

**HYPERTENSION SCREENINGS:  
A SURVEY OF MICHIGAN OPTOMETRISTS**

by

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**This paper is submitted in partial fulfillment of the  
requirements for the degree of**

**Doctor of Optometry**

**Ferris State University  
Michigan College of Optometry**

**May, 2008**

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**Has been approved**

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**HYPERTENSION SCREENINGS:  
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I, Lesley Ann Sobeck, hereby release this Paper as described above to Ferris State University with the understanding that it will be accessible to the general public. This release is required under the provisions of the Federal Privacy Act.

Lesley Ann Sobeck  
Doctoral Candidate

08/05/08  
Date

## ABSTRACT

*Background:* As the scope of practice for optometrists has continued to grow, optometrists have become more involved in both the ocular effects of systemic diseases as well as the overall systemic health of the patient. The goal of this research is to determine whether or not optometrists in Michigan are screening for hypertension as a part of their routine examinations to detect ocular complications of systemic disease before they manifest in the eye. *Methods:* A survey was developed and sent to a random selection of optometrists across the state of Michigan. 107 surveys were returned resulting in a response rate of 53.5%. These responses gave insight into the frequency and importance of hypertension screenings in the state of Michigan. *Results:* Optometrists in Michigan are concerned with the overall systemic health of their patients, including how high blood pressure can affect the eye. Unfortunately, blood pressure is not routinely screened in many practices. Time constraints are listed as one of the major reasons that hypertension screenings are not performed. *Conclusions:* Delegating more tasks to technicians, or implementing the use of automated devices would allow practitioners to include hypertension screenings in their office with minimal increases in exam time, thus providing more comprehensive care to their patient population.

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## INTRODUCTION

Hypertension is one of the most common worldwide diseases afflicting humans.<sup>1</sup> There have been extensive advances in the prevention and treatment of this disease, but hypertension is still an important public health challenge as it has a significant associated morbidity and mortality.

Hypertension is the most important modifiable risk factor for coronary heart disease (the leading cause of death in North America), stroke (the third leading cause), congestive heart failure, end-stage renal disease, and peripheral vascular disease.<sup>1</sup> As such, it is vitally important that health care providers identify and treat patients who may be afflicted by this process. Patients are generally asymptomatic for years before persistent hypertension will develop into complicated hypertension – a condition where target organ damage to the aorta and small arteries, heart, kidneys, retina, and central nervous system is evident.<sup>1</sup> This process generally begins with increased cardiac output in those aged 10 to 30 years, and is termed prehypertension. Increased peripheral resistance will become more prominent in those aged 20 to 40 years, leading to early hypertension. If no intervention is sought in this time period, those aged 30 to 50 years will develop established hypertension, continuing on to complicated hypertension in persons aged 40 to 60 years.<sup>1</sup>

In the United States it is approximated that around forty-three million people have hypertension. This is defined as a systolic blood pressure of 140 mm Hg or greater and/or a diastolic blood pressure of 90 mm Hg or greater. This definition also includes those taking antihypertensive medications.<sup>1</sup> A 2005 survey in the United States found that in the population aged 20 years or older, an estimated 41.9 million men and 27.8 million



women have prehypertension. In addition, 12.8 million men and 12.2 million women have stage 1 hypertension, while 4.1 million men and 6.9 million women have stage 2 hypertension.<sup>1</sup> Many of these patients may have been undiagnosed for years, slowly causing unnecessary damage to the internal organ systems.

As primary care providers, optometrists are in a prime position to help in the early detection of this systemic disease, particularly as an optometrist can sometimes be the only health care provider present in some rural areas. Forty percent of people 17 to 44 years old, and 88 percent of those 45 years and older have a chronic problem requiring periodic vision treatment.<sup>2</sup> For those in the 45 and older age group, this is often prompted by the onset of presbyopia.<sup>3</sup> Patients in this age bracket are also more likely to have developed hypertension and could be screened as part of their regular optometric check. This would catch those patients who do not routinely see a general practitioner unless a problem arises.

In 1975, the American Optometric Association adopted a resolution encouraging all optometrists to measure blood pressure and to use the measurement and referral standards recommended by the National Heart, Lung, and Blood Institute Advisory Council.<sup>4</sup> Measurement of blood pressure is a simple, noninvasive method of screening for individuals with hypertension. Optometrists who incorporate blood pressure screenings into their eye exams would have the ability to catch many undiagnosed or improperly treated cases of hypertension. Patients who are found to have a higher than normal blood pressure reading could be referred to a general practitioner for subsequent testing and treatment. For those patients who are found to have a blood pressure reading

in the normal range, the optometrist could then quickly assess the patient's level of risk for developing hypertension in the future and provide education on steps that could be taken to prevent or delay the onset of the disease. Examples include simple lifestyle modifications such as<sup>1</sup>:

- Lose weight if overweight.
- Limit alcohol intake.
- Increase aerobic activity.
- Reduce sodium intake.
- Maintain adequate intake of dietary potassium, calcium, and magnesium.
- Stop smoking.
- Reduce dietary intake of saturated fat and cholesterol.

Over time, hypertension leads to many changes in the blood vessels of the body. The eye is the only organ of the body where blood vessels can be observed directly and noninvasively.<sup>5</sup> The same changes which are occurring in the rest of the body can therefore be observed in the eye during a fundoscopic examination. Ophthalmic complications of hypertension can vary. Common manifestations include retinal arteriolosclerosis and branch retinal vein occlusion. Less common manifestations include retinopathy, retinal artery occlusion, retinal artery macroaneurysm, anterior ischemic optic neuropathy, choroidal infarcts, and ocular motor nerve palsies. A rare manifestation would be an exudative retinal detachment in accelerated disease or eclampsia.<sup>6</sup>

Even with all of the varied manifestations of hypertension which can occur in the eye, most will only occur after the blood vessels have been compromised for an extended

period of time. Implementing screenings for hypertension among patients would catch those at risk for developing hypertensive eye disease before systemic signs become apparent in the eye.

## METHODS

The purpose of this study was to survey the frequency and methods used among optometrists in Michigan when screening for hypertension among the patients in their offices. Aspects which were studied included current mode of practice, frequency of screenings performed, identifiable risk factors, use of guidelines, methods used to obtain blood pressure readings, patient education and protocol, and the importance of incorporating a patient's overall systemic health into the eye exam.

Survey mailings were sent to 200 practitioners in Michigan, without bias to current mode of practice or location. Participants were randomly selected from a list of current practicing optometrists located in the "Doctor Locator" section of the American Optometric Association webpage. No identifying information was requested or collected from any of the survey participants.

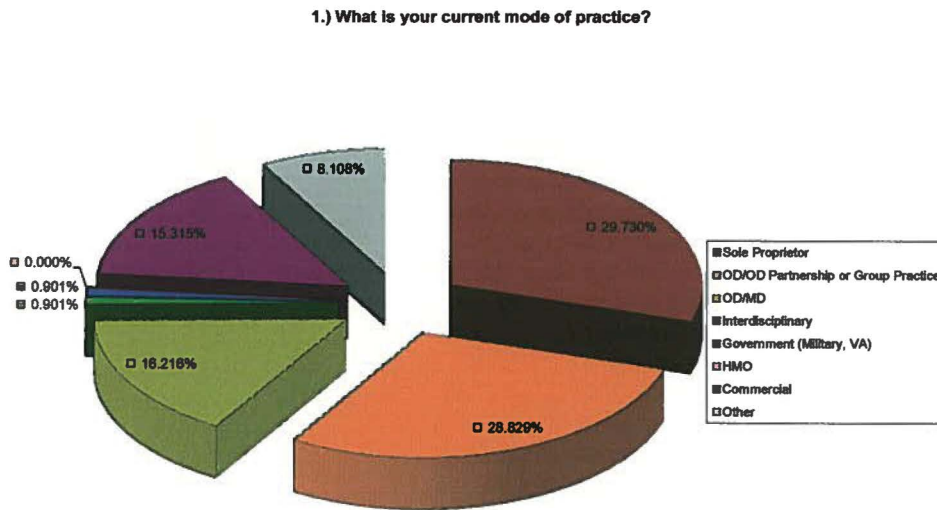
These survey mailings included an introductory letter, requesting voluntary participation in the study (Appendix A), a two-page survey (Appendix B) and a self-addressed, stamped business reply envelope. Participants were given approximately six weeks to return their completed surveys in the provided envelope. Of the 200 surveys which were mailed out, nine (4.5%) were returned as undeliverable. 107 completed surveys were returned in the requested time period, resulting in a respondent rate of 53.5%. These responses were then tallied and analyzed.

## RESULTS

The survey (Appendix B) consisted of ten questions. The first question requested mode of practice information from study participants. The remaining questions specifically asked respondents about hypertension screening and patient care. All survey results are described below.

The first question asked respondents, “What is your current mode of practice?” The most common responses were sole proprietor (29.730%) and OD/OD partnership or group practice (28.829%). Other less common modes of practice are illustrated in the figure below.

*Current Mode of Practice-Figure 1.0*

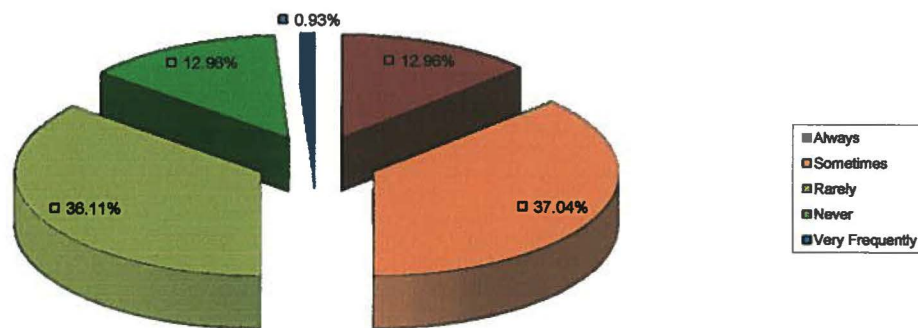


The second question asked, “Which of the following best approximates the

frequency of hypertension screenings preformed in your office?” The most common responses was sometimes (37.04%) followed by rarely (36.11%). The remainder of responses is illustrated in the figure below.

*Frequency of In-Office Hypertension Screenings-Figure 2.0*

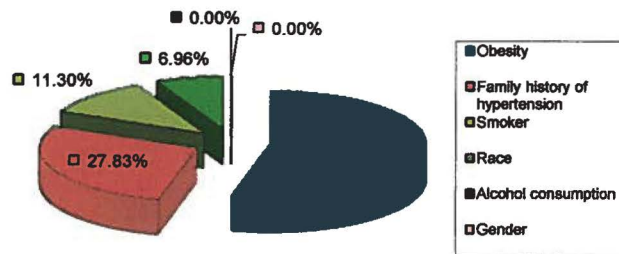
2.) Which of the following best approximates the frequency of hypertension screenings performed in your office?



The third question asked respondents “Rank in order, from most important to least important the following hypertension risk factors you consider when evaluating a patient.” The most important risk factor overall was obesity (53.91%) followed by family history of hypertension (27.83%). Smoker (11.30%) was the third most important risk factor followed by race (6.96%). Alcohol consumption (0%) and gender (0%) were the least important risk factors. Other write-in risk factors included lack of physical exam, diabetes, and age.

*Hypertension Risk Factors-Figure 3.0*

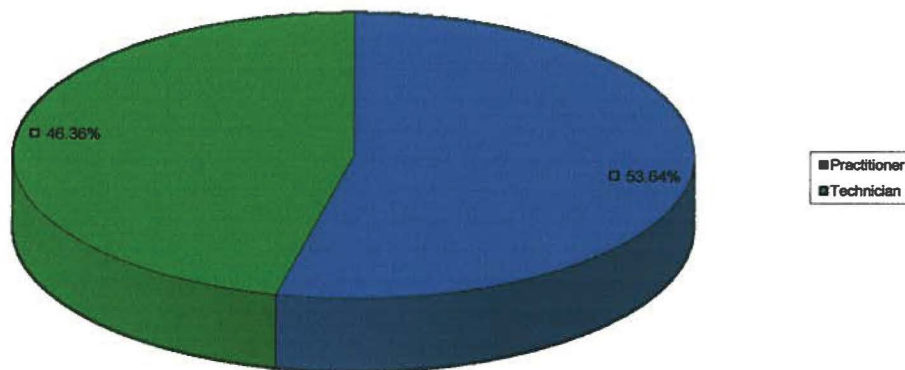
3.) Rank, in order from most important to least important, the following hypertension risk factors you consider when evaluating a patient.



Administration of blood pressure readings was the subject of the fourth question. The percentage of practitioners that take blood pressure readings (53.64%) slightly outweighed the percentage of technicians who perform the task (46.36%). Student was a write-in category.

*Administration of Blood Pressure Readings-Figure 4.0*

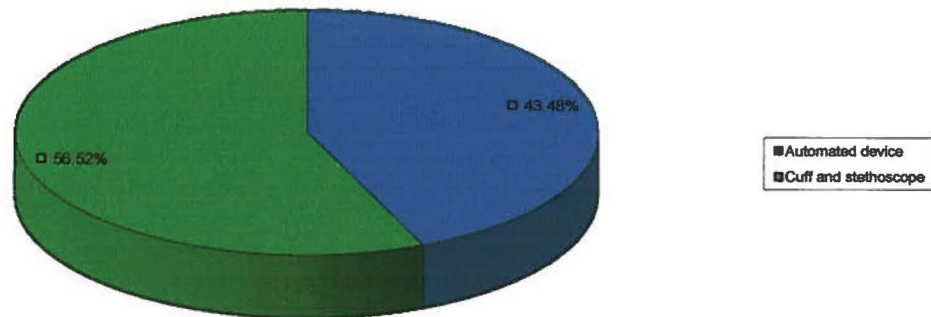
4.) In your office, who takes blood pressure readings of your patients?



Blood pressure reading devices was the subject of the fifth question. The traditional cuff and stethoscope (56.52%) was more commonly used than automated devices (43.48%).

*Blood Pressure Reading Devices-Figure 5.0*

5.) In your office, which of the following is used to take blood pressure readings?



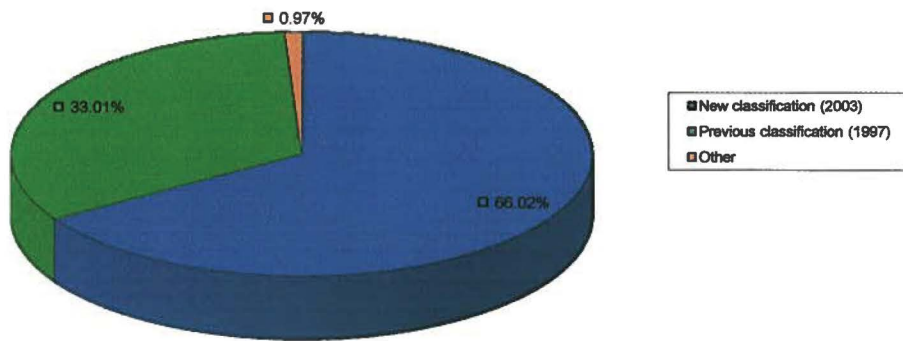


The sixth question of the survey asked, “Which of the following hypertension guidelines do you use when assessing the results of a patient’s blood pressure readings?”

The most common response was the new classification from 2003 (66.02%).

*Hypertension Guidelines-Figure 6.0*

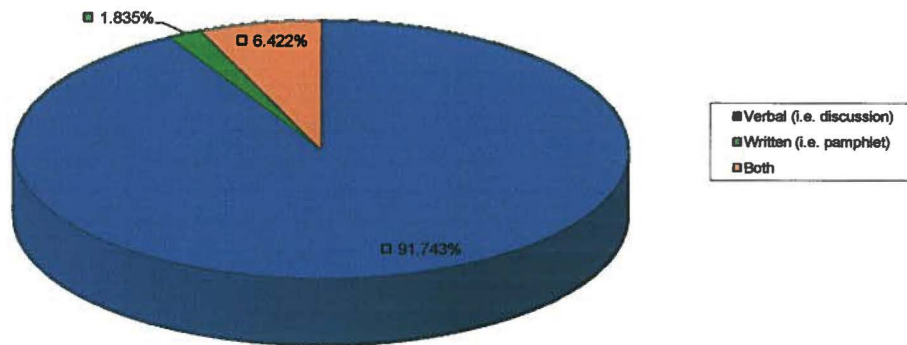
6.) Which of the following hypertension guidelines do you use when assessing the results of a patient’s blood pressure readings?



In the seventh question, study participants were asked, “Which of the following do you include in your patient education for patients with hypertension?” The most common response was verbal discussion (91.743%). The other responses are illustrated in the figure below.

*Patient Education-Figure 7.0*

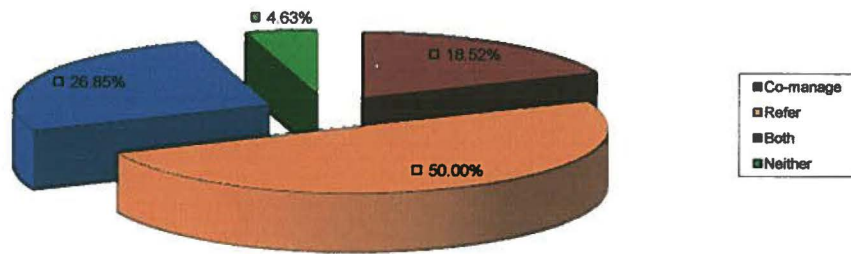
7.) Which of the following do you include in your patient education for patients with hypertension?



Respondents were asked, “In your office, which of the following protocol is implemented for hypertensive patients?” Referral (50%) was the most common response. Percentages of other responses are illustrated in the figure below.

*Patient Management Protocol-Figure 8.0*

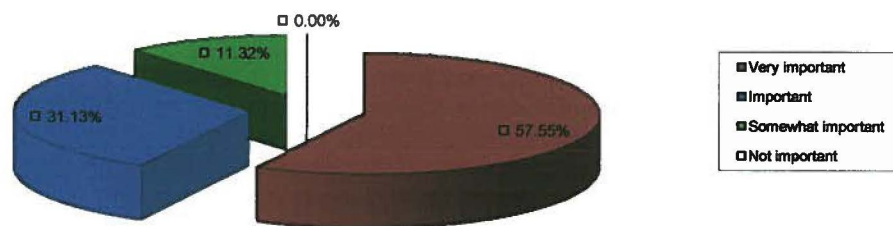
8.) In your office, which of the following protocol is implemented for hypertensive patients?



The ninth question asked, “Please rate how important you feel it is to incorporate the patient’s overall health (including blood pressure) into your exam.” The majority of study participants felt it is very important (57.55%). The responses to this item are illustrated below.

*Importance of Blood Pressure-Figure 9.0*

9.) Please rate how important you feel it is to incorporate the patient’s overall health (including blood pressure) into your exam.



The final question asked for any additional comments from study participants. Common responses included: the use of digital fundus photography in diagnosing and monitoring hypertensive patients; the desire to incorporate hypertensive screenings into routine eye exams; and the time constraints that do not allow for hypertensive screenings during routine eye exams.

## DISCUSSION

The first question of the survey instrument asked for current mode of practice of the study participants. The purpose of this question was to help the study authors to determine what modes of practice would be represented in the survey responses and if that would bias the results. The distribution of the mode of practice among respondents was relatively widespread: sole proprietor, 29.730%; OD/OD partnership or group practice, 28.829%; OD/MD, 16.216%; and commercial, 15.32%. The distribution was not heavily weighted towards any one mode of practice and therefore the results do not appear to be biased as they might have been if the responses were from primarily one mode of practice only.

The rest of the survey specifically asked respondents about hypertension screening and patient care. The specific questions are described in the results section and are also available in the research instrument in Appendix B. The following is a discussion of the notable findings of the survey.

Interestingly, nearly 90% of study participants responded that incorporating the patient's overall health (including blood pressure) into the exam was very important (57.55%) or important (31.13%). However, the most responses for the frequency of

hypertension screenings performed in the office were either sometimes (37.04%) or rarely (36.11%). It is surprising that such a large percentage of respondents infrequently perform hypertension screenings when most feel that incorporating the patient's overall health (including blood pressure) into the exam is of great importance. This may be explained by the trend expressed in the respondents comment section that there is a desire to incorporate hypertensive screenings into routine eye exams but that time constraints make it difficult to do so.

Also of interest, nearly 54% of respondents stated that the practitioner is the individual who takes blood pressure readings and nearly 57% of the readings are taken with the traditional cuff and stethoscope. Perhaps time constraints would be less of an issue if a greater percentage of technicians took blood pressure readings as part of the initial testing instead of the practitioners themselves. Delegating this responsibility to a technician is also much easier now with the use of automated devices that are user-friendly and do not require more complex training like the traditional method. Someone who is not trained in proper cuff and stethoscope technique can easily use the automated devices in a brief amount of time.

Over half of those surveyed responded that the most important hypertensive risk factor to consider when evaluating a patient is obesity. Whether a patient is a smoker was also in the top three most important risk factors for hypertension of those surveyed. Further study should be done to determine if respondents are including these risk factors in patient education or if they feel this is out of the realm of the role of an optometrist.

Interestingly, less than 2% of survey participants provide some form of written

patient education for hypertension patients. Perhaps patients would retain more information if they not only received verbal but written patient education. Optometrists typically have pamphlets for glaucoma, macular degeneration, etc. so why not include hypertension as well?

Since many respondents refer patients to primary care physicians for hypertension another area that may need further study is to determine how much communication and follow-up is done between the optometrist and the primary care physician.

The majority of respondents are using the 2003 hypertension classification guidelines when assessing the results of a patient's blood pressure readings. However, approximately 33% still follow the 1997 hypertension classification guidelines. Further research should be done to determine if or how this impacts patient care.

#### CONCLUSION

Hypertension is one of the most common worldwide diseases afflicting humans. There have been extensive advances in the prevention and treatment of this disease, but hypertension is still an important public health challenge as it has a significant associated morbidity and mortality.

The purpose of this study was to survey the frequency and methods used among optometrists in Michigan when screening for hypertension among the patients in their offices. Aspects which were studied included current mode of practice, frequency of screenings performed, identifiable risk factors, use of guidelines, methods used to obtain blood pressure readings, patient education and protocol, and the importance of incorporating a patient's overall systemic health into the eye exam.

An overall response rate of 53.5% gave a wide variety of responses, representing a good sample of the optometrists practicing in Michigan. Although 90% of study participants responded that incorporating the patient's overall health (including blood pressure) into the eye exam was important, hypertension measurements are only taken in office sometimes or rarely. Time constraints are listed as one of the most common reasons why hypertension is not screened in offices. Delegating more tasks to technicians or implementing the use of automated devices may streamline the process and allow more comprehensive care for patients who seek optometric care.



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APPENDIX A  
SURVEY INTRODUCTION

# Hypertension Screening Survey

*This survey will take  
approximately five minutes to  
complete.*

*No identifying information  
will be collected.*

*Please return in the  
pre-addressed, postage paid  
envelope provided by  
July 1, 2007.*

**MICHIGAN COLLEGE  
OF OPTOMETRY**

**Study results will be available  
4-25-08 by contacting:  
Paula Richards  
Email: rich63@ui mail.torrs.edu  
Lesley Soback  
Email: sobe2@ui mail.torrs.edu**

**Questions or Concerns? Contact:  
Dr. Cornie Meinholdt  
Human Subjects Research  
Committee  
Email: CornieMeinholdt@torrs.edu  
Tel. 231.691.2769**



You are being asked to participate in a study  
to collect data regarding the utilization of  
hypertension screenings by Michigan optometrists.  
The results will provide a better understanding of the prevalence  
of hypertension screenings in optometric practice.

*Thank you for your participation.*

**APPENDIX B**  
**SURVEY INSTRUMENT**



1.) What is your current mode of practice?

- |  |  |
|--|--|
| <input type="checkbox"/> Sole Proprietor                     | <input type="checkbox"/> Government (Military, VA) |
| <input type="checkbox"/> OD/OD Partnership or Group Practice | <input type="checkbox"/> HMO                       |
| <input type="checkbox"/> OD/MD                               | <input type="checkbox"/> Commercial                |
| <input type="checkbox"/> Interdisciplinary                   |  |
| <input type="checkbox"/> Other _____                         |  |

2.) Which of the following best approximates the frequency of hypertension screenings performed in your office?

- Always
- Sometimes
- Rarely
- Never

3.) Rank in order, from most important to least important the following hypertension risk factors you consider when evaluating a patient?

- Race
- Gender
- Obesity
- Smoker
- Alcohol consumption
- Family history of hypertension

4.) In your office, who takes blood pressure readings of your patients?

- Practitioner
- Technician

5.) In your office, which of the following is used to take blood pressure readings?

- Automated device
- Cuff and stethoscope



6.) Which of the following hypertension guidelines do you use when assessing the results of a patient's blood pressure readings?

- New classification (2003)  
i.e. High-140/90 or above; Prehypertension-120-130/80-89; Normal-119/79 or below
- Previous classification (1997)  
i.e. High-140/90 or above; Borderline-130-139/85-89; Normal-129/84 or below;  
Optimal-120/80 or below
- Other \_\_\_\_\_

7.) Which of the following do you include in your patient education for patients with hypertension?

- Verbal (i.e. discussion)
- Written (i.e. pamphlet)
- Both

8.) In your office, which of the following protocol is implemented for hypertensive patients?

- Co-manage
- Refer
- Both
- Neither

9.) Please rate how important you feel it is to incorporate the patient's overall health (including blood pressure) into your exam.

- Very important
- Important
- Somewhat important
- Not important

10.) Additional comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_