lipsitz, 2013).

As patients over eighty years old are at an increased risk of frailty and polypharmacy, hypertensive patients in this age group should be closely and frequently assessed for both by providers. This can be calculated through interpreting risk factors including mental status, comorbidities, and environment (Benetos, et. al., 2017a). Hypertension is best managed and adverse reactions to medications can be avoided by treating hypertension with a low dose of two varying classes of antihypertensive medications, rather than increasing the dose of one medication (ACC, 2017; & Hansell, et. al., 2017). In vulnerable or high-risk patients, an individualized approach to hypertension treatment through medication management should be carefully enacted. This includes frequent and close follow up and may include higher target blood pressures than outlined by expert guidelines (Benetos, et. al., 2015b).

Background

As the population ages in the United States and individuals are generally living longer than they ever have, more patients are diagnosed with hypertension due to physiologic changes that occur over time. Stiffening of vascular structures and decreased baroreceptor activity are both major causes of hypertension in the elderly and also the cause of greater variation in blood pressure throughout the day. This can also lead to increased episodes of hypotension and is associated with cognitive impairment (Lipsitz, 2013). Increasingly strict categorization and management guidelines by groups such as the ACC and the American Heart Association (AHA) means that almost half of the adult population in the United States will be considered hypertensive (ACC, 2017).

High blood pressure is often an incidental finding in clinical appointments, as it is screened for frequently but patients are rarely symptomatic. In the case report that follows, the patient was an eighty-nine-year-old female who presented to the clinic with a complaint other than hypertension. However, despite her current antihypertensive medication, her blood pressure reading of 148/86 would place her in the stage II hypertensive category of the current ACC and AHA guidelines (See Appendix). Through careful screening, hypertensive patients can be identified and appropriate interventions should be followed as outlined by current evidence based data to lower blood pressure to acceptable levels.

Treatment of hypertension is not without risks, however, and for the population over age eighty, these risks of treatment may outweigh the benefits. This is particularly true for frail elderly, who may be especially vulnerable to adverse effects from antihypertensive medications which can be vast and harmful. Major concerns that practitioners and patients alike have with medication treatment of hypertension in the very old are syncope and falls (Lipsitz, 2013).

Polypharmacy is also a major concern in this population as more conditions are treated with progressing age. This review is presented to identify and report current evidence about patients over eighty years old and when hypertension should be pharmacologically managed.

Case Report

The patient, E.L. was an eighty-nine year-old Caucasian female presenting with the chief complaint of a cough. Vital signs at the visit included a heart rate of 80, blood pressure of 148/86, temperature of 98.6 degrees Fahrenheit, and respirations at sixteen breaths per minute. The patient was slightly overweight with a body mass index of twenty-seven.

E.L. was calm, pleasant, and in no apparent distress during the visit. She described that she had been to a different clinic with the complaint of the same cough about a month prior. She was given a prescription cough suppressant, which she could not remember the name of, and reported it had not helped her cough. She had finished the bottle by the time of this clinic visit and was increasingly frustrated with her cough. The cough was worst at night, but nothing else seemed to improve it or worsen it. A complete review of systems was obtained, and all areas were negative, including no fever, malaise, or weight loss. "I feel pretty good in general, it's just this darn cough," the patient explained. The cough was described as dry and not productive. The only other medications she reported taking included Lisinopril ten milligrams once daily for hypertension. She had been taking this for over three years. Additionally, she used calcium carbonate tablets daily to ease her heartburn symptoms.

E.L.'s medical history was unremarkable except for hypertension. She complained of heart burn and reflux during the clinic visit, but stated she had never been formally diagnosed with acid reflux or gastroesophageal reflux disease (GERD). E.L.'s surgical history was also unremarkable. Her family history she was greatly unsure of, except she knew her parents most

likely had high blood pressure or heart disease. Socially, she was retired, and had smoked cigarettes for several decades, but quit some time ago. She was a poor historian when it came to her smoking history, so a pack-year history was unable to be calculated.

Physical exam and assessment of E.L. were unremarkable. Her lung sounds were clear, and her heart sounds revealed no murmurs, gallops, rubs, or clicks. She had no edema around her ankles or feet. No pain was appreciated upon palpation in her gastric area. A chest X-Ray was obtained and was normal except for some degenerative changes in the patient's spine. It was negative for any consolidations, fluid, or masses in her lungs or pleural space and her heart size was normal.

Differential diagnoses for her cough included poorly controlled GERD, heart failure, or a side effect from her Lisinopril prescription. The patient was placed on Ranitidine 150 milligrams twice daily and was thoroughly taught about the medication and its usage. She was instructed to return to clinic in four weeks, or sooner if the Ranitidine did not help to alleviate her cough or if any new symptoms arose or worsened.

E.L.'s blood pressure was elevated in the visit, and she was instructed to check it at home several times in the following weeks at various times of day, write them down, and bring them to her follow up appointment. She reported no side effects from the Lisinopril she was currently taking, but the provider explained to E.L. that at her follow up visit she may need increased dosing of her Lisinopril or the addition of another medication to better control her blood pressure daily. This greatly concerned E.L. as she was very afraid of falling and injuring herself and was aware that anti-hypertensive medications can cause low blood pressure, and therefore dizziness or lightheadedness. She also reported many of her friends that take a "water pill" complain about having to use the bathroom more frequently, especially at night. E.L. asked, "at eighty-nine years

old, isn't it good enough? I don't want to be on a lot of pills with a lot of side effects, and it's not even that high!"

Literature Review

As almost a nonagenarian with hypertension, E.L. is at higher risk for cardiovascular events and death related to stroke, myocardial infarction, renal disease, or heart failure (AHA, 2018). However, her concerns of pharmacological treatment for her hypertension remain valid. The risks of antihypertensive medications, like falls from hypotensive episodes, increased urinary frequency or nocturia, and other various side effects may outweigh the benefits of treating minor to moderate hypertension in her age group. Additionally, many elderly individuals may be skeptical of treating a symptomless, silent condition, like newly diagnosed hypertension. For others with poorly controlled or worsening hypertension, they could be reluctant to agree to an increase or change in their prescribed medication regimen.

In November 2017, the ACC and AHA updated their High Blood Pressure Guidelines for the first time since 2003 (See Appendix). Together, they reduced the treatment threshold from 140/90 to 130/80, which calls for earlier and increased interventions for many in the United States (ACC, 2017; AHA, 2018). In their general recommendations outlined, age groups are only vaguely discussed. For Stage I hypertension, which is a systolic blood pressure (SBP) of 130 to 139 and diastolic blood pressure (DBP) of 80 to 89, medications should only be prescribed "if a patient has already had a heart attack or stroke, or is at high risk of heart attack or stroke based on age, the presence of diabetes mellitus, chronic kidney disease, or calculation of atherosclerotic risk" (ACC, 2017, p. 2). The guidelines were developed with a panel of over twenty scientists, overseen by the Joint National Committee (JNC) as well as the National Heart, Lung, and Blood Institute, and in collaboration with several other professional health organizations (ACC, 2017).

When the treatment of hypertensive elderly patients is specifically discussed in detail of the ACC 2017 guidelines, all patients aged sixty-five and older are categorized together in the same treatment plan. These recommendations for all adults over sixty-five state that as long as patients are community-dwelling and ambulatory with a SBP of greater than 130, they should be treated for hypertension (Whelton, et. al., 2017). The guidelines go on to state that if a “high burden of comorbidity” is present for the adult over age sixty-five, the clinician should use best judgment and patient’s preference to guide a decision (Whelton, et. al., 2017, p. 134). While frailty, polypharmacy, and declining cognitive function of the patient in question are recognized as potential barriers to treating hypertension in many elderly patients, explicit instructions for the treatment of patients who have these conditions are not specifically addressed in any category by the ACC, even in the sections regarding treating hypertension with other comorbidities present (Whelton, et. al., 2017). Hypertension guidelines from the Joint National Committee were presented recently in 2014 as well, stating that all patients over sixty years old should have a goal blood pressure of less than 150/90. Again, patients over eighty years old are not specifically accounted for (James, et. al., 2014). These contrasting recommendations and lack of guidelines specific to patients over eighty years old leaves a great amount of room for interpretation when treating hypertensive patients in this age group.

A literature review was performed to best assess current recommendations for practice in management and treatment of hypertension in individuals eighty years old and older. The search engine used was the Cumulative Index of Nursing and Health Literature (CINAHL). Parameters were set and maintained to years 2013 through 2018 as well as “English Language” and “Peer Reviewed.” The first search performed was “blood pressure management eighty frail” in the all text keyword option to see if key words throughout the whole text of an article would be

identified. This yielded four results, two of which were relevant to this analysis. Next, “blood pressure” reduced to the “title” search, and “frail” and “elderly” were searched within all keyword text. This yielded twelve results, of which three were considered relevant after review. “Hypertension” was searched in the title section with “frail” and “older than” in the all text keyword parameter. This found fourteen articles, and two more were determined to be relevant to the topic in question. When “blood pressure nonagenarian” was searched in the all text keyword option, this generated fourteen results, two of which were appropriate to use. Articles that were found but excluded throughout the search were frequently studying other specific variables not relevant to this topic, such as Diabetes Mellitus, or involved patients being hospitalized only.

To begin the management of new or worsening hypertension in an elderly patient, approaches are similar to other younger adults. A thorough evaluation of the elderly hypertensive patient’s lifestyle and diet, current medications, and when and how the blood pressure reading was attained should all be considered thoroughly before treatment is initiated (Hansell, et. al., 2017). At any stage of hypertension, renal damage should be assessed, and in resistant hypertension, a renal ultrasound with duplex is advised. Hypertension is classified as resistant when three or more classes of antihypertensive medications will not control the blood pressure (Hansell, et. al., 2017). A sleep study may still be warranted even if previously performed, as sleep apnea can arise or worsen even in very old age, and when untreated can cause high blood pressure. While seemingly obvious and simple, support staff also may need to be reminded on proper technique when taking a patient’s blood pressure to ensure the patient has been seated for more than five minutes and was not talking during the reading (Hansell, et. al., 2017).

While presenting blood pressure readings of patients are often the main focus, past readings of octogenarians’ and nonagenarians’ blood pressures should also be closely analyzed

by the provider. When compared to those aged sixty-five to eighty-four, those eighty-five years and older actually had both lower and better-controlled blood pressure readings than the younger elderly group (Zdrowski, et. al., 2016). Ravindrarajah, et. al., also found that in patients both medically treated and untreated for hypertension, blood pressure values decreased substantially in patients in their eighties (Ravindrarajah, Dregan, Hazra, Hamada, Jackson, & Gulliford, 2017). From a daily standpoint, eating, sleeping, and various activities can have a substantial impact on an elderly patient's blood pressure. A record of multiple blood pressure readings over a three-week span should be closely analyzed before a patient that is over eighty's medication regimen is changed or increased (Lipsitz, 2013).

Polypharmacy is of great concern in elderly patients over eighty years old. Despite this, the treatment of hypertension remains the same as for all members of the population: when necessary, two different classes of antihypertensive medications should be combined at a low dose rather than maximizing one medication to reach the goal blood pressure (ACC, 2017; & Hansell, et. al., 2017). Antihypertensive medications at a low dose reduce the risk of adverse effects, even when two are combined, and can be eighty percent as effective as when the medication is at the standard prescribed dose (Hansell, et. al., 2017). All medications, including those to treat hypertension, should be frequently analyzed and reassessed by health care providers for very old patients. In patients over eighty years old in a long-term care setting, one analysis uncovered that forty percent of patients were receiving too much treatment for their hypertension, as their average blood pressure readings were considered hypotensive (Schwinn, et. al., 2017). In the same study, seventy-five percent of patients with other comorbid conditions were not meeting hypertension treatment recommendations outlined by current guidelines. In particular, only about forty percent of patients studied with diabetes or chronic renal failure were

receiving an ACE inhibitor or Angiotensin II receptor blocker (Schwinn, et. al., 2017). Other types of medications to consider in the hypertensive elderly include non-steroidal anti-inflammatory drugs, corticosteroids, selective norepinephrine reuptake inhibitors, and high doses of decongestants. All of these can raise blood pressure and should be reduced or eliminated when possible to improve blood pressure and reduce the risks of polypharmacy (Hansell, et. al., 2017).

The Hypertension in the Very Elderly Trial (HYVET study) is the only identified study where Hypertension and its treatment and outcomes were analyzed in a double-blind randomized control study with a placebo group specifically in people over eighty years old. The largest study identified, three thousand people with hypertension were selected to participate (Becket, et. al., 2008). The HYVET study is frequently mentioned, referenced, and analyzed by many of the selected current articles that were reviewed, including the 2017 ACC guidelines. A thirty percent reduction in strokes as well as a thirty-nine percent reduction in strokes leading to death was identified for the active-treatment group in the HYVET study (Beckett, et. al., 2008). However, this specific finding was not statistically significant. This loss of power and ethical concerns caused the study to be terminated early in 2005 (Becket, et. al., 2008; Benetos, et. al., 2015b). Cardiovascular causes of death, heart failure rates, and death in general from any cause were all reduced in the active-treatment group receiving the medications (Beckett, et. al., 2008). These conclusions presented from the HYVET study, although not completed, imply that pharmacologically treating all patients over eighty years old for their hypertension will lead to an overall reduction in mortality.

HYVET was considered a landmark study and is directly cited by the ACC as showing favorable outcomes for aggressively treating hypertension in the elderly (Whelton, et. al., 2017). Nonetheless, Benetos, et. al., (2015b) points out that there are many flaws in the HYVET study

not realistic to practice. Individuals with SBP of 140 to 160 were excluded from the study, as only those with a SBP of greater than 160 were studied. HYVET also only studied generally healthy citizens, as it excluded people from participating if they suffered from cardiovascular disease, dementia, kidney failure, or if they required daily nursing care. While some frail elderly patients were included in the study, those at higher risk of cognitive decline or orthostatic hypotension were omitted from the study (Benetos, et. al., 2015b). When it comes to the elderly, those with less comorbidities, frailty, and better general health are likely selected for studies such as HYVET (Pajewski, et. al., 2016). Realistically, many of the general population of elderly with hypertension will fit a profile that involves other diseases and frailty more than those studied. This means that the data from HYVET used to form guidelines from the ACC were from patients that are not an accurate reflection of the general public.

In hypertension management, little is known about the benefits or risks when treating very old, frail, institutionalized patients. In fact, the HYVET study's findings are contrasted in "Treatment With Multiple Blood Pressure Medications, Achieved Blood Pressure, and Mortality in Older Nursing Home Residents: The PARTAGE Study" of 2015 (Benetos, et. al., 2015a). The PARTAGE Study directly analyzed frail people in nursing homes over eighty years old and concluded that those with a SBP under 130 and taking two or more antihypertensive medications were found to have more than double the risk of mortality (Benetos, et. al., 2015a). Similarly, Formiga, et. al., present that when nonagenarians' blood pressures, cognitive status, and mortality risk were studied over two years, lower SBPs and poor cognitive status were associated with higher mortality (Formiga, Ferrer, Sobrino, Riera-Mestre, Coca, & Pujol, 2009). When SBP was analyzed over five years in a group of ninety-year olds from the Netherlands, a decreasing trend was strongly associated with all-cause mortality. This, again, was observed in

patients that were both pharmacologically treated and not treated for hypertension. The results were more significant in those living in a care facility (Poortvliet, et. al., 2013).

Lacking studies and clear hypertension treatment recommendations, elderly patients that are considered frail must be identified and thoroughly assessed with a benefit and risk analysis before hypertension treatment begins or is increased. Patients in their eighties, nineties, and beyond are at a significantly heightened risk of frailty, especially if they reside in a care center. Other disease states, falls and fear of falls, depression, incontinence, cognitive impairment, and lack of physical reserve can all be considered major contributing factors to frailty (Benetos, et. al., 2015b). In these vulnerable patients, reduced cerebral perfusion and orthostatic hypotension are often of great concern for providers (Lipsitz, 2013). Confusion, drowsiness, faintness, and dizziness can all be symptoms of hypotension, which can lead to falls or other potentially catastrophic events (Schwinn, et. al., 2016).

While tedious, the frailty status of a patient in question can be interpreted by use of combined data from assessments like a cognitive exam, gait-speed walking test, depression self-ratings like the Patient Health Questionnaire-9, as well as analysis of laboratory tests to assess for disease states (Pajewski, et. al., 2016). A Comprehensive Geriatric Assessment (CGA) also is an effective way to determine an elderly patient's benefit and risk analysis when it comes to a new medication like an antihypertensive. Similar to a frailty analysis, a multi-disciplined approach should be used for a thorough CGA that includes an analysis of disease states and comorbidities, nutritional status, psychological state, functional mobility, living environment, social support, as well as a medication review (Benetos, et. al., 2015b).

Published just before the release of the new High Blood Pressure Guidelines by the ACC, Hansell, Mann, and Kirk (2017) discuss using evidence-based practice when treating

hypertension in the very old and how to best incorporate various comorbidities, cognitive decline, and frailty into the practical management of these patients. While they do indeed recommend following strict guidelines when appropriate in elderly adults, those that are diabetic or residing in a care facility should be excluded (Hansell, et. al., 2017). Other recognized barriers of treatment for many patients include side effects of medications or other adverse effects, such as syncope, bradycardia, or electrolyte deficiencies. In these cases, higher blood pressure readings than the guidelines suggest may be acceptable and even recommended. Although specific goal blood pressures are not presented, a goal for SBP of less than 140 will still be beneficial in elderly patients who cannot tolerate attempts at lower goals (Hansell, et. al., 2017). Benetos, et. al., also advises that a SBP goal of less than 150 may be satisfactory in many elderly patients (2015b).

Conclusion

No specific guidelines exist for the ideal blood pressure goal of patients over eighty years old. The only randomized control trial with placebo-control ever conducted to study hypertension management in adults living in the community in this age group is the HYVET study (Benetos, et. al., 2015b). Although medication management to control hypertension can reduce the risks of stroke, myocardial infarction, and other diseases, there are many risks associated with treatment for the elderly (Hansell, et. al., 2017). The current guidelines presented by the ACC and AHA should be considered a starting point, but as risk factors such as frailty are identified, treatment should be individualized, and higher blood pressures are often acceptable and safer (Benetos, et. al., 2015b). Appropriate interventions should be performed to reduce polypharmacy, high-risk lifestyle factors, and other potential causes of hypertension. In very old patients, blood pressure readings should be analyzed over a several week period and at various

times of the day for a proper understanding of the patient's personal trends (Lipsitz, 2013).

Frailty should be very closely assessed and calls for determining benefits and risks of treatment before medications are introduced or increased (Benetos, et. al., 2015b). As patients age and blood pressures may potentially decline over time, long-term analysis of trends should be assessed by the provider, as should careful and frequent follow-ups to identify adverse effects of medications (Ravindrarajah, et. al., 2017). Moving forward, to allow for safer treatment of patients aged eighty and older, further research needs to be conducted regarding hypertension management in this age group specifically (Benetos, et. al., 2015a; & Zdrojewski, et. al., 2016). Particular attention in these studies should be paid to the frail elderly (Schwinn, et. al., 2017; & Benetos, et. al., 2015b).

E.L.'s blood pressure trends from the case study presented should be analyzed at her follow-up appointment. If her cough has improved, GERD can be identified as the culprit, which indicates the ACE Inhibitor is not the cause. A close examination of E.L.'s frailty status, which could be performed through a CGA, should be done, as well as an analysis of polypharmacy. If her blood pressure still warrants treatment and the benefits of treating her outweigh the risks, she should be placed on a different class of antihypertensive in addition to her current dose of Lisinopril ten milligrams daily. The risks of her poorly managed hypertension as well as risks and benefits of the new medication should be thoroughly explained to E.L., and plenty of time should be allowed for her to ask questions. Should her hypertension remain poorly controlled, dosing should increase very slowly, and a third class of antihypertensive medication should be considered if other causes of resistant hypertension can be eliminated. Close follow up to assess for adverse effects of the new medication, like hypotension, should be performed soon after this visit and frequently thereafter. Her blood pressure trends over long-term should also be

frequently assessed, as should her frailty and polypharmacy status at subsequent visits as she grows older.

Learning Points

- No specific guidelines exist for blood pressures in people over eighty. General hypertension guidelines for all adults over sixty-five presented by the ACC (2017) should be followed unless contraindicated. Lifestyle interventions and analysis of causes of hypertension should not be overlooked regardless of age.
- Polypharmacy should be analyzed and reduced when possible in very elderly patients receiving hypertension treatment. Regardless, using two low-dose antihypertensive medications from different classes reduces the risks of adverse effects and allows for better control than maximizing one medication.
- In the very elderly, blood pressures can vary greatly during the day and may slowly decline overall. Long term and daily trends should be assessed.
- Frailty should be closely assessed for in patients with hypertension over eighty years old. Frail patients are at increased risk of adverse effects from antihypertensive medications which can be life-threatening.
- Management of hypertension in frail patients over eighty years old should be performed with a cautious and individualized approach, and higher blood pressure values than the guidelines state are likely appropriate.

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Appendix

American College of Cardiology and American Heart Association Hypertension Guidelines

Normal	Less than 120/80 mm Hg
Elevated	Systolic between 120-129 <i>and</i> diastolic less than 80
Stage 1	Systolic between 130-139 <i>or</i> diastolic between 80-89
Stage 2	Systolic at least 140 <i>or</i> diastolic at least 90 mm Hg
Hypertensive Crisis	Systolic over 180 and/or diastolic over 120, with patients needing prompt changes in medication if there are no other indications of problems, or immediate hospitalization if there are signs of organ damage