HYPERTENSION MANAGEMENT IN THE REPUBLIC OF TRINIDAD AND TOBAGO: A FEASIBILITY STUDY ON THE USE OF HOME BLOOD PRESSURE MONITORS AND AN AUTOMATED TELEPHONE INFORMATION SYSTEM

by
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ABSTRACT

Problem Statement: Many studies have supported the benefits of home blood pressure monitoring (HBPM) and telemonitoring in improving hypertension awareness and control. However, little was known about the use of HBPM and telemonitoring by hypertensive patients in the Republic of Trinidad and Tobago.

Methods and Design: A six-month prospective observational study using HBPM and telemonitoring was conducted on hypertensive patients in two public sector health centres in the Republic of Trinidad and Tobago. Newly diagnosed and poorly controlled adult patients were eligible for enrollment if they spoke English and were willing to participate in HBPM and telemonitoring. All enrolled patients received the HBPM and telemonitoring intervention and were given a blood pressure goal based on the presence or absence of diabetes. The primary endpoint was change in mean arterial pressure (MAP) between baseline and the six-month follow-up point. Patients who provided blood pressure readings at baseline, three-month and six-month visits were included in the analysis.

Results: A total of 171 patients were screened, 157 completed the baseline visit and 118 ultimately engaged in HBPM and telemonitoring for a six-month study period. Of the 118 final participants, 96% expressed a preference for the home monitoring vs traditional management, 87% successfully transmitted their HBPM results via telemonitoring more than once a month and 70% showed a reduction in MAP. Mean systolic blood pressure decreased by 9.2 mm Hg (95% CI 5.4-12.9), mean diastolic blood pressure decreased by

6.9 mm Hg (95% CI 4.4-9.4) and MAP decreased by 7.7 mm Hg (95% CI 4.9-10.4; p=0.0000) from baseline to the six-month visit.

Conclusion: Home blood pressure monitoring and telemonitoring can be effectively utilized in the Republic of Trinidad and Tobago public sector primary care setting to improve hypertension management. Ministry of Health officials and primary care providers should strongly consider promoting these technologies. Follow-up studies with larger sample size and randomized study design should be conducted to validate these non-randomized feasibility study findings and gain further insight about the generalizability of these findings across the Republic of Trinidad and Tobago and other Caribbean nations.

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PREFACE

This dissertation is an original, unpublished, work by the author, Brad Smith. Gary Gerstenblith, MD, served as principal investigator and lead clinician. The author received mentorship and medical practitioner support in the development of the research protocol from his thesis advisors and clinicians working with the Trinidad and Tobago Health Sciences Initiative Cardiology Program. Patient care and primary data collection were provided by Trinidadian physicians and nurses working in the hypertension and lifestyle clinics in the Republic of Trinidad and Tobago. Logistical support and program funding was provided in coordination with the Trinidad and Tobago Health Sciences Initiative, Cardiology Program.

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PROBLEM AND PUBLIC HEALTH SIGNIFICANCE

Background

The Republic of Trinidad and Tobago is an English speaking twin-island Caribbean nation located just off the coast of South America / Venezuela with a population of 1.2 million. Trinidad is the larger of the two islands, comprising 95% of the nation's total 1,980 square miles, which is roughly the size of Delaware. The country has a strong economy, based largely on the petro-chemical industry, and a solid infrastructure including clean water, sanitation systems, power grid, and education system. The government has established a public health system that is free at the point of service and offers all of its citizens access to basic healthcare including physician services, diagnostic testing, procedures / surgeries and standard medications. The country also has a private fee-for-service healthcare system used by individuals who possess the financial resources needed to gain access but a majority of citizenry lack these financial resources and are fully dependent upon the public health system. The public health system has clear strengths including a focus on universal coverage, a broad network of public health centres that provide chronic disease management services and a large team of dedicated healthcare providers committed to improving the health of their fellow citizens. The public health system also has some clear weaknesses or challenges including limited resources: physical infrastructure (clinic space, inpatient beds, lab facilities, etc.), human resources (physicians, nurses, technologists, etc.), equipment and supplies (diagnostic testing equipment, computer systems, medical supplies, etc.), limited deployment of new technologies and challenging patients who are often unaware of the seriousness of their

health condition, and less than fully compliant with healthy lifestyle and medical recommendations. Despite the strengths of the public health system and the commitment of its healthcare providers, hypertension is often poorly controlled and cardiovascular and cerebrovascular mortality rates are high.

Statement of Problem

Many studies have supported the benefits of HBPM and telemonitoring demonstrating improved hypertension awareness and control. However, little is known about the use of HBPM and telemonitoring by hypertensive patients in the Republic of Trinidad and Tobago, where hypertension frequently goes unmonitored and, when monitored, treatment strategies often fail to effectively manage blood pressure and thus reduce the risk of cardiovascular and cerebrovascular disease.

Public Health Significance

The 2008 WHO - Global Burden of Disease Report (2008a) attributes more than 9.4 million deaths each year to high blood pressure, making high blood pressure the largest mortality risk factor world-wide. The World Health Organization (WHO) Global Health Estimates for 2000-2010 lists cardiovascular diseases as the leading causes of death world-wide, accounting for over 31% of all deaths (World Health Organization, 2014). Both WHO reports also note how poorly controlled blood pressure and other cardiovascular risk factors contribute to the significant burden of chronic diseases in general and that this burden is widely distributed across the globe including both developing and developed countries. The Central Statistical Office and the Ministry of

Health of Trinidad and Tobago report that this global problem is a significant concern for the people of Trinidad and Tobago. The 2008 Vital Statistics, Deaths by Cause, Sex and Area of Residence table lists diseases of the circulatory system as the leading cause of death for both men and women, accounting for 31% of deaths in males, 35% of deaths in females and 33% of total deaths. The Trinidad and Tobago Chronic Non-Communicable Disease Risk Factor Survey – Pan American STEPS Final Report 2012 indicated that 34.1% of survey respondents aged 55-64 had been diagnosed with raised blood pressure or hypertension within the past twelve months. In summary, high blood pressure is of growing significance as a public health concern in the Republic of Trinidad and Tobago and many other developing nations. In addition, there are now available well-established treatment strategies which have the potential to improve blood pressure management while enhancing the impact of the limited resources available in the public health centres of Trinidad and Tobago. All of these reasons make this an important area for research. Demonstrating the successful implementation of proven disease management strategies from high per capita income nations in the environment of Trinidad's public health centres could have a significant impact for the Republic of Trinidad and Tobago as well as other developing nations which are facing similar challenges.

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

Prevention and Management of Chronic Diseases

Much is known about hypertension management. Professional societies across the globe have reviewed the science and issued detailed treatment recommendations in the form of guidelines for the detection, evaluation and management of high blood pressure. There is also a wealth of published information regarding effective management models and tools that can be used to improve outcomes. Advances in medical and public health practices over the last century have improved both the treatment of medical conditions and the understanding of how to intervene in the environment to promote healthy conditions. While the advancements have been numerous and the collective impact immeasurable in terms of lives saved, many challenges remain. Today the leading challenges are centered on the prevention and management of chronic diseases. Yach et al. (2004) reviewed the World Health Report 2003 and noted chronic diseases were the leading cause of death globally with cardiovascular diseases accounting for the most deaths in 2002 (17 million) followed by cancer (7 million), chronic lung diseases (4 million) and diabetes mellitus (almost 1 million). They also noted that the global prevalence of chronic diseases was increasing, with the majority of the increase coming from developing countries where cardiovascular disease is already the leading cause of death.

The American Heart Association (AHA) and the American Diabetes Association (ADA) have come together to stress the need to control risk factors that impact on multiple diseases. Eckel et al. (2006) summarized the "Call to Action" which strongly recommended that all providers assess patients for their global risk of CVD and diabetes including fasting/postprandial hyperglycemia, overweight/obesity, elevated systolic and

diastolic blood pressure and dyslipidemia. They also remind us that in the early stages of these conditions lifestyle modification with attention to weight loss and physical activity may well be sufficient for maintaining good health.

In 2005, Kearney et al. (2005) examined global data, focusing on the prevalence of high blood pressure. They defined hypertension as an average systolic blood pressure 140 mm Hg or greater, diastolic blood pressure 90 mm Hg or greater or use of antihypertensive medication, and reported that 26.4% of the world's adult population had hypertension in 2000 with men having slightly higher rates than women (26.6% vs. 26.1%). Their research projected that prevalence rates would increase to 29% by 2025.

Lawes et al. (2008) reviewed the World Health Report, 2002 and examined high blood pressure as a risk factor. Using an average systolic blood pressure greater or equal to 115 mm Hg to define elevated blood pressure, the authors estimated 7.6 million premature deaths and 92 million lost disability adjusted life years (DALY) were directly attributable to elevated blood pressure. Their research indicated that about half this burden was borne by people with hypertension and the other half by people with a lesser degree of high blood pressure. The research also indicated that about 80% of the global burden was in developing economies, dispelling the myth that high blood pressure is solely a problem of developed nations.

High Blood Pressure and Ethnicity

Having established that chronic diseases in general and high blood pressure specifically result in a significant global burden and a major challenge for developing nations, we examine specific variables that impact on the prevention and management of high blood pressure. Cherry D et al. (2008) through the U.S. Department of Health and Human

Services' National Ambulatory Medical Care Survey reported that 27.9% of all adult physician office visits were for hypertension, far more than for any other condition.

Ostchega et al. (2008) examined data from the National Health and Nutrition Examination Survey (NHANES) and reported ethnic disparities in awareness, treatment and control of hypertension in a U.S.-based population. The NHANES group reported that 29% of the U.S. population over 18 were hypertensive, defining hypertension as average systolic blood pressure 140 mm Hg or greater, diastolic blood pressure 90 mm Hg or greater or use of antihypertensive medication. The investigators noted that hypertension prevalence was significantly higher among non-Hispanic blacks vs. non-Hispanic whites and Mexican Americans, which highlights the impact of ethnic and/or cultural differences within populations.

National Center for Health Statistics, Health, United States, (2009) estimates the prevalence of hypertension in the African American population to be 38.8% for males and 42.8% for females. The same report also indicates increased prevalence with age (males: 20-34=9.2%, 35-44=21.1%, 45-54=36.2%, 55-64=50.2%, 65-74=64.1% and 75-greater=65%); (females: 20-34=2.2%, 35-44=12.6%, 45-54=36.2%, 55-64=54.4%, 65-74=70.8% and 75-greater=80.2%). Cruickshank et al. (2001) examined four different African-origin groups (rural and urban Cameroon, Jamaica and Manchester Britain) and noted lower prevalence of hypertension in rural Cameroon than other African-ancestry populations and ethnic differences similar to the United States, i.e., higher prevalence of hypertension in African-Britains than in whites.

Cardiovascular Disease in Trinidad and Tobago

Gulliford et al. (1996) examined the Trinidad and Tobago population and noted an epidemiological transition in the years from 1953 through 1992. In this period, the percentage of total deaths from cardiovascular diseases increased from 29% of all deaths to 54%. In the same period, the percentage of deaths from diabetes mellitus, an independent cardiovascular risk factor, increased from 2% to 12%. While the accuracy of disease-specific death certificate information over such a long time period may be somewhat questionable, the general trends of increased chronic disease mortality are undeniable.

The more recent report, Health Systems Profile – Trinidad and Tobago, from the Health Systems and Services Area of the Pan American Health Organization / World Health Organization (2008b) indicates that mortality rates from cardiovascular diseases have leveled out at 2.8 deaths per 1,000 population, or approximately 37% of total deaths. Cardiovascular deaths, however, still account for more mortality than cancer, external causes, communicable diseases, HIV/AIDS, and tuberculosis combined.

Miller et al. (1996) prospectively studied the Trinidadian population from 1977 through 1985 in the St. James survey. They classified the population into three categories (African descent, Indian descent and Other descent) based on ancestry of the subject's grandparents, and failed to find differences in the incidence of hypertension by ethnicity.

Mahabir and Gulliford (1999) evaluated the quality of blood pressure management in the government primary care health centres in Trinidad and Tobago from 1994 through 1998. While they noted an increase in the documentation of lifestyle management counseling (dietary advice and exercise advice) and an increase in standard medical therapy (use of

diuretics, beta-blockers, calcium antagonists and ACE inhibitors), the percentage of patients well controlled (percent of cases with BP less than or equal to 140/90 remained exceptionally low (15% in 1994 vs. 13% in 1998).

In 1998, Mahabir and Gulliford along with Bickram (1998) also examined hospital admissions for acute stroke in Trinidad and Tobago. Overall, the age-standardized acute stroke admission rates were higher for patients of Indian descent than those of African descent. They reported that 29% of acute stroke admissions resulted in fatality and another 56% resulted in severe disability. These concerning figures omitted the stroke patients who died before they could be transported to the hospital. Of those admitted with acute stroke, the majority (66%) of the patients reported physician diagnosed hypertension, yet 56% of these patients were not receiving any anti-hypertension therapy at the time of admission.

A recent report from the Caribbean Community and Common Market (CARICOM) on Chronic Non-Communicable Diseases (CNCDs) (2011) reported that the indirect costs associated with the morbidity and mortality of hypertension can be three to four times as high as the direct cost of treatment (hospitalization, physician visits, drugs and diagnostic testing). The same report indicated hypertension's combined direct and indirect costs can approach 3% of gross domestic product (GDP) for Barbados and Jamaica, Caribbean countries similar to Trinidad and Tobago.

Management Guidelines for High Blood Pressure

The literature is rich with information about treatment strategies and approaches to management of patients with high blood pressure. Hundreds of studies have contributed to the body of knowledge which teams of experts use to create national and regional

guidelines. Of note, the management of high blood pressure as a medical condition, unlike some other areas of cardiovascular disease, is consistent with a population-based prevention strategy and the WHO's recommended priorities. The WHO's publication *Integrated Management of Cardiovascular Risk* (2002) points out the wisdom of focusing on the underlying risks of a population: "Epidemiological theory indicates that, compared with intensive individual treatment of high-risk patients, small improvements in the overall distribution of risk in a population will yield larger gains in diseases reduction, when the underlying conditions that confer risk are widespread in the population."

In the United States, the National Heart, Lung, and Blood Institute (NHLBI) coordinated the National High Blood Pressure Education Program (NHBPEP) in which thirty-nine major professional, public, and volunteer agencies came together with federal agencies (12/03) to produce the "Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure" (2004). This report uses a classification system in which blood pressures fall into one of four categories, using both systolic blood pressure (SBP) and diastolic blood pressure (DBP): "Normal" (SBP <120 & DBP <80), "Prehypertension" (SBP 120-139 & DBP 80-89), "Stage 1 Hypertension (SBP 140-159 & DBP 90-99), and "Stage 2 Hypertension (SBP ≥160 & DBP ≥100). The report also stresses the following key messages.

- In persons older than 50 years, systolic blood pressure greater than 140 mm Hg is a much more important cardiovascular disease (CVD) risk factor than diastolic blood pressure.

- The risk of CVD beginning at 115/75 mm Hg doubles with each increase of 20/10 mm Hg: individuals who are normotensive at age 55 have a 90 percent lifetime risk of developing hypertension.
- Individuals with systolic blood pressure of 120-139 mm Hg or a diastolic blood pressure 80-89 mm Hg should be considered as pre-hypertensive and require health-promoting lifestyle modifications to prevent CVD.
- Thiazide-type diuretics should be used in drug treatment for most patients with uncomplicated hypertension, either alone or combined with drugs from other classes. Certain high-risk conditions are compelling indications for the initial use of other antihypertensive drug classes (angiotensin converting enzyme inhibitors, angiotensin receptor blockers, beta-blockers, calcium channel blockers).
- Most patients with hypertension will require two or more antihypertensive medications to achieve goal blood pressure (<140/90 mm Hg, or <130/80 mm Hg for patients with diabetes or chronic kidney disease).
- If blood pressure is >20/10 mm Hg above goal blood pressure, consideration should be given to initiating therapy with two agents, one of which usually should be a thiazide-type diuretic.
- The most effective therapy prescribed by the most careful clinician will control hypertension only if patients are motivated. Motivation improves when patients have positive experiences with, and trust in, the clinician. Empathy builds trust and is a potent motivator.
- In presenting these guidelines, the committee recognizes that the responsible physician's judgment remains paramount.

Similar guidelines have been created by many regions and countries around the world. The British Hypertension Society, for example, issued revised guidelines in 2004 (BHS-IV). The review from Williams et al. (2004) shows that while they use a more complex classification scheme with three categories of normal blood pressure ("Optimal", "Normal" and "High Normal"), three categories of hypertension ("Grade 1/Mild", "Grade 2/Moderate" and "Grade 3/severe"), and two categories for isolated systolic hypertension ("Grade 1" and "Grade 2"), most of the treatment recommendations are the same. Bailey et al. (2008) show that while hypertension control rates vary by age (81% for persons age 15 to 39 years to only 42.1% for persons age ≥80 years), treatment plans consistent with guidelines, in which dose is titrated up and secondary drugs are added as needed for effective control, can lead to significantly improved control rates.

Treatment Results

Law et al. (2009) recently conducted a meta-analysis of 147 randomized trials and reported that for the patients that require medical intervention to control their blood pressure, thiazides, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, beta-blockers and calcium channel blockers all have a similar effect on preventing Coronary Heart Disease (CHD) events and strokes; and that reductions of 25% and 36% respectively can be expected with good blood pressure control. Turnbull et al. (Blood Pressure Lowering Treatment Trialists Collaboration et al., 2008) note that 'The Blood Pressure Lowering Treatment Trialists' Collaboration conducted a similar meta-analysis and reported that the benefits of blood pressure reduction are important to both the younger (<65 years) and older (≥65 years) populations, and that because of the

similar effects across drug classifications, cost and patient tolerance become important factors.

While recent data on physician practice patterns in the Republic of Trinidad and Tobago is difficult to find, Mahabir et al. (1997) surveyed 161 providers in 1997 and noted a lack of consensus on clinical guideline information (threshold for treatment of high blood pressure and standard medication regimens), noting that preference differed for the different ethnic groups (African ancestry vs. Indian ancestry). The authors also noted that physicians considered medication adherence, patient education, lifestyle and access to medications as important obstacles to blood pressure control.

Patient Adherence to Medication Regimens

Adherence to medication regimens has been a problem since the inception of medication. C. Everett Koop, MD is credited with stating the obvious when dealing with the problem of adherence to medication instructions: "Drugs don't work in patients who don't take them". Osterberg and Blaschke (2005) cited earlier research when listing the twelve major predictors of poor adherence in their 2005 review: 1) presence of psychological problems (particularly depression), 2) presence of cognitive impairment, 3) treatment of asymptomatic disease, 4) inadequate follow-up, 5) side effects of medication, 6) patient's lack of belief in the benefits of treatment, 7) patient's lack of insight into the illness, 8) poor provider – patient relationship, 9) presence of barriers to care or medications, 10) missed appointments, 11) complexity of treatment and 12) cost of medication.

Jerant et al. (2008) examined the alternative self-report methods of measuring medication adherence and concluded there is no gold standard, noting that different measurement techniques tap into different behavior constructs. DiMatteo (2004) reviewed 569 studies

reporting adherence to medication and noted that adherence is moderated by medical condition as well as demographic factors: older age, female gender, higher income and more education were associated with improved adherence, and the mean adherence for cardiovascular disease was seventy-seven percent. Schroeder et al. (2004) conducted a systematic review of randomized controlled hypertension trials and concluded that adherence in hypertensive patients was lower, between fifty percent and seventy percent. The authors note that a comparison of adherence rates from one trial to the next is difficult because there is no common definition for adherence. The authors also noted that multiple strategies to improve adherence in hypertensive patients had seen limited success and concluded that multi-factorial solutions are needed to overcome the multi-variant challenges.

Krousel-Wood et al. (2005) conducted a review of hypertension trials and came to the conclusion that patient-centered care and interventions tailored to the patient-specific barriers were critical to improve adherence. Munger et al. (2007) also conducted a review and noted the variation in adherence by factors of race and ethnicity, pointing to several studies, NHANES III and Multi-Ethnic Study of Atherosclerosis (MESA), in which the rates of treated but non-controlled patients varied by ethnic group. T. Alleyne et al. (2005) point out the cultural connection of Afro-Caribbean populations to low cost herbal remedies. They conducted a study in the Republic of Trinidad and Tobago to examine the impact of coconut water and mauby, two tropical food drinks, on the control of hypertension. While the study was very small, it suggests that the use of coconut water and mauby may help lower blood pressure, and highlights the Caribbean interest in herbal remedies as an alternative to modern medications.

Fahey et al. (2006) conducted a meta-analysis through June 2006 to examine interventions to improve control of blood pressure in patients with hypertension as part of the Cochrane Collaboration. The authors used the following six categories to classify published trials: 1) self-monitoring, 2) education directed to the patient, 3) education directed to the healthcare professional, 4) physician-extender led care (nurse or pharmacist), 5) care delivery interventions and 6) appointment reminder systems. They noted that an organized system of registration, recall and regular review along with a vigorous stepped care approach to antihypertensive drug treatment appear to be the most likely ways to improve control of high blood pressure. The authors also point to the potential of physician-extender led care, and note that while multi-faceted interventions can be effective, it is difficult to determine the independent effects of any one aspect of care. In a separate review article, Fahey et al. (2005) examined educational and organizational interventions to improve management of hypertension in a primary care setting and concluded that physicians need an organized system of regular follow-up to implement a vigorous stepped care approach when patients do not reach target blood pressure levels.

Impact of Home Blood Pressure Monitoring

The Europeans have gone beyond traditional recommendations for lifestyle changes and medications and issued guidelines on the use of home blood pressure monitors to aid in the management of hypertension. Parati et al. (2008) summarized the European Society of Hypertension guidelines for blood pressure monitoring at home, a summary report of the Second International Consensus Conference on Home Blood Pressure Monitoring which deals mainly with proper methodology, clinical and therapeutic thresholds and

clinical applications in hypertension. The authors provide this simple summary table of the advantages and limitations of home blood pressure monitoring.

Table 1: HBPM Advantages and Limitations

Advantages	Limitations
• Multiple measurements over a period of a day, week, or month are possible • Assessment of treatment effects at different times of the day and over extended periods are facilitated • No alarm reaction to BP measurement • Good reproducibility • Good prognostic value • Relatively low cost • Patient-friendliness • Involvement of patient in hypertension management • Possibility of digital storage, printout, PC download or teletransmission of BP values • Improvement of patients' compliance to treatment • Improvement of hypertension control rates	• Need for patient training • Possible use of inaccurate devices • Measurement errors • Limited reliability of BP values reported by patients • Induction of anxiety, resulting in excessive monitoring • Treatment changes made by patients on the basis of casual home measurements without physician guidance • Normal thresholds and therapeutic targets still debated • Lack of night recording

Pickering et al. (2006) highlight the need for physicians to access blood pressure readings from settings outside of the physician office in order to overcome monitoring challenges like "white coat syndrome" and generally improve treatment of patients with hypertension. In 2008, Viera et al. (2008) examined the motivations and percentage of patients using home blood pressure monitors in North Carolina and noted that forty-three percent of hypertension patients were using home blood pressure monitors at least once a month and that the results of these tests were not validated or shared with their physicians. Despite the potential for validation and communication challenges noted in the North Carolina study and elsewhere, Pickering et al. (2008) authored a call to action

in support of the use of home blood pressure monitors on behalf of the American Heart Association, American Society of Hypertension and Preventive Cardiovascular Nurses Association, citing the current availability of accurate, reliable, easy to use and relatively inexpensive monitors. Parati et al. (2008) noted these same characteristics and provided detailed instructions about proper monitoring techniques when they authored the European Society of Hypertension guidelines for blood pressure monitoring at home.

These endorsements of home blood pressure monitoring come after more than thirty years of research. Soghikian et al. (1992) examined the impact of home blood pressure monitoring on hypertension care and concluded that the addition of home blood pressure monitors led to fewer physician visits and lower costs of care without a decrease in blood pressure control. Friedman et al. (1996) examined the use of home blood pressure monitors along with an automated telephone system and counseling and determined that the system was likely to improve health outcomes and reduce health services utilization and cost. Staessen et al. (2004) examined physicians using home blood pressure monitors as a proxy for office based monitors and noted that home monitor use was associated with less intensive drug treatment and lower cost. The differences in treatment were thought to be associated with lower treatment rates for patients with "white coat syndrome". Marquez-Contreras et al. (2006) introduced home blood pressure monitors for one hundred hypertensive patients and noted that as compared to one hundred control group patients, the intervention group had improved medication adherence and blood pressure levels. In the same year, Ogedegbe et al. (2006) reviewed the literature to-date and concluded that multi-factorial interventions were common and showed a positive impact on hypertension care. The authors focused on medication adherence and conclude

that the home blood pressure monitors had an impact on medication adherence through both patient and physician behavior, resulting in higher levels of antihypertensive medication being taken thereby lowering blood pressure levels.

Verberk et al. (2007) examined the impact of home blood pressure monitoring on medication levels and noted that patients using home blood pressure monitors maintained similar blood pressure levels while consuming less medication and saving healthcare dollars. Consistent with the Staessen article from 2004, the lower levels of medication were assumed to be attributed to over diagnosis / over treatment in patients with some level of "white coat syndrome". Withholding medication or treating these patients with less intensive medication therapy is assumed to have no impact on blood pressure control rates. Green et al. (2008) examined the effect of home blood pressure monitors and web communication with a pharmacist and noted pharmacist care management delivered through secure patient web communication improves blood pressure control in patients with hypertension. Asayama et al. (2009) reported that evening home blood pressure monitoring was predictive of incidence of stroke over twelve years of follow-up for 2,234 Japanese patients. Scisney-Matlock et al. (2009) validated the reliability and reproducibility of home blood pressure measurements in hypertensive women of varying ages and ethnicities. As noted earlier, the use of telephone monitoring systems can also be used to improve healthcare delivery and medication adherence. Clark et al. (2007) and Spaeder et al. (2006) both successfully utilized this technology to improve care in heart failure patients.

Factors that Contribute to Effective Blood Pressure Control

While it is important to learn from the efforts of previous investigators who have studied specific interventions, one also needs to examine the specific target patient population characteristics and the interaction between these patients and the healthcare providers to determine what will work best in the specific environment. Fuertes et al. (2009) focused on the "working alliance" between patients and their physicians and noted that psychological and interpersonal dimensions of the medical care are related to patient adherence and satisfaction. This work reinforces the earlier work of Laine et al. (1996), Braddock et al. (1999), and Larson et al. (2005) who respectively focused on "patient centered care", "informed decision making" and "clinical empathy". Naik et al. (2008) followed this same line of research at a veterans hospital population in Texas, where the authors focused on the multiple factors that contribute to effective hypertension control including patient characteristics, self-management behavior, and communication factors. They reported that patient endorsement of a shared decision-making model, where patients proactively communicate with clinicians and clinicians use a collaborative communication style, has a significant impact on hypertension control.

Hyman et al. (2001) examined the NHANES patient group to determine the characteristics of patients with uncontrolled hypertension and reported that the great majority had health insurance but lacked awareness of hypertension. African ancestry patients, those older than 65 years of age, males and those who had needed to be seen by a physician in the preceding 12 months were also at higher risk. Kramer et al. (2004) examined the hypertension control in the MESA group and concluded that hypertension treatment and control strategies should reflect an understanding of the differences in

prevalence and control rates among minority groups. They noting that after controlling for socioeconomic factors, the African-American ethnicity was independently associated with "treated but uncontrolled hypertension" (OR 1.35; 95% CI 1.07-1.71).

Bosworth et al. (2006) reported similar results when examining 569 patients in the Veterans' Study to Improve the Control of Hypertension, noting that after controlling for more than twenty factors related to blood pressure control and despite good access to healthcare and medications, African-American veterans have lower levels of blood pressure control than whites. Kressin et al. (2007) examined a another veteran group for differences in health beliefs, processes of care and medication adherence by race and noted that while African-American patients had a higher sense of seriousness regarding their high blood pressure, they were significantly more likely to forget to take their medication and had significantly less trust in their physicians. The authors noted that confidence in one's ability to take medications as prescribed was associated with better adherence regardless of race.

Hekler et al. (2008) examined patient characteristics involving illness beliefs and adherence behaviors among African-Americans using a model based on five constructs connecting the patient with hypertension: identity, causes, consequences, time line, and controllability/cure. The authors reported that patients who embrace a medical belief model in which their hypertension is caused and controlled by factors such as diet, age, and weight achieve lower systolic blood pressures; whereas patients that focus on stress as the cause of their hypertension were likely to lower their stress levels but not their blood pressure. Gulliford et al. (2004) examined a broad range of socioeconomic factors within Trinidad and Tobago to better understand if these patient characteristics accounted

for differences in hypertension management and noted that factors like gender, income and education level all play an important role.

Conceptual Framework

The conceptual framework depicted in the figure below integrates many of the key concepts described in the literature review and forms the rationale for the intervention used in this study. The framework starts with an assumption that patients approach the challenges of hypertension using a health belief model construct. That is to say that the patient's understanding of susceptibility, severity, benefits, barriers, and self-efficacy are incorporated into their decision making regarding health behavior. The framework then adds the assumption that physician and nurses are using established hypertension management strategies that embrace the medical belief model in which hypertension is caused by factors such as genetic predisposition, poor diet, sedentary lifestyle, and age; and controlled by factors such as healthy diet, exercise, and medication compliance. The framework then highlights the limited interactions between patients and their healthcare provider. The limited patient-provider interaction is believed to be particularly important in the environment of the public health centres of the Republic of Trinidad and Tobago because hypertension clinics, or "lifestyle clinics" as they are called, are frequently overcrowded and high quality patient education is limited. Next, the conceptual framework draws from the literature dealing with innovative technologies and intervention strategies used to achieve the following goals: (1) patients will receive frequent feedback regarding the seriousness of their health condition and the effectiveness of their most recent hypertension management strategies, (2) patients will

get more frequent feedback from providers, reinforcing the medical belief model, (3) providers will get more timely feedback regarding the success or failure of each patient's hypertension management strategies, (4) access barriers associated with aligning schedules for patients and providers to travel to health centres and physically meet will be significantly reduced, (5) limited health centre resources will be increasingly prioritized to focus on patients with time-sensitive problems and (6) patients will be monitored for non-compliance to minimize the number of patients who are "lost to follow-up". In the conceptual model, improvement related to each of these goals can be achieved through a series of frequent / short "automated encounters". The frequent / short "automated encounters" strengthen the relationship between patients and provider and help empower patients to take a more active role in managing their health. An intervention which includes HBPM and automated monitoring was selected because the associated automated encounters help integrate the cognitive environments of patients and providers and improve the frequency and timing of patient provider interactions. Specifically, the health beliefs construct (susceptibility, severity, benefits, barriers, and self-efficacy) suggests that patients seeing their own blood pressure measurements frequently and receiving increased feedback from physicians and nurses can improve health behavior. Similarly, the medical belief model, where medication compliance, healthy diet, and exercise help to effectively manage blood pressure, is supported with a more frequent blood pressure measurements and optimally timed changes in medication and patient education.

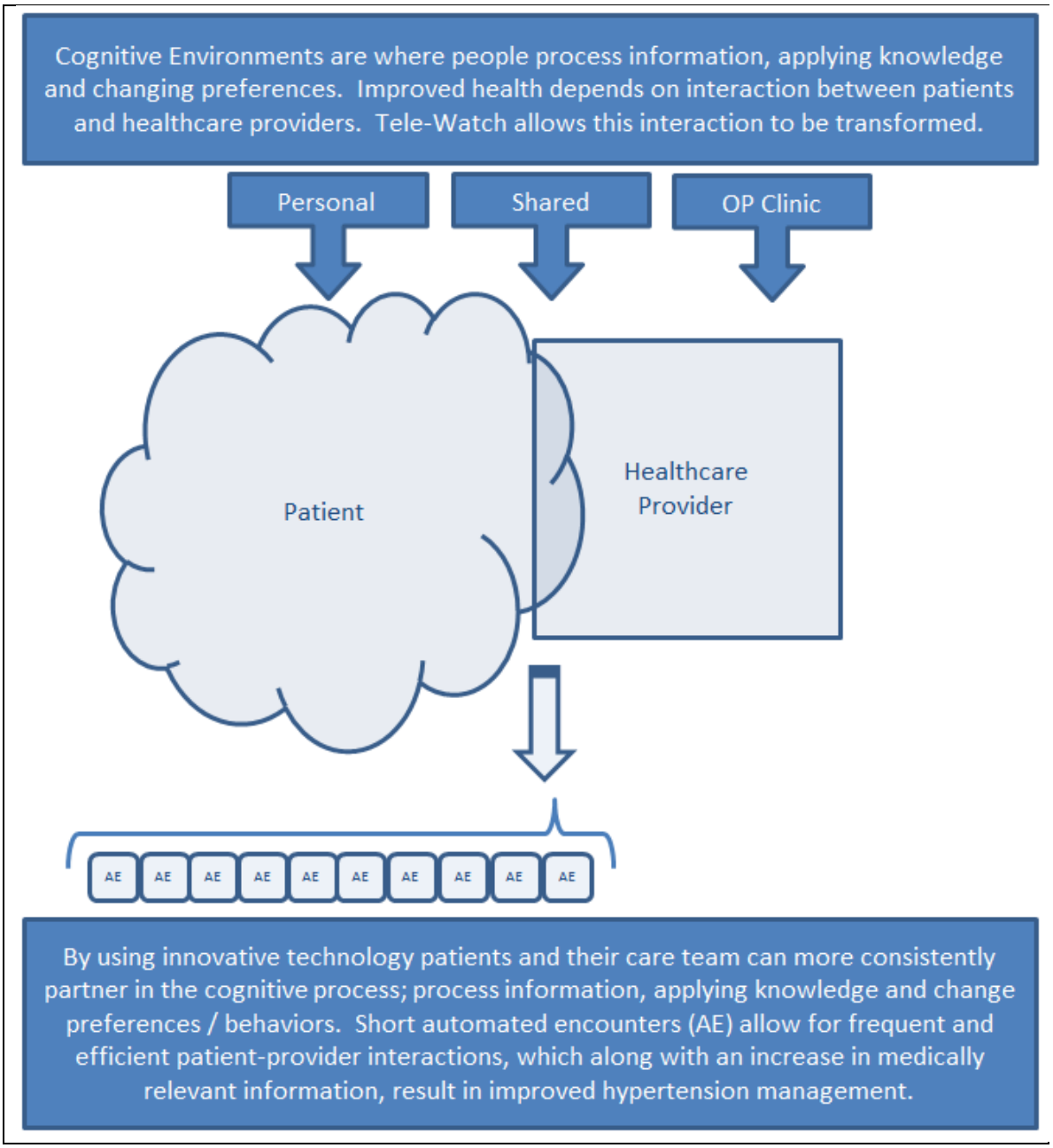

Figure 1: Conceptual Framework

Research Questions, Specific Aims and Hypotheses

Research Questions

1. Can public sector hypertension patients be successfully trained to utilize home blood pressure monitoring equipment and effectively convey their medical condition to health centre physicians and staff via the automated telephone monitoring system?
2. Can information from home blood pressure monitoring and an automated telephone monitoring system be successfully integrated into the hypertension medical management model used in primary care chronic disease clinics in the Republic of Trinidad and Tobago?
3. Will public sector hypertension patients respond positively to home blood pressure monitoring and a more dynamic communication model with their physicians?
4. Will primary care physicians in the Republic of Trinidad and Tobago respond positively to the integration of home blood pressure monitoring information into their practice and to a dynamic communication model with their hypertension patients?
5. Can a comprehensive dataset including information from clinic exams, patient and family histories, health behaviors and beliefs surveys be collected to characterize the hypertensive patient population being treated in the primary care clinics in the Republic of Trinidad and Tobago to inform future research studies?

Specific Aims and Hypotheses

Specific Aim 1: Train and then observe physicians and hypertension patients in the use of a HBPM and an automated telephone-information system to determine if these tools can contribute to effective blood pressure management at two public health centres in the Republic of Trinidad and Tobago so as to examine the hypotheses that:

Hypothesis 1a [primary outcome variable]: Using change in seated MAP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Hypothesis 1b: Using change in seated SBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Hypothesis 1c: Using change in seated DBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Hypothesis 1d: Using change in Pulse Pressure (PP) as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Hypothesis 1e: Using change in standing SBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Hypothesis 1f: Using change in standing DBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period.

Specific Aim 2a: Train and then observe hypertension patients in the use of home blood pressure monitors to determine if patients at two public health centres in the Republic of Trinidad and Tobago can demonstrate proper blood pressure monitoring technique *(cuff is placed correctly, sensor is positioned over the brachial artery, arm is positioned at heart level, machine is activated correctly, patient is calm and still during measurement, systolic and diastolic measures are correctly identified)* so as to examine the hypothesis that:

Hypothesis 2a: After receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago are able to demonstrate effective use of a home blood pressure monitor in three consecutive clinic visits over a six-month study period.

Specific Aim 2b: Survey hypertension patients, previously trained in the use of home blood pressure monitors, to determine if patients at two public health centres in the Republic of Trinidad and Tobago feel they know how to correctly use a home blood pressure monitor so as to examine the hypothesis that:

Hypothesis 2b: After receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago will express that they know how to properly use a home blood pressure monitor in three consecutive clinic visits over a six-month study period.

Specific Aim 2c: Train and then monitor hypertension patients to determine if patients at two public health centres in the Republic of Trinidad and Tobago can consistently convey their medical information to health centre physicians and staff via a pre-recorded question set and an automated telephone monitoring system so as to examine the hypothesis that:

Hypothesis 2c: After receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago will be able to convey their medical information to health centre physicians and staff via an automated telephone monitoring system with a frequency of ≥ 25 phone calls per six-month study period.

Specific Aim 3: Train primary care physicians at two public health centres in the Republic of Trinidad and Tobago to use an automated telephone monitoring system to manage public sector hypertension patients and then survey these same physicians to determine if they were able to use the system to guide their medical decisions *(maintain current anti-hypertensive therapy, change the dose of an anti-hypertensive therapy, add a new anti-hypertensive therapy, discontinue an anti-hypertensive therapy, become aware of a side effect of an anti-hypertensive therapy, recommend patient come to the clinic or go to an Emergency Department, prompt education of the patient regarding dietary compliance, prompt education of the patient regarding physical activity)* so as to examine the hypothesis that:

Hypothesis 3: After receiving basic training, primary care physicians at two public health centres in the Republic of Trinidad and Tobago will successfully use an automated telephone monitoring system over a six-month study period to manage ≥ 80% of the hypertension study patients.

Specific Aim 4: Survey hypertension patients who have previously been trained and used home blood pressure monitors and an automated telephone monitoring system for a six-month study period to determine if patients at two public health centres in the Republic of Trinidad and Tobago have a positive response to the system *(agree with the following statements: the home blood pressure monitoring system helped them improve their blood pressure control, the home blood pressure monitoring system helped them actively participate in the management of their blood pressure, the home blood pressure monitoring system helped them understand how the type of medicine can influence their blood pressure, the home blood pressure monitoring system helped them understand how the dose of medicine can influence their blood pressure, the home blood pressure monitoring system helped them understand how their medication helps control their blood pressure, the home blood pressure monitoring system helped them understand how diet, particularly salt intake, can influence their blood pressure, the home blood pressure monitoring system helped them understand how physical activity can influence their blood pressure, the home blood pressure monitoring system helped them understand their blood pressure goal, the home blood pressure monitoring system helped them identify changes in their blood pressure, the home blood pressure monitoring system helped them communicate with their physician, the home blood pressure monitoring system helped them identify problems with their medication, and they prefer the home blood pressure monitoring system to the standard hypertension management model.)* so as to examine the hypothesis that:

Hypothesis 4: After receiving basic training and using a home blood pressure monitor along with an automated telephone monitoring system for a six-month study period, ≥

80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago will respond positively to the use of these tools in their hypertension management.

Specific Aim 5: Survey public sector patients diagnosed with hypertension in the Republic of Trinidad and Tobago to characterize medical history, family history, cardiovascular risk factors, health behaviors, health beliefs, and critical hypertension management questions *(Is the patient's blood pressure well controlled? Do patients actively participate in the management of their blood pressure? Do patients understand how the type of medicine can influence their blood pressure? Do patients understand how the dose of medicine can influence their blood pressure? Do patients believe their medication is working well to control their blood pressure? Do patients understand how diet, particularly salt intake, can influence their blood pressure? Do patients understand how physical activity can influence their blood pressure? Do patients know what their blood pressure goal is?)* so as to inform future research studies and explore the relationships between patient characteristics and patient responses to using home blood pressure monitoring and an automated telephone monitoring system.

METHODS

Study Design

The study followed a non-randomized prospective observational design to assess the feasibility of using HBPM and the automated telephone-information system to manage elevated blood pressure and subsequently improve the health outcomes of the Republic of Trinidad and Tobago population. It should be noted that the initial proposal called for a randomized study design comparing the proposed intervention to routine medical management but the non-randomized study design was ultimately chosen because key stakeholders in Trinidad felt strongly that all study patients should receive HBPM and the automated telephone-information system intervention. Their concern with the randomized design was that patients would speak with one another and those not receiving the intervention would think they were being deprived of the best care. While the non-randomized design was not the first choice, this design did offer the researcher team an excellent opportunity to examine many unknowns associated with deploying HBPM and automated telephone-information system technology in a developing country like the Republic of Trinidad and Tobago. Preliminary site visits to the Republic of Trinidad and Tobago revealed that the public sector health delivery system that cares for the country's less affluent citizens is significantly different from the health delivery systems of the United States and Western Europe where HBPM and automated telephone-information systems have been studied and demonstrated to be effective tools in the management of elevated blood pressure. In addition to the cultural differences that could influence the use and effectiveness of these technologies, the environment and

underlying infrastructure were different. For example, at the time of the study there were no computers in the primary care clinics of the health centre. Patient records were hand written and stored in large log books. While some of the medical staff had some experience working with computers outside of the health centre, many of the nurses had little or no experience with computers. Physicians generally had more experience with computers than nurses but they had little or no experience using computer systems to organize patient records and monitor patient responses to therapy. The deployment, general acceptance and successful utilization of these technologies in the public sector health delivery system are all being tested as part of this feasibility study. Additionally, there is very little validated information documenting the medical condition of patients with elevated blood pressure in the country's public sector health delivery system. Records from health centre visits are limited and maintained in log books, which are generally unavailable to investigators and exceptionally difficult to explore with advanced statistical techniques. The final study design allows for the detailed monitoring of patients and healthcare providers during the implementation of the HBPM and automated telephone-information system intervention and provides both qualitative and quantitative measurements of important medical and healthcare delivery system variables. The feasibility study is believed to be a critical step before proceeding to a more elaborate and expensive study design to explore the hypothesis that an enhanced care model including HBPM and an automated telephone-information system is more effective at managing elevated blood pressure than the standard care delivery model.

Study Team and Training

The study team consisted of six Trinidadian primary care physicians, four cardiologists from Johns Hopkins University, two primary care nurses from Trinidad, a cardiac nurse from Johns Hopkins University, a system expert from Johns Hopkins University Applied Physics Laboratory and a public health doctoral candidate at Johns Hopkins Bloomberg School of Public Health. Five of the six Trinidadian physicians have active chronic disease clinics, from which the patient population was selected. The sixth Trinidadian physician is a Lecturer within the Family Medicine Programme at the University of West Indies in Trinidad. The Johns Hopkins University cardiology group was led by physicians focused on preventive cardiology and included the Director of Clinical Research for the Cardiology Division. All of the Johns Hopkins University participants were part of the Trinidad and Tobago Health Sciences Initiative, a Republic of Trinidad and Tobago funded training program. The five Trinidadian physicians who manage hypertension patients in the health centres and the two primary care nurses were given copies of the research protocol to review and suggest changes. Each person was also given detailed training documents and attended an afternoon training session where the home blood pressure monitors were tested, the automated telephone monitoring system demonstrated and the study forms reviewed. Follow-up training was conducted as requested and the study protocol was reviewed during periodic visits to enrollment sites by members of the Johns Hopkins team.

Study Setting and Population

The study was conducted in two public sector primary care / chronic disease clinic locations within the Republic of Trinidad and Tobago. The first, Arima District Health Facility, is a larger facility which provides primary care, accident and emergency and some specialty services located in the north central region of Trinidad, 16 miles east of Port of Spain, the capital. The second, Woodbrook Health Centre / Infinity Medical Clinic is a small facility located in the capital city of Port-of-Spain which focuses exclusively on primary care services. Both centres serve ethnically diverse populations which were thought to be generally reflective of the national population.

One hundred and seventy-one adult patients thought to be newly diagnosed or previously diagnosed but poorly controlled were screened for enrollment into the study by the primary care physicians at each location based on a convenience sample (those presenting for treatment at the time of open enrollment). Fourteen patients were determined to have normal blood pressure (SBP <140 and DBP <90) and the remaining one hundred and fifty-seven patients were ultimately recruited. All enrolled patients had a diagnosis of hypertension as documented by a facility-based blood pressure reading (SBP ≥140 or DBP ≥90) or active treatment for hypertension and met the basic enrollment criteria: speaks English and possesses normal hearing, language and telephone skills. These basic enrollment criteria were chosen to match the minimum requirements for use of the automated telephone monitoring system which uses question sets recorded exclusively in English. The enrollment criteria were left broad to maintain a diverse study population reflective of the general population being treated in the public sector health system of the

Republic of Trinidad and Tobago. All study patients were presented with a full description of the study, their rights as study participants and a standard consent agreement prior to enrolling in the study.

Description of the Intervention

As noted earlier, the HBPM and automated telemonitoring intervention was designed to address some of the main challenges facing the Republic of Trinidad and Tobago's public sector primary care centre; where large numbers of patients with uncontrolled or poorly managed blood pressure are treated by a small number of healthcare providers with a limited number of crowded clinic-based interactions. Specifically, the intervention uses home blood pressure monitors and an automated telephone monitoring system to create frequent automated encounters where patients and providers can interact to improve blood pressure control. The increased frequency of blood pressure data and feedback from physicians and nurses is designed to empower patients and support improved health behavior through the health beliefs constructs (susceptibility, severity, benefits, barriers, and self-efficacy). The increased frequency of blood pressure and other patient data to physicians and nurses helps facilitate optimally timed changes in medication and patient education.

Recently diagnosed hypertensive patients and poorly managed hypertensive patients were referred to special hypertension management study clinics which were generally operated one day per week. Each prospective study patient underwent an initial screening exam. If the patient met the enrollment criteria and expressed an interest in enrollment, they were consented, given the baseline examination and questionnaire, assigned a blood

pressure goal of 140/90 mm Hg (or 130/80 mm Hg if diabetic) and registered in the automated telephone monitoring system. The baseline examination form, shown in Appendix A, covered a wide range of demographic, patient history, family history, health belief and behavior questions in addition to clinic examination data. The blood pressure measurements used as the study's primary outcome variables were derived from the repeated baseline, three-month and six-month blood pressure measurements taken by a healthcare professional (physician or licensed nurse) in a clinic setting using a sphygmomanometer. The following methodology was used to derive a single blood pressure measure reading for the visit from the repeated measures taken during the examination: when three "Seated SBP" measurements were reported, the average of the 2nd and 3rd measurement was used; when two "Seated SBP" measurements were reported, the 2nd reading was used; when only a single "Seated SBP" measurement was available, it was used.

Each patient was provided with a home blood pressure monitor, Omron Digital Blood Pressure Monitor Model 790-IT, trained on proper technique (cuff is placed correctly, sensor is positioned over the brachial artery, arm is positioned at heart level, machine is activated correctly, patient is calm and still during measurement, systolic and diastolic measures are correctly identified) and observed to determine if they understood how to use the home blood pressure monitor and could demonstrate proper blood pressure monitoring technique. Each patient also received education regarding the factors which contribute to elevated blood pressure including uncontrollable factors such as genetic predisposition and age and behavioral factors such as poor diet, sedentary lifestyle, and medication compliance. At the end of the baseline visit, patients were asked to actively

participate in the management of their blood pressure by applying the medical knowledge they received from their physicians and nurses in clinic, exhibiting healthy behavior (maintain a healthy diet, exercise regularly and take their medications as prescribed), continuously monitoring their blood pressure at home and submitting their blood pressure readings to their physicians and nurses via phone monitoring system. The specific frequency of the home monitoring and reporting was determined by the treating physician based on patient characteristics. Each physician followed standard hypertension management algorithms as informed by the National High Blood Pressure Education Program's "Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure" and the Caribbean Health Research Council's "Managing Hypertension in Primary Care in the Caribbean". By using "standard therapy" for the treatment of hypertension and other co-morbidities, the study design attempted to limit the number of variables impacting the physicians' and study patients' behaviors. Study patients had additional physical exams and answered survey questions as noted in Appendix C and Appendix D at the three-month and six-month visits. Patients were also monitored throughout a six-month study period via the automated computer system (physicians and nursing staff reviewed call logs and alerts weekly). Electronic requests for direct communication with the clinic staff (physician or nurse) were expected to be answered within two business days. Patients may have been asked to return to clinic for additional treatment if determined necessary by the treating primary care physician. Study data were reviewed both by the local Trinidadian physicians and the team from Johns Hopkins to ensure data quality and safety

monitoring. Extreme readings were validated by reviewing the clinic exam documents a second and third time to ensure data entry was not a source for measurement error.

Home Blood Pressure Monitoring Cycle

As noted in Figure 2, below, the home blood pressure monitoring cycle has six steps and starts with a patient measuring their blood pressure using their home blood pressure monitor. The patient then calls a local phone number from their home or cellphone where he or she is connected to the automated monitoring system and prompted to enter their unique study identification number and password and then answer a series of questions about their current medical condition. The specific pre-recorded question set is described in Appendix G and includes instruction like "please enter your sitting systolic, the higher, blood pressure number, followed by the pound sign", "are you having problems taking any of your medications, if yes press one, if no press two" and "would you like to speak to the nurse, if yes press one, if no press two". In the third step of the cycle, the monitoring system collects the information. In the fourth step, the monitoring system analyzes the information against the patient-specific parameters created by the treating physician and signals a system alert if the measurements exceed certain parameters. In step five, the specific responses, trends, alerts and requests from patients are made available to the primary care physicians in the chronic disease clinics via remote web connections. The physicians and nurses also have access to customized reports based on patient-specific parameters preloaded into the system. In step six, the physician and nurses provide feedback to the patient and adjust care plans as needed.

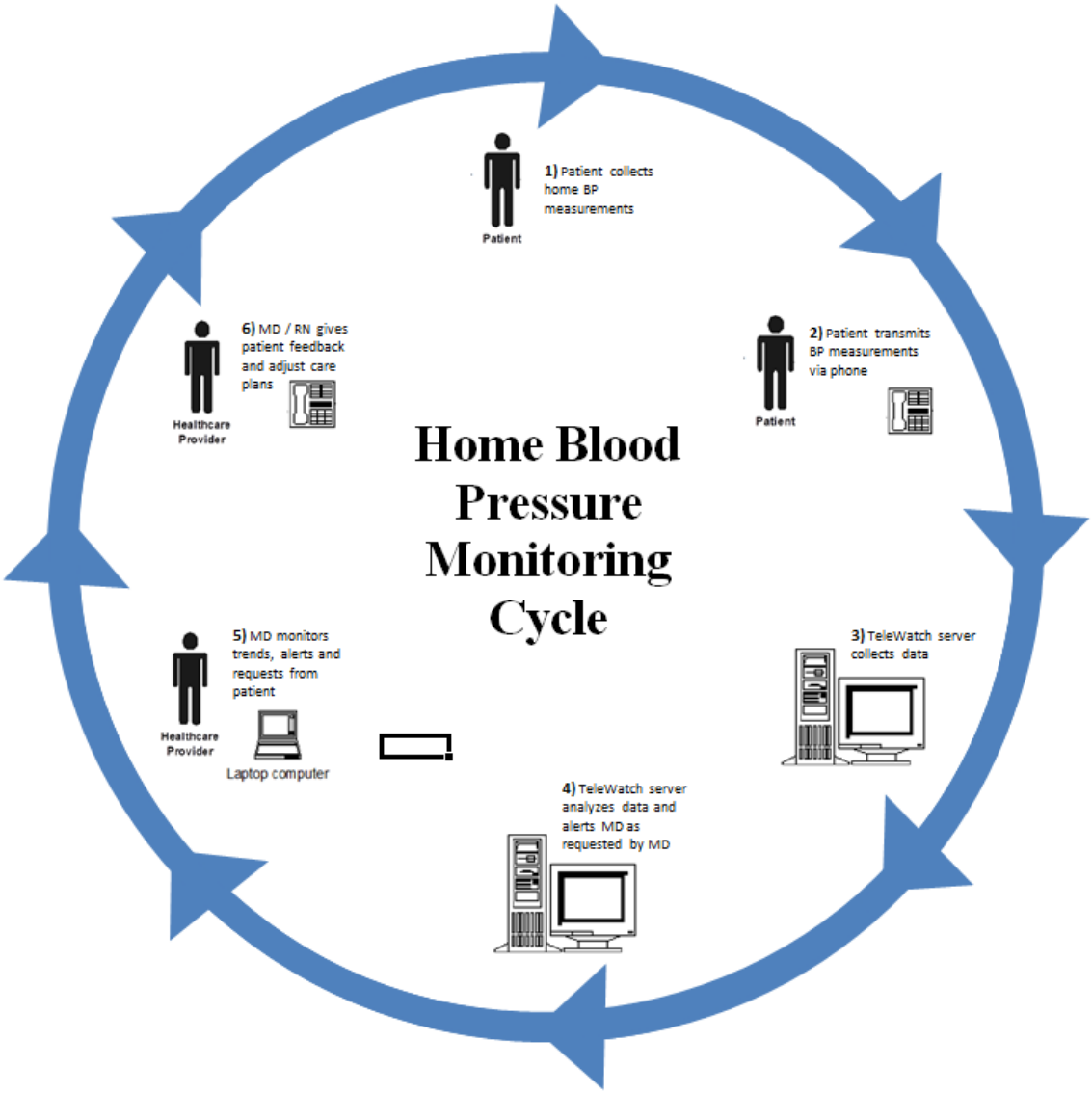

Figure 2: HBPM Cycle

Technical Telephone / Computer Interface

As described in Figure 3 below, the automated monitoring system and associated server-based database have eight sections and multiple interfaces. In the "Author" section, the physicians from Johns Hopkins University and the local primary care clinics partnered to

create and record a customized set of questions for hypertensive patients in the Republic of Trinidad and Tobago. In the "Patient" section, the treating physicians and nurses created system records for each of their patients and determined the patient alert values based on the patient's personal medical history. In the "Report" section, the treating physician specifies which reports he or she wants displayed. In the "Analyze" section, the treating physician defines how he or she wants to see the patient's data, using customized charts and graphs. In the "Response" section, the treating physician and nurse can monitor alerts and note the resulting changes in the care plan. In the "Message" section, the treating physician and nurse can listen to messages from the patient or record a custom message for the patient to hear with their next automated encounter. In the "Watch" section, the treating physician and nurse can efficiently monitor new calls, alerts and messages with color coded and prioritized lists. In the "Interactive Voice Response" section, the patient call is received, the pre-recorded question set is delivered and the patient's responses are recorded. All of these data are brought together in a single database.

Software components of TeleWatch as described by James G. Palmer and Jeffrey A. Spaeder in Johns Hopkins APL Technical Digest, Volume 25, Number 3 (2004).

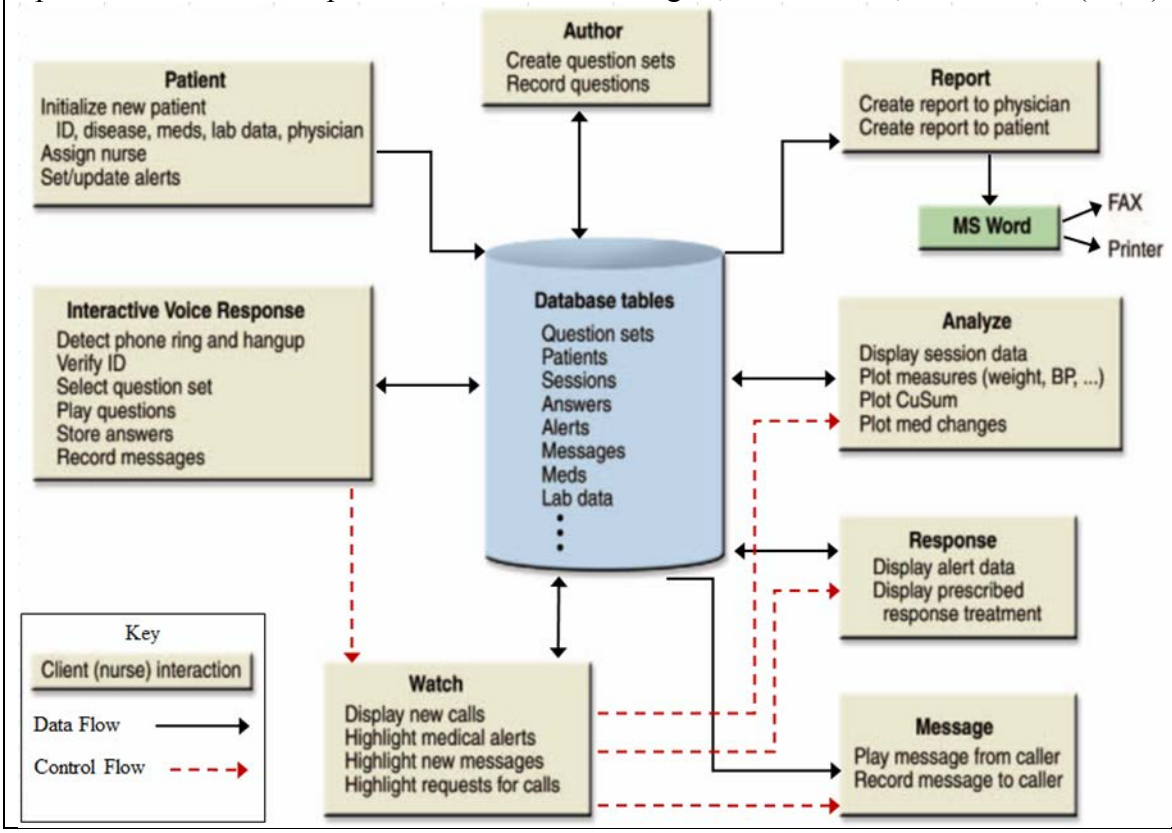

Figure 3: TeleWatch Software Components

Description of the Key Variables

Table 2: Key Variables - Assigned

Variable Name	BL	3M	6M	Variable Label / Description
jhu_number	x			Unique Pt. Study Number (assigned by research team)
en_centre	x			Enrollment Health Centre (Arima or Woodbrook)
target_sbp	x			Pt SBP Target (assigned based on Dx of diabetes)
target_dbp	x			Pt DBP Target (assigned based on Dx of diabetes)

Table 3: Key Variables – Primary Blood Pressure Measures

Variable Name	BL	3M	6M	Variable Label / Description
seat_sbp	x	x	x	Seated SBP (derived from multiple
seat_dbp	x	x	x	Seated DBP (derived from multiple
seat_pulse	x	x	x	Seated Pulse (derived from multiple
seat_pp	x	x	x	Seated Pulse Pressure (derived from multiple readings)
seat_map	x	x	x	BL Seated Mean Arterial Pressure (MAP) (DBP + DBP + SBP) / 3 (derived from multiple readings)
stand_sbp	x	x	x	BL Standing SBP (derived from multiple readings)
stand_dbp	x	x	x	BL Standing DBP (derived from multiple readings)

Table 4: Key Variables – Demographics

Variable Name	BL	3M	6M	Variable Label / Description
age_at_en	x			Age at Enrollment
age_group				Age Group: examines two groups (<=55) and (>55)
gender	x			Gender (female=0, male=1)
race	x			Ethnicity (African, Indian, Mixed, Other)
union_status	x			Union Status (Single, Married, Separated / Divorced / Widowed, Common-law, Other
assistance	x			Person to Assist (None, Occasionally, Most Times, Always have some to help as needed)
employment	x			Employment (None, Part-time, Full-time, Retired)
education	x			Formal Education (None, Primary, Secondary, Post-Secondary)

Table 5: Key Variables – Patient Characteristics

Variable Name	BL	3M	6M	Variable Label / Description
height_cm	x			BL Height cm
weight_kg	x	x	x	BL Weight kg
waist_cm	x	x	x	BL Waist cm
bmi	x	x	x	BL BMI calculated
en_pg3_6	x	x	x	Current Tobacco Use (Y/N)
en_pg3_9	x	x	x	Current Illicit Drug Use (Y/N)
en_pg3_14	x	x	x	Current Alcohol Use (Y/N)
en_pg3_16	x			Salt Added to Food (Y/N)
en_pg3_18	x			Weekly Physical Activity (30 mins / week) (Y/N)
en_pg3_25	x			Currently Taking Medications (Y/N)
en_pg3_50	x			Currently Taking Supplements (Y/N)

Table 6: Key Variables – Use of Home Blood Pressure Monitor

Variable Name	BL	3M	6M	Variable Label / Description
pt_use_cuff	x	x	x	Proper Use of HMPM: Cuff Placement
pt_use_sensor	x	x	x	Proper Use of HMPM: Sensor Position
pt_use_arm	x	x	x	Proper Use of HMPM: Arm Position
pt_use_machine	x	x	x	Proper Use of HMPM: Machine Activation
pt_use_pt_calm	x	x	x	Proper Use of HMPM: Patient Calm
pt_use_sbp_dbp	x	x	x	Proper Use of HMPM: SBP-DBP Identified
pt_use_understand	x	x	x	Proper Use of HMPM: Pt Confirms Understanding

Table 7: Key Variables – Demographics

Variable Name	BL	3M	6M	Variable Label / Description
en_pg2_2	x			Pt History Coronary Artery Disease (CAD)
en_pg2_3	x			Pt History Angina
en_pg2_5	x			Pt History Myocardial Infarction (MI)
en_pg2_8	x			Pt History Cath Documented Coronary Artery Disease
en_pg2_11	x			Pt History Percutaneous Coronary Intervention (PCI)
en_pg2_14	x			Pt History Coronary Artery Bypass Graft (CABG) Surgery
en_pg2_17	x			Pt History Congestive Heart Failure (CHF)
en_pg2_19	x			Pt History of Stroke or Transient Ischemic Attack (TIA)
en_pg2_20	x			Pt History Transient Ischemic Attack (TIA)
en_pg2_22	x			Pt History of Stroke
en_pg2_26	x			Pt Current Dx of Depression
en_pg2_28	x			Pt Current Dx of Diabetes
en_pg2_33	x			Pt Current Dx of Dyslipidemia
en_pg2_35	x			Pt Current Dx of Gout
en_pg2_36	x			Pt Obstructive Sleep Apnea Symptoms
en_pg2_41	x			Pt History of Peripheral Vascular Disease (PVD)
en_pg2_46	x			Pt History of Renal Insufficiency
en_pg3_1	x			Pt History of Bronchospastic Disease
en_pg3_4	x			Pt History of Tobacco Use

Table 8: Key Variables – Family History

Variable Name	BL	3M	6M	Variable Label / Description
en_pg4_1	x			Fam Hist Cardiovascular Disease (CVD)
en_pg4_2	x			Fam Hist of Hypertension
en_pg4_9	x			Fam Hist of Myocardial Infarction (MI) or Angina
en_pg4_16	x			Fam Hist of Stroke or Transient Ischemic Attack (TIA)
en_pg4_23	x			Fam Hist of Sudden Death
en_pg4_30	x			Fam Hist of Kidney Dialysis

Table 9: Key Variables – Patient Feedback

Variable Name	BL	3M	6M	Variable Label / Description
under_med	x		x	Patient Feedback: Understand Meds
likely_med	x		x	Patient Feedback: Likely to Take Meds
under_diet	x		x	Patient Feedback: Understand Healthy Diet
likely_diet	x		x	Patient Feedback: Likely to Maintain Diet
under_exer	x		x	Patient Feedback: Understand Healthy Phys Activity
likely_exer	x		x	Patient Feedback: Likely to Maintain Physical Activity
med_a_forget	x		x	Patient Med Adherence Feedback: Sometimes Forget (Y/N)
med_a_careless	x		x	Patient Med Adherence Feedback: Sometimes Careless (Y/N)
med_better	x		x	Patient Med Adherence Feedback: Sometimes stop taking meds when feeling better
med_worse	x		x	Patient Med Adherence Feedback: Sometimes stop taking meds when feeling worse
med_a_score	x		x	Med Adherence Score 1 to 4 (sum of above)
limit_phy	x		x	Last 30 Days Poor Physical Health (0-30)
limit_ment	x		x	Last 30 Days Poor Mental Health (0-30)
limit_all	x		x	Last 30 Days Limited by Health (0-30)

Table 10: Key Variables – Medication Problems

Variable Name	BL	3M	6M	Variable Label / Description
pt_takes_meds		x	x	Pt Problems: None - Takes Meds Regularly (Y/N)
tmv_pg2_2		x	x	Pt Problems: Medication Side Effects (Y/N)
pt_prob_obtain		x	x	Pt Problems: Problem Obtaining Meds
pt_prob_forget		x	x	Pt Problems: Forget to Take Medications (Y/N)
pt_prob_no_help		x	x	Pt Problems: Medications Not Helping
pt_prob_other		x	x	Pt Problems: Other Medication Problems (Y/N)

Table 11: Key Variables – Medication Compliance Self-Assessment

Variable Name	BL	3M	6M	Variable Label / Description
pt_med_compl		x	x	Patient Feedback: Estimated Medication Compliance (_%)
pt_diet_compl		x	x	Patient Feedback: Assess Dietary Compliance (Excellent, Good, Fair, Poor)
pt_exer_compl		x	x	Patient Feedback: Access Physical Activity Compliance (Excellent, Good, Fair, Poor)
pt_phys_ability		x	x	Physical Activity (Increased, No Change, Decreased)
pt_limited_days		x	x	Patient Feedback: Number of days where physical activity was limited because of health (0-30)

Table 12: Key Variables – Patient Assessment of BP Management

Variable Name	BL	3M	6M	Variable Label / Description
pt_controlled	x	x	x	Pt Assessment: BP Well Controlled
pt_participate	x	x	x	Pt Assessment: I Actively Participate BP Mgmt.
pt_u_meds	x	x	x	Pt Assessment: I understand how type of medications influences BP
pt_u_dose	x	x	x	Pt Assessment: I understand how dose of medication influences BP
pt_meds_work	x	x	x	Pt Assessment: I believe medications are working
pt_u_diet	x	x	x	Pt Assessment: I uderstand how diet influences BP
pt_u_exer	x	x	x	Pt Assessment: I understand how physical activity influences BP
pt_knows_goal	x	x	x	Pt Assessment: I know what my BP goal

Table 13: Key Variables – Health Beliefs #1

Variable Name	BL	3M	6M	Variable Label / Description
hb_a	x		x	Health Belief Question: Severity Activity Interference
hb_b	x		x	Health Belief Question: Severity Get Worrisome Illnesses
hb_c	x		x	Health Belief Question: Susceptibility Mild Cold
hb_d	x		x	Health Belief Question: Susceptibility
hb_e	x		x	Health Belief Question: Susceptibility Seasonal Flu
hb_f	x		x	Health Belief Question: Susceptibility Heart Attack
hb_g	x		x	Health Belief Question: Susceptibility 3Days in Bed
hb_h	x		x	Health Belief Question: Susceptibility Ease of Illness
hb_i	x		x	Health Belief Question: Severity Mild Cold
hb_j	x		x	Health Belief Question: Severity Heart
hb_k	x		x	Health Belief Question: Severity Cavity
hb_l	x		x	Health Belief Question: Severity 3Days in
hb_m	x		x	Health Belief Question: Severity Get Serious Illnesses
hb_n	x		x	Health Belief Question: Health Status Compared to Other
hb_o	x		x	Health Belief Question: Health Status Describe your Health
hb_p	x		x	Health Belief Question: Barriers Too Much Effort
hb_q	x		x	Health Belief Question: Locus of Control Avoidance
hb_r	x		x	Health Belief Question: Locus of Control Personal Care

Table 14: Key Variables – Health Beliefs #2

Variable Name	BL	3M	6M	Variable Label / Description
hb_s	x		x	Health Belief Question: Trust in MD Doctors Help Most
hb_t	x		x	Health Belief Question: Trust in MD Home Remedies
hb_u	x		x	Health Belief Question: Trust in MD Doctors Can't Help
hb_v	x		x	Health Belief Question: Barriers Med Costs
hb_w	x		x	Health Belief Question: Barriers Felt Worse
hb_x	x		x	Health Belief Question: Barriers
hb_y	x		x	Health Belief Question: Barriers Heard Meds Dangerous
hb_z	x		x	Health Belief Question: Trust in MD Doctors Prevent Illness
hb_aa	x		x	Health Belief Question: Health Concern How Concerned
hb_ab	x		x	Health Belief Question: Health Concern Current Self-Care
hb_ac	x		x	Health Belief Question: Health Concern Improved Self-Care
hb_ad	x		x	Health Belief Question: Health Concern More Important Things

Table 15: Key Variables – Health Beliefs Factor Variables

Variable Name	BL	3M	6M	Variable Label / Description
hb_fact1	x		x	Factor Analysis Variable 1 (Health Beliefs Questionnaire)
hb_fact2	x		x	Factor Analysis Variable 2 (Health Beliefs Questionnaire)
hb_fact3	x		x	Factor Analysis Variable 3 (Health Beliefs Questionnaire)
hb_fact4	x		x	Factor Analysis Variable 4 (Health Beliefs Questionnaire)
hb_fact5	x		x	Factor Analysis Variable 5 (Health Beliefs Questionnaire)
hb_fact6	x		x	Factor Analysis Variable 6 (Health Beliefs Questionnaire)
hb_fact7	x		x	Factor Analysis Variable 7 (Health Beliefs Questionnaire)
hb_fact8	x		x	Factor Analysis Variable 8 (Health Beliefs Questionnaire)
hb_fact9	x		x	Factor Analysis Variable 9 (Health Beliefs Questionnaire)
hb_fact10	x		x	Factor Analysis Variable 10 (Health Beliefs Questionnaire)

Table 16: Key Variables – Physician Use of Computerized Monitoring System

Variable Name	BL	3M	6M	Variable Label / Description
tmv_pg1_1		x	x	MD Assessment Maintain Therapy
tmv_pg1_2		x	x	MD Assessment Change Dose
tmv_pg1_3		x	x	MD Assessment Add Therapy
tmv_pg1_4		x	x	MD Assessment Stop Therapy
tmv_pg1_5		x	x	MD Assessment Side Effects
tmv_pg1_6		x	x	MD Assessment Call Pt to Clinic
tmv_pg1_7		x	x	MD Assessment Prompt Educ Diet
tmv_pg1_8		x	x	MD Assessment Prompt Educ Exercise
md_uses		x	x	MD Used Syst for 1-8 Reasons

Table 17: Key Variables – Call Data and Outcome Groups

Variable Name	BL	3M	6M	Variable Label / Description
m_valid_calls			x	Number of Valid Calls (6-month study period)
m_bad_calls			x	Number of Invalid Calls (6-month study period)
m_call_n			x	Number of Total Calls (6-month study
m_vcall_perc			x	Percent of calls that were judged valid (complete data; values were within plausible range)
m_call_span			x	Span of time from first to last call (range 0 - 180 days)
sbp_callz			x	Reported SBP from HBPM (measured with each call)
dbp_callz			x	Reported DBP from HBPM (measured with each call)
success			x	Patient Results Grouping: examined two groups (Success = HTN Controlled and MAP lowered) (Not-Successful)
ben_cat			x	Patient Results Grouping: Examined three group (best performers, middle performers, worst performers)
best_worst			x	Patient Results Grouping: Examined two group (best performers and worst performers; middle performers dropped)

Sample Size Calculation

The following variables were used in the PS Power and Sample Size Calculator to determine an appropriate sample size of one hundred twelve (112): paired t-test (test type), α=.05 (alpha / probability of incorrectly accepting the null hypothesis), power=.8 (probability of correctly rejecting the null hypothesis), δ=2 mm Hg (delta / expected

meaningful difference in means from enrollment to six-month visit) and σ=7.5 mm Hg (sigma / standard deviation of difference in the response of matched pairs). This sample size was rounded up to (n=125) and considered appropriate for examining the questions of feasibility addressed by this pilot study.

Information Lost to Follow-up

One hundred fifty-eight patients enrolled in the study and completed the baseline visit. Thirty-nine of these had incomplete records at the end of the study and were excluded from the statistical analysis because post-intervention measurements of blood pressure were not available. The loss of follow-up data for these individuals is the result of several issues. First, blood pressures for 46% of them were within normal range, <140/90 mm Hg, and these patients were excluded from follow-up. Second, records were missing for 39% of these patients and it is unclear whether patients did not return to the health centre because they chose a different provider or whether the records were misplaced. Study notes on the remaining 15% of patients explain the reasons for their withdrawal. One patient passed away. Two patients were too ill or frightened to participate and three patients didn't see the value of the program. As noted in the table below, mean blood pressure measurements for the 39 patients excluded from the final analysis were lower than the 118 patients who had complete records and were included in the analysis. This difference is consistent with the earlier observation that nearly half of the excluded patients did not have elevated blood pressure at the time of the baseline visit and may not have been hypertensive.

Table 18: Excluded Patients: – Comparison of Baseline Blood Pressure

Comparison of Baseline Blood Pressure	
39 Patients Excluded	118 Patients Included
SBP = 137 mm Hg (Std. Dev. 21.6)	SBP = 141 mm Hg (Std. Dev. 20.6)
DBP = 84 mm Hg (Std. Dev. 12.0)	DBP = 88 mm Hg (Std. Dev. 13.9)
MAP = 102 mm Hg (Std. Dev. 14.2)	MAP = 106 mm Hg (Std. Dev. 15.0)

Statistical Software and Statistical Analysis Plan

Patient exam and survey data were initially collected in the primary care clinics using the paper forms shown in Appendices A, B, C, D, E, and F. Clinic data were entered into database format and merged with electronic data captured via the automated monitoring system using the tiered question set shown in Appendix G using Microsoft Excel 2010. The comprehensive dataset summarized in Appendix H was then analyzed using the Stata/SE 13.1 statistical packages.

Hypothesis (1a) analyzes changes in hypertensive patients' MAP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining MAP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the MAP readings against time (six-month study period) to examine trends in MAP from the baseline visit through six-month visit.
- Examining individual patient changes in MAP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-

month visit and using a paired t-test to test the hypothesis that patients lowered their MAP over time; or Ha: mean(diff) != 0.

- Examining the relationship between changes in MAP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (1b) analyzes changes in hypertensive patients' seated SBP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining seated SBP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the seated SBP readings against time (six-month study period) to examine trends in seated SBP from the baseline visit through six-month visit.
- Examining individual patient changes in seated SBP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-month visit and using a paired t-test to test the hypothesis that patients lowered their seated SBP over time; or Ha: mean(diff) != 0.
- Examining the relationship between changes in seated SBP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (1c) analyzes changes in hypertensive patients' seated DBP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining seated DBP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the seated DBP readings against time (six-month study period) to examine trends in seated DBP from the baseline visit through six-month visit.
- Examining individual patient changes in seated DBP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-month visit and using a paired t-test to test the hypothesis that patients lowered their seated DBP over time; or Ha: mean(diff) != 0.
- Examining the relationship between changes in seated DBP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (1d) analyzes changes in hypertensive patients' PP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining PP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the PP readings against time (six-month study period) to examine trends in PP from the baseline visit through six-month visit.
- Examining individual patient changes in PP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-

month visit and using a paired t-test to test the hypothesis that patients lowered their PP over time; or Ha: mean(diff) != 0.

- Examining the relationship between changes in seated PP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (1e) analyzes changes in hypertensive patients' standing SBP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining standing SBP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the standing SBP readings against time (six-month study period) to examine trends in standing SBP from the baseline visit through six-month visit.
- Examining individual patient changes in standing SBP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-month visit and using a paired t-test to test the hypothesis that patients lowered their standing SBP over time; or Ha: mean(diff) != 0.
- Examining the relationship between changes in standing SBP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (1f) analyzes changes in hypertensive patients' standing DBP to assess the effectiveness of blood pressure management at two public health centres in the Republic of Trinidad and Tobago over a six-month study period. The statistical analysis included:

- Examining standing DBP readings at baseline, three-month visit and six-month visit; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the standing DBP readings against time (six-month study period) to examine trends in standing DBP from the baseline visit through six-month visit.
- Examining individual patient changes in standing DBP readings from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-month visit and using a paired t-test to test the hypothesis that patients lowered their standing DBP over time; or Ha: mean(diff) != 0.
- Examining the relationship between changes in standing DBP and other study variables including patient characteristics, health behaviors and health beliefs using multiple linear regression to model relationships.

Hypothesis (2a) examines the public sector hypertension patients' ability to correctly use a home blood pressure monitor in a clinic setting under physician / nurse observation. Statistical analysis included:

- Reporting the percentages of public sector hypertension patients successfully performing each step of the six blood pressure monitoring steps at each of the three clinic visits (cuff is placed correctly, sensor is positioned over the brachial artery, arm is positioned at heart level, machine is activated correctly, patient is calm and still during measurement, systolic and diastolic measures are correctly identified). The analysis will help identify the types of errors that are most likely to lead to inaccurate home blood pressure readings and to inform future patient education program training.

- Reporting the percentages of public sector hypertension patients successfully performing all steps of the blood pressure monitoring process at each of the three clinic visits.
- Reporting odds ratios and adjusted odds ratios for each of the six steps and the summary indicator at the three-month visit and the six-month visit versus the initial visit adjusting for factors, such as blood pressure, age, gender, need for additional training, etc. Population averaged logistic regression models using generalized estimating equations (GEE) methods were used in which proper use of the home blood pressure machine is the binary outcome variable [Yes/No]. This longitudinal analysis will show whether public sector hypertension patients have consistently demonstrated proper use of the home blood pressure machine over the study period.

Hypothesis (2b) examines the public sector hypertension patients' belief that they can correctly use a home blood pressure monitor. Statistical analysis included:

- Reporting the percentages of public sector hypertension patients that believe they can correctly use a home blood pressure monitor at the initial visit, three-month visit and the six-month visit.
- Analyzing the sensitivity and specificity of the public sector hypertension patient opinion comparing to the physician / nurse observation to assess the reliability of the patient opinions.

Hypothesis (2c) examines the public sector hypertension patients' ability to effectively convey their medical information to health providers via the automated telephone monitoring system. Statistical analysis included:

- Reporting the percentages of public sector hypertension patients that complete the question set ≥ 25 times over the six-month study period.
- Plotting the completed automated encounters against time (six-month study period) to show the trend of participation.
- Reporting odds ratios and adjusted odds ratios for each encounter adjusting for factors such as blood pressure, age, etc. Population averaged logistic regression models using generalized estimating equations (GEE) methods were utilized where use of automated telephone monitor system is the binary outcome variable; yes/no. This longitudinal analysis will show whether public sector hypertension patients have consistently demonstrated the ability to effectively convey their medical information to health providers over the study period.

Hypothesis (3) examines the primary care physicians' use of an automated telephone monitoring system to manage public sector hypertension patients. Statistical analysis included:

- Reporting the percentages of primary care physicians using an automated telephone monitoring system to help make the following eight decisions during months 1-3 and during months 4-6: maintain current anti-hypertensive therapy, change the dose of an anti-hypertensive therapy, add a new anti-hypertensive therapy, discontinue an anti-hypertensive therapy, become aware of a side effect of an anti-hypertensive therapy, recommend patient come to the clinic or go to an emergency department, prompt education of the patient regarding dietary compliance, prompt education of the patient regarding physical activity.

- Reporting the percentages of primary care physicians using an automated telephone monitoring system to help manage public sector hypertension patients at the three-month visit and at the six-month visit.
- Reporting odds ratios and adjusted odds ratios for each of the eight decisions and the summary indicator at the three-month visit versus the six-month visit adjusting for factors, such as blood pressure, age, gender, etc. Population averaged logistic regression models using generalized estimating equations (GEE) methods were utilized in which the automated system use to help make medical decision is the binary outcome variable; yes/no. This longitudinal analysis will show whether primary care physicians have consistently used the system over the study period.

Hypothesis (4) examines the public sector hypertension patients' responses to using home blood pressure monitors and an automated telephone monitoring system as tools in their hypertension management. Statistical analysis included:

- Reporting the percentages of public sector hypertension patients responding favorably (responses 4-6 on a 6-point Likert scale) to each of 12 "Impact of Home Blood Pressure Monitoring" survey questions.
- Reporting odds ratios and adjusted odds ratios for each of the 12 "Impact of Home Blood Pressure Monitoring" survey questions adjusting for factors such as blood pressure, age, gender, etc. Population averaged logistic regression models using generalized estimating equations (GEE) methods were utilized in which favorable response is the binary outcome variable; yes/no.

Aim (5) seeks to characterize medical history, patient history, family history, cardiovascular risk factors, health behaviors, health beliefs, and other hypertension

management variables of the hypertension patient population being managed in the public sector clinics of the Republic of Trinidad and Tobago. Statistical analysis included:

- Examining each measured characteristic; including the summary statistics: minimums, maximums, medians, means, and standard deviations.
- Plotting the measurements against time over the six-month study period to examine trends.
- Examining changes in individual patients' characteristics from baseline to three-month visit, from three-month visit to six-month visit and from baseline to six-month visit, using a paired t-test or Wilcoxon signed-rank test to test the hypothesis that patients' characteristics changed over time; or Ha: mean(diff) != 0.
- Examining the relationships between patient characteristics and blood pressure with bivariate analyses.
- Regression models will be utilized to examine the relationships between blood pressure and multiple patient characteristics.

RESULTS - Description of Hypertensive Patient Population

As noted in the table below, the study enrolled patients from two clinic locations. Seventy-five percent of the enrolled patients came from Arima District Health Facility which is located in the central Arima district. The facility has an Accident and Emergency Department (A&E) adjacent to primary care clinics and other outpatient care services. Twenty-five percent of the enrolled patients came from Woodbrook, a small primary care clinic located in the nation's capital of Port of Spain. The patient's age at enrollment ranged from 29 to 81 with an average age of 57.5. Sixty-one percent of the patients were older than 55. Females represent 72% of the study population whereas they represent approximately 50% of the overall population (Republic of Trinidad and Tobago Central Statistical Office, 2012).

Table 19: Patient Characteristics - Age & Gender

Patient Characteristics: Age & Gender		
Enrollment Health Centre	Freq.	%
Arima	89	75.4%
Woodbrook	29	24.6%
Age Group		
<= 55	46	39.0%
>55	72	61.0%
Gender		
Female	85	72.0%
Male	33	28.0%

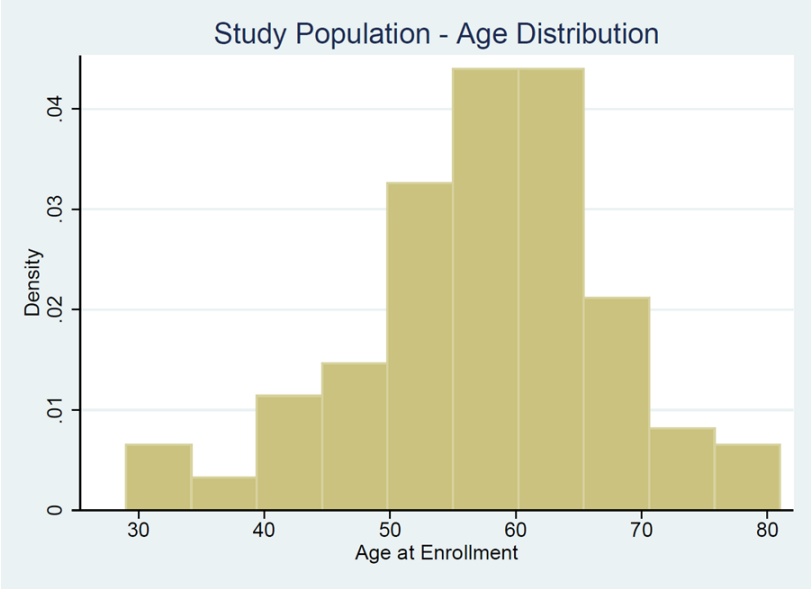

Figure 4: Study Population - Age Distribution

As noted in the table below, the racial mix of patients was 53% African ancestry, 19.1% East Indian ancestry and 27.8% Mixed as compared to the respective national average of 34.2%, 35.4%, and 22.8%. (Republic of Trinidad and Tobago Central Statistical Office, 2011). The increased representation of patients with African ancestry is consistent with the population living in the north of the country where the study was conducted. As one would expect in a hypertension clinic patient population, which has a mean age above the national average, there are higher proportions of married (57.4%) and separated / divorced (18.3%) patients than the national average of 41.2% and 10.0% respectively. Twenty-four percent of study patients reported "none" for employment. This is a relatively high percentage; given the low unemployment in the Republic of Trinidad and Tobago. But it is not surprising; given the older population and the fact that the public sector clinics support the poorest of the population. Greater than 75% of the study patients reported a strong support system; having a person to assist them with their

healthcare needs “most times” or “always”. The education levels of study participants 38.7% primary education, 40.5% secondary and 19.8% post-secondary are comparable to the proportions of adults ≥ 25 in the general population: 30.6% primary education, 43.6% secondary and 20.6% post-secondary or higher (Republic of Trinidad and Tobago Central Statistical Office, 2011).

Table 20: Patient Characteristics - Race, Union Status, Employment and Education

Patient Characteristics: Race, Union Status, Employment & Education		
Race		
African	61	53.0%
Indian	22	19.1%
Mixed	32	27.8%
Union Status		
Single	28	24.4%
Married	66	57.4%
Separated / Divorced	21	18.3%
Employment		
None	27	24.1%
Part-Time	13	11.6%
Full-Time	38	33.9%
Retired	34	30.4%
Person to Assist		
None	15	14.6%
Occasionally	9	8.7%
Most Times	11	10.7%
Always	68	66.0%
Formal Education		
None	1	0.9%
Primary	43	38.7%
Secondary	45	40.5%
Post-Secondary	22	19.8%

As noted in the table below, almost 100% of the study patients were taking some sort of medication at the time of enrollment and 41.3% were taking some sort of supplements.

The most common pre-study medications and number of patients listing them were: aspirin (60), nifedipine (54), enalapril (52), bezide (38), atenolol (23), simvastatin (22), metformin (20), lisinopril (18), bendroflumethiazide (10), omeprazole (10), aprinox (9), simlo (8), Crestor (6), Lipitor (6) and GTN (5). The most common pre-study supplements and the number of patients listing them were: Vitamin C (16), Centrum Silver (11), Vitamin B (11), Calcium (7), cod liver oil (6), evening primrose oil (5), Omega 3 (5), Vitamin E (5), Multibionta (4), generic multivitamin (4), Centrum (3), Glucosamine (3), fish oil (2), folic acid (2), and iron tablets (2).

The number of overweight patients (BMI $\geq$ 25 but <30) and obese patients (BMI $\geq$ 30) was 45.3% and 33.3% respectively. These rates are very high but consistent with the respective national averages of 63.8% and 29.3% (World Health Organization, 2011). Weekly physical activity levels are well below recommendations with only 54.4% reporting that they participate in weekly exercise and only 53.3% of those individuals reporting that they exercise more than three times a week. Current use of tobacco is reported at 10.2% which is consistent with the national average of 13.1% (World Health Organization, 2011). Current alcohol use was reported by 37.8% of study patients. The vast majority of these patients, 97.3%, reported that their alcohol use was limited to $\leq$2 drinks per day. A high percentage of patients, 74.6%, reported adding salt to meals. Less than 1% of patients reported use of illegal drugs. Marijuana was reported by three individuals.

Table 21: Patient Characteristics - Medications and Lifestyle

Patient Characteristics: Meds & Lifestyle		
Variable	Freq.	%
Currently Taking Medications	116	99.2%
Currently Taking Supplements	45	41.3%
BMI Category		
<18.5 Underweight	2	1.7%
18.5 – 24.9 Normal	23	19.7%
25.0 – 29.9 Overweight	53	45.3%
>= 30.0 Obese	39	33.3%
Weekly Physical Activity	62	54.4%
Sessions per Week ≤ 3	21	46.7%
Sessions per Week >3	24	53.3%
Pt History of Tobacco Use	23	20.4%
Current Tobacco Use	11	10.2%
Current Alcohol Use	42	37.8%
Drinks per Day ≤2	36	97.3%
Drinks per Day >2	1	2.7%
Salt Added to Meals	44	74.6%
Current Illicit Drug Use	1	0.9%
Illicit Drug – Marijuana	3	2.9%

As noted in the table below, comorbid conditions are commonplace in the study population. In addition to elevated blood pressure readings, the patients also reported high rates of: dyslipidemia (39.8%), diabetes (20.3%), CAD (19%) and Bronchospastic Disorders (17.9%).

Table 22: Patient Characteristics - Patient History

Patient Characteristics: Patient History		
Variable	Freq.	%
Current Dx of Diabetes	24	20.3%
Diabetes - Pt On Oral Agents	21	20.8%
Diabetes - Pt On Insulin	3	3.0%
Pt Current Dx of Dyslipidemia	45	39.8%
Dyslipidemia - On Therapy	36	34.3%
Current Dx of Depression	5	4.4%
On Meds for Depression	2	2.0%
Current Dx of Gout	1	0.9%
Obstructive Sleep Apnea Symptoms	20	17.7%
Sleep Apnea - Prior Sleep Study	6	5.5%
History CAD	22	19.0%
History Angina	17	16.0%
History CABG Surgery	1	0.9%
History CHF	1	0.9%
History of Stroke or TIA	1	0.9%
History of Bronchospastic Disorders	20	17.9%

Family history was defined as a first-degree relative: father, mother, brother or sister having a history of disease. As noted in the table below, many patients had a strong family history of disease. Study patients reported high rates of non-communicable disease with 86.7% reporting a family history of cardiovascular disease. Study patients also reported high family history rates for cerebrovascular disease at 30.9%.

Table 23: Patient Characteristics - Family History

Patient Characteristics: Family History		
Variable	Freq.	%
CV Disease	98	86.7%
Hypertension	95	85.6%
MI or Angina	35	32.1%
Stroke / Transient Ischemic Attack (TIA)	34	30.9%
Sudden Death	28	24.8%
Kidney Dialysis	8	7.1%

The table below highlights other clinical findings from the baseline examination. These findings help underscore the need for effective blood pressure control in this patient population.

Table 24: Patient Characteristics - Exam Findings

Patient Characteristics: Exam Findings		
Variable	Freq.	%
Retinopathy	11	15.5%
Carotid Bruits	2	1.8%
Thyromegaly	4	3.5%
Volume Overload	3	2.6%
Abnormal Cardiac Exam	12	10.5%
Abnormal ECG	16	35.6%
Abnormal Pedal Pulses	14	12.2%

The table below summarizes the lab test results for the study population. While basic lab tests were recommended for all study participants, testing rates were low. Conversations with clinic providers identified a variety of possible factors limiting access to testing during the study.

Table 25: Patient Characteristics - Exam Findings

Patient Characteristics: Exam Findings				
Lab Test	Obs	Mean	Min	Max
Creatinine	34	1.17	0.6	10.0
BUN	33	14.51	8.6	24.0
Potassium	27	5.98	2.5	41.0
Sodium	27	141.48	133.0	150.0
Fasting Lipid Panel HDL	30	50.67	33.0	90.0
Fasting Lipid Panel LDL	28	131.76	56.0	225.0
Fasting Lipid Panel Triglycerides	35	112.20	46.0	402.0
Fasting Lipid Panel Total Cholesterol	35	209.51	138.0	316.0
Fasting Lipid Panel VLDL	31	34.55	11.0	229.0
Fasting Glucose	29	100.45	30.0	184.0

The vast majority of patients presented to the hypertension management study clinic with minimal medical records and unclear or nonexistent blood pressure management strategies. The table below summarizes the blood pressure readings during the baseline exam and highlights the heterogeneity of previous blood pressure management. A few patients had very low blood pressure readings, most patients had relatively normal to moderately elevated blood pressure readings and others had very high blood pressure readings. It should be noted that many of the patients with low blood pressure readings initially presented to the Accident and Emergency Department where they received blood pressure medications before the baseline visit. Pre-enrollment blood pressure information was available for 17 patients and documents the pre-enrollment reductions in blood pressure. The average blood pressure for those 17 patients dropped from 159/95 mm Hg to 125/77 mm Hg. The mean decrease in SBP of 34 mm Hg was statistically significant ($t=5.7738$ $Pr(T>t)=0.0000$. The mean decrease in DBP of 17.5 mm Hg was also statistically significant ($t=5.2501$ $Pr(T>t)=0.0001$.

Table 26: Patient Characteristics - Baseline BP Measurements

Patient Characteristics: Initial Blood Pressure Measurements				
Variable	Obs	Mean	Min	Max
Seated MAP – Baseline	118	105.88	64.67	162.67
Seated SBP – Baseline	118	140.82	82.00	200.00
Seated DBP – Baseline	118	88.41	56.00	144.00
Seated PP – Baseline	118	52.41	14.00	90.00
Standing SBP – Baseline	116	140.62	80.00	196.00
Standing DBP – Baseline	116	93.03	60.00	120.50

The table below shows a summary of seated blood pressure readings versus the patient's blood pressure target. Patients without diabetes were given a resting systolic pressure target of 140 mm Hg and a resting diastolic pressure target of 90 mm Hg, while patients with diabetes were given lower targets, 130 mm Hg and 80 mm Hg respectively. Again the range of values demonstrates the heterogeneity of previous blood pressure management. A few patients had blood pressure readings well below their blood pressure target, most patients had readings relatively close to their blood pressure target and others had blood pressure readings well above their blood pressure target.

Table 27: Patient Characteristics - Baseline BP vs Targets

Patient Characteristics: Initial Bllod Pressure vs Targets				
Variable	Obs	Mean	Min	Max
Diabetic Patients				
Over SBP Target - Baseline	24	11.44	-48	70
Over DBP Target - Baseline	24	5.90	-32	64
Non-Diabetic Patients				
Over SBP Target - Baseline	94	0.66	-50	53
Over SBP Target - Baseline	94	(0.95)	-32	40
All Study Patients				
Over SBP Target - Baseline	118	2.85	-50	70
Over SBP Target - Baseline	118	0.44	-32	64

Patients were asked a series of questions to access their perceived understanding of their physician's medication, exercise and diet directives and their intensions to follow their physician's advice. The table below summarizes the responses to the following questions at baseline and demonstrates that, on average, patients perceive themselves as having a good understanding of physician directives regarding medications, diet and exercise. The questions included: "How well do you understand your current medications and how to take them?", "How well do you understand a healthy diet?", "How well do you understand a healthy physical activity?", [Answer to these questions were recorded on a Likert scale where 1=Excellent, 2=Good, 3=Fair and 4=Poor] "How likely is it that you will be able to take your medications as directed by your doctor?", "How likely is it that you will be able to maintain a healthy diet as directed by your doctor?", "How likely is it that you will be able to maintain healthy physical activity as directed by your doctor?"

[Answers were recorded on a Likert scale where 1=Very Likely, 2=Likely, 3=Unlikely and 4=Very Unlikely].

Table 28: Patient Characteristics - Baseline Intent to Follow Advice

Patient Characteristics: BL Understanding / Intent to Follow Advice				
Patient Understanding	Obs	Mean	Min	Max
Prescribed Medications – Baseline	111	1.79	1.00	4.00
Healthy Diet – Baseline	116	1.73	1.00	4.00
Recommended Exercise – Baseline	116	1.69	1.00	3.00
[Scale: 1=Excellent, 2=Good, 3=Fair, 4=Poor]				
Patient Intent to Follow MD Advice	Obs	Mean	Min	Max
Prescribed Medications – Baseline	116	1.36	1.00	4.00
Healthy Diet – Baseline	115	1.56	1.00	4.00
Recommended Exercise – Baseline	116	1.59	1.00	4.00
[Scale: 1=Very Likely, 2=Likely, 3=Unlikely, 4=Very Unlikely]				

When asked, "How many days during the previous 30 days was your daily activity limited because of poor physical or mental health?", 59 patients answered zero and the remaining patients had some level of limited daily activity. The table below shows that physical health limitations were more commonly reported than mental health limitations and the mean "all cause" number of limited days was 2.54.

Table 29: Patient Characteristics - Days with Limited Activity

Patient Characteristics: Days with Limited Activity Because of Health				
Limited Activity (last 30 days)	Obs	Mean	Min	Max
Poor Physical Health - Baseline	111	2.53	0.00	30.00
Poor Mental Health - Baseline	114	1.69	0.00	25.00
Physical or Mental Health - BL	113	2.54	0.00	30.00

When asked about adherence to medication regimens: "Do you ever forget to take your medicine?", "Are you careless at times about taking your medication?", "When you feel better, do you sometimes stop taking your medicine?" and "Sometimes if you feel worse when you take the medicine, do you stop taking it?", more than 80% of patients answered "yes" to at least one question and more than 45% of the patients answered "yes" to two or more questions. The table below summarizes the medical adherence results: 58.8% responded "yes" to sometimes forget, 36.8% responded "yes" to sometimes stop taking their medications when feeling better, 36.6% responded "yes" to sometimes stop taking their medications when feeling worse and 32.2% responded "yes" to being careless at times.

Table 30: Patient Characteristics - Medication Adherence

Patient Characteristics: Medication Adherence

Fails to Take Medication:	Freq.	%
Forget Sometimes - BL	67	58.8%
Careless Sometimes - BL	37	32.2%
Stops: Feeling Better - BL	42	36.8%
Stops: Feeling Worse - BL	41	36.6%

Med Adherence Score	Obs	Mean	Conf. Interval		Min	Max
Positive Responses (0-4) – BL	113	1.65	1.41	1.90	0.00	4.00

Med Adherence Score	0	1	2	3	4	Total
Freq. of "Yes" Responses	22	40	20	17	14	113

RESULTS - HBPM and Telemonitoring - Impact on Hypertensive Patient Population

This study examined four basic questions in the setting of two public health centres in the Republic of Trinidad and Tobago. One, can hypertension patients effectively use home blood pressure monitors and telemonitoring to more actively participate in the management of their blood pressure? Two, can primary care physicians successfully use an automated telephone monitoring system to manage hypertensive patients? Three, will hypertension patients respond positively to the use of home blood pressure monitors and telemonitoring in the management of their blood pressure? And four, will home blood pressure monitors and telemonitoring assist patients and physicians in the management of blood pressure?

Can hypertension patients effectively use home blood pressure monitors and telemonitoring to more actively participate in the management of their blood pressure?

This question was examined from three perspectives: (1) can patients consistently demonstrate proper use of the home blood pressure monitors; (2) will patients have confidence in their ability to use home blood pressure monitors; and (3) will patients be able to convey their medical information to physicians via an automated telephone monitoring system.

Physicians and nurses in the public health centres provided study patients with training and then evaluated the patients' use of home blood pressure monitoring machines based

on the following criteria. The patients were evaluated at each of the three visits; baseline, three-month and six-month.

Proper use of the home blood pressure monitors:

1. Is the cuff placed correctly?
2. Is the sensor positioned over the brachial artery?
3. Is the arm positioned at heart level?
4. Is the machine activated correctly?
5. Is patient calm and still during measurement?
6. Are the systolic and diastolic measures correctly identified?

As shown in the table below, the vast majority of the time patients were able to demonstrate proper use of the home blood pressure monitors. Properly positioning the cuff so that the sensor was over the brachial artery was the most common problem. Seven percent of patients needed supplemental training on this point at the baseline training but the error rate declined to less than 1% by the six-month visit.

Table 31: Results - Proper Use of HBPM

Results: Proper Use of the Home Blood Pressure Monitors

Measure	Correct	C-Rate	Error	E-Rate	Total
pt_use_cuff1	82	94.3%	5	5.7%	87
pt_use_cuff2	113	97.4%	3	2.6%	116
pt_use_cuff3	111	99.1%	1	0.9%	112
pt_use_sensor1	79	92.9%	6	7.1%	85
pt_use_sensor2	113	98.3%	2	1.7%	115
pt_use_sensor3	111	99.1%	1	0.9%	112
pt_use_arm1	85	96.6%	3	3.4%	88
pt_use_arm2	112	97.4%	3	2.6%	115
pt_use_arm3	112	100.0%	0	0.0%	112
pt_use_machine1	84	96.6%	3	3.4%	87
pt_use_machine2	115	99.1%	1	0.9%	116
pt_use_machine3	112	100.0%	0	0.0%	112
pt_use_pt_calm1	84	96.6%	3	3.4%	87
pt_use_pt_calm2	116	100.0%	0	0.0%	116
pt_use_pt_calm3	112	100.0%	0	0.0%	112
pt_use_sbp_dbp1	83	96.5%	3	3.5%	86
pt_use_sbp_dbp2	114	99.1%	1	0.9%	115
pt_use_sbp_dbp3	111	100.0%	0	0.0%	111

Hypothesis 2a: **[Yes]** These results demonstrated that after receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago are able to demonstrate effective use of a home blood pressure monitor at three consecutive clinic visits over a six-month study period.

As shown in the table below, the vast majority of the patients expressed to their physician and nurse that they understood how to use home blood pressure monitors properly.

Table 32: Results - Patient Expressed Understanding of HBPM

Results: Patients' Expressed Understanding of HBPM Use

Measure	Yes	Y-Rate	No	N-Rate	Total
pt_use_understand1	81	93.1%	6	6.9%	87
pt_use_understand2	105	99.1%	1	0.9%	106
pt_use_understand3	104	100.0%	0	0.0%	104

Hypothesis 2b: **[Yes]** After receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago expressed that they understood how to properly use a home blood pressure monitor at three consecutive clinic visits over a six-month study period.

The study found mixed results when examining the telemonitoring data, where patients transmitted their blood pressure data and answers to a standard question set. Primary care physicians reported low call volume early in the study. They questioned patients and found that the cost of the phone call was a significant barrier to many patients. Cell phone use in Trinidad is ubiquitous. Many people use cell phones exclusively and charges accrue with each minute of use. Given the study's specific desire to test the HBPM and telemonitoring system in this limited / low income population, the decision was made to reimburse patients for their telemonitoring phone calls. A reimbursement system was devised based on an expected call length of 4 minutes and an $8.00 TT (~$1.25 US) reimbursement for each recorded phone call was provided to patients upon request. Not all patients requested reimbursement but many did. Physicians and nurses also tailored their instructions to patients based on their specific situation. In many cases, the ratio of HBPM measurements to transmitted telemonitoring encounters was reduced; i.e. patients were instructed they could transmit a subset of their measurements. As noted

in the figures below, the mean number of phone calls received was 33, where an average of 29 calls included complete and plausible data and 4 calls were incomplete or judged to be invalid based on the implausible results (DBP > SBP, BP readings outside plausible range, etc.). Many invalid calls were followed minutes later by a complete / valid call, indicating that the caller made a simple mistake entering her or his data but was not discouraged by the error. Other invalid calls were not followed by a valid call indicating the caller may have been experiencing challenges beyond simple data entry. Overall call volumes were strong. Eighty percent of patients recorded 8 or more valid calls over the six-month study period and 50% of patients recorded 24 or more valid calls. Very few patients experienced significant problems using the telemonitoring system (5 patients had ≥ 12 invalid calls).

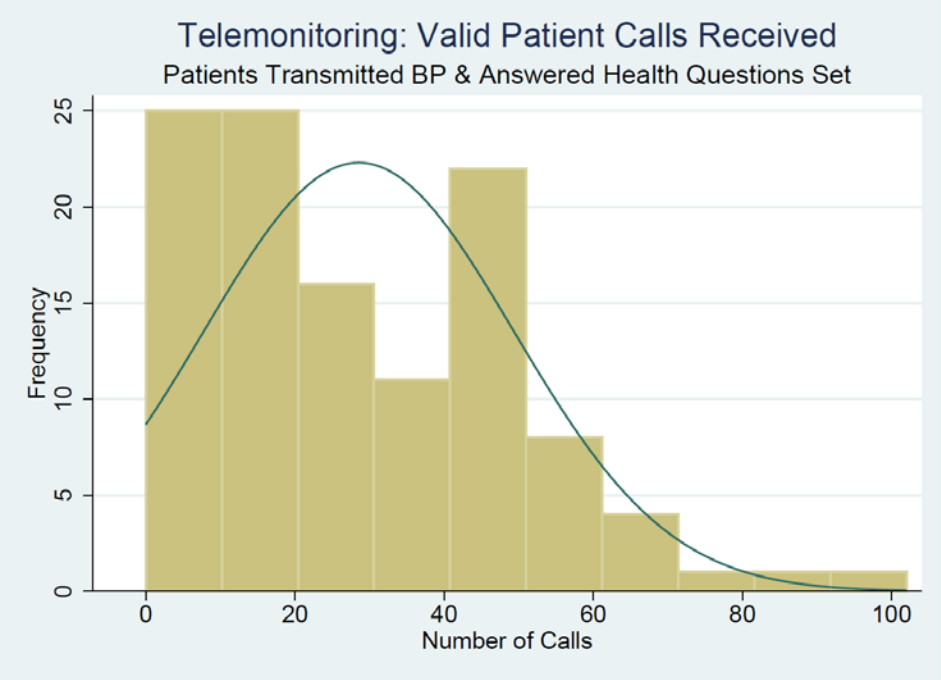

Figure 5: Results - Number of Valid Telemonitoring Calls

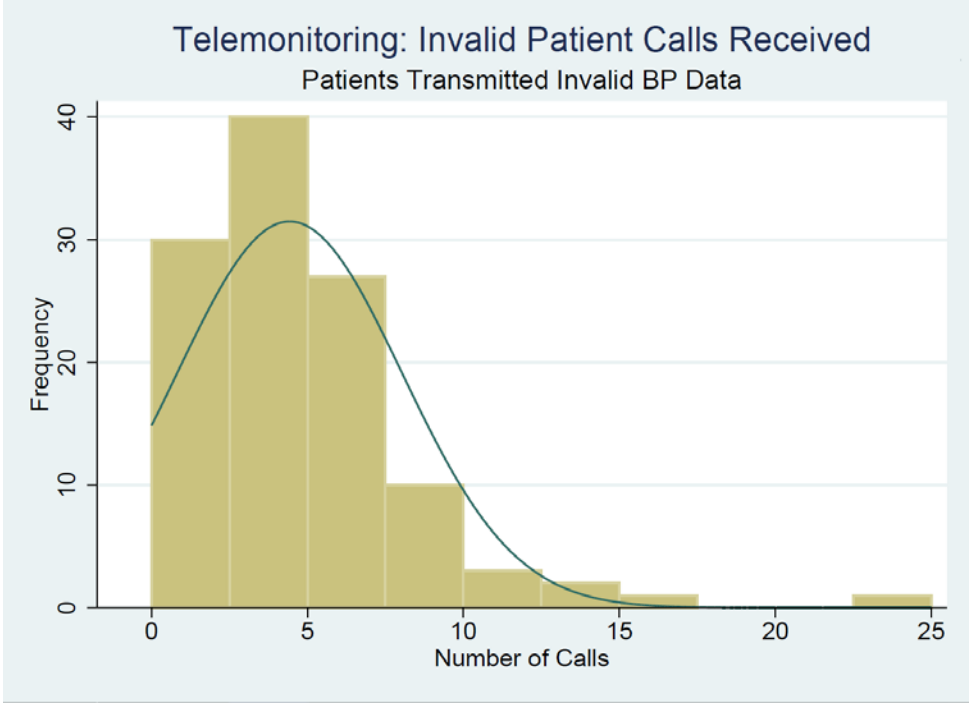

Figure 6: Results - Number of Invalid Telemonitoring Calls

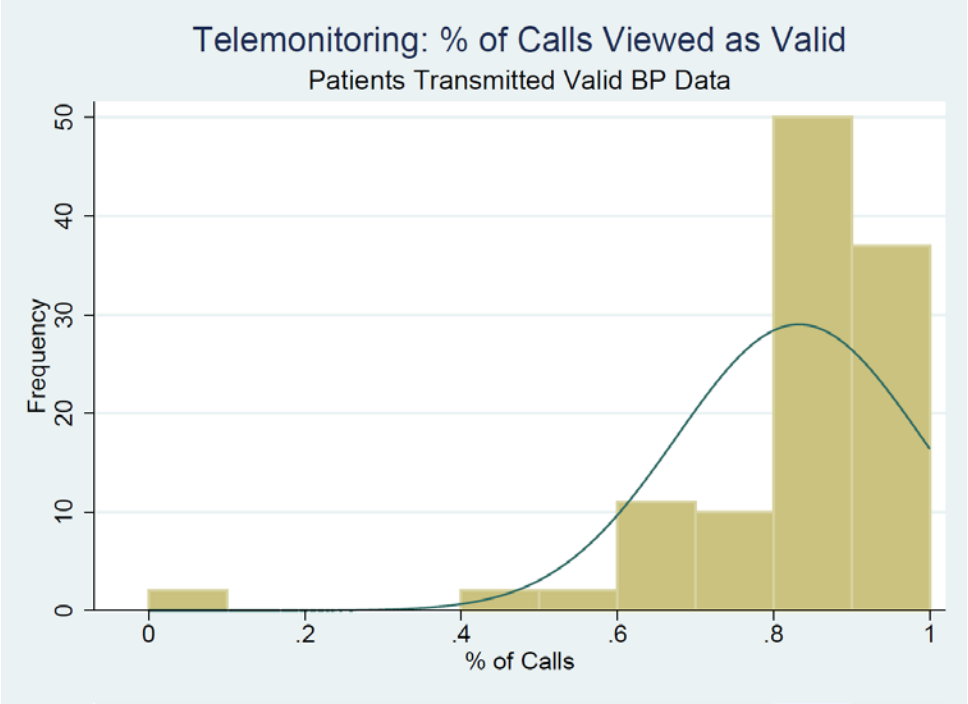

Figure 7: Results – Percent of Telemonitoring Calls - Valid

Hypothesis 2c: **[No]** After receiving basic training, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago did not convey their medical information to health centre physicians and staff via an automated telephone monitoring system with a frequency of ≥ 25 phone calls per six-month study period. The frequency of phone calls over the six-month study period was lower than hypothesized but, as noted in the figures below, both SBP and DBP declined over time in relation to the number of calls received. The reductions in SBP and DBP were both statistically significant, ($F_{1,219}$=11.97 Prob>F=0.000) and ($F_{1,219}$=10.50 Prob>F=0.0000) respectively.

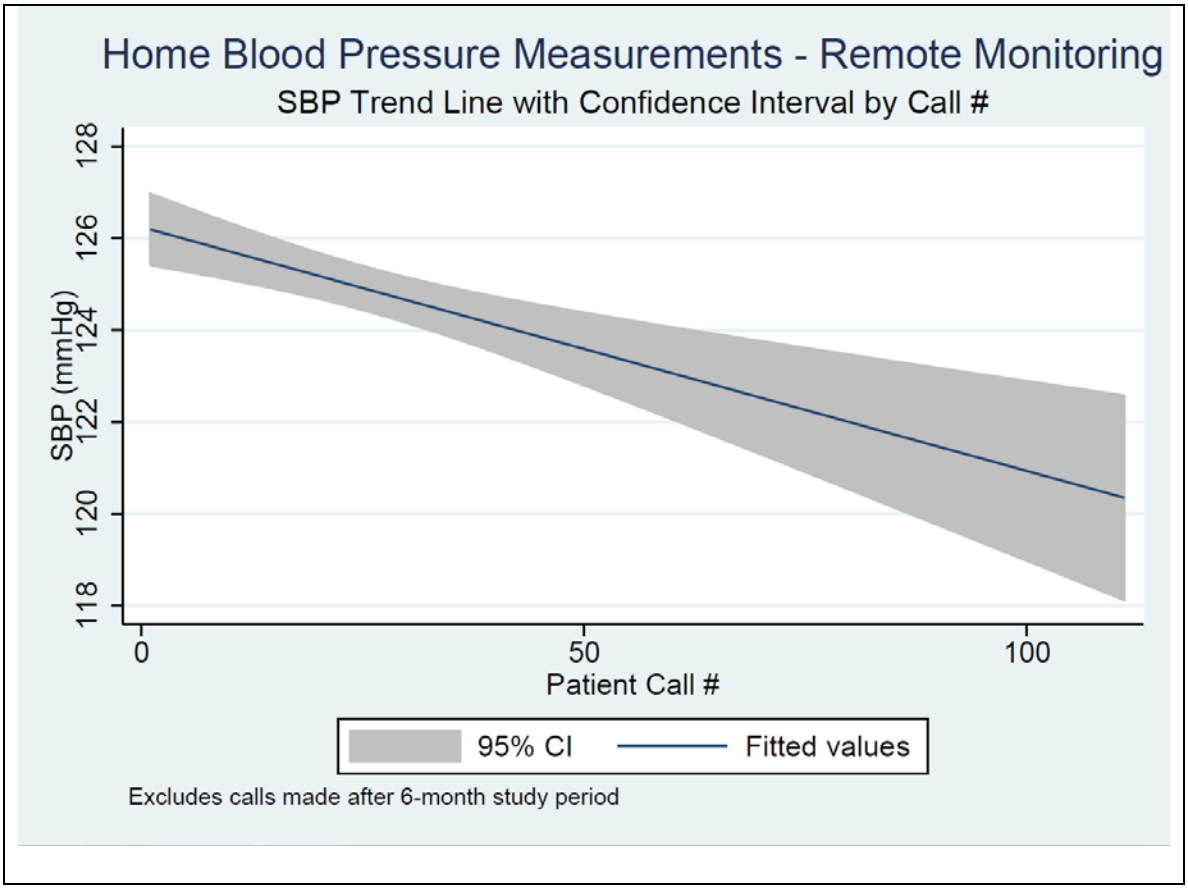

Figure 8: Results - SBP Trend by Telemonitored Call

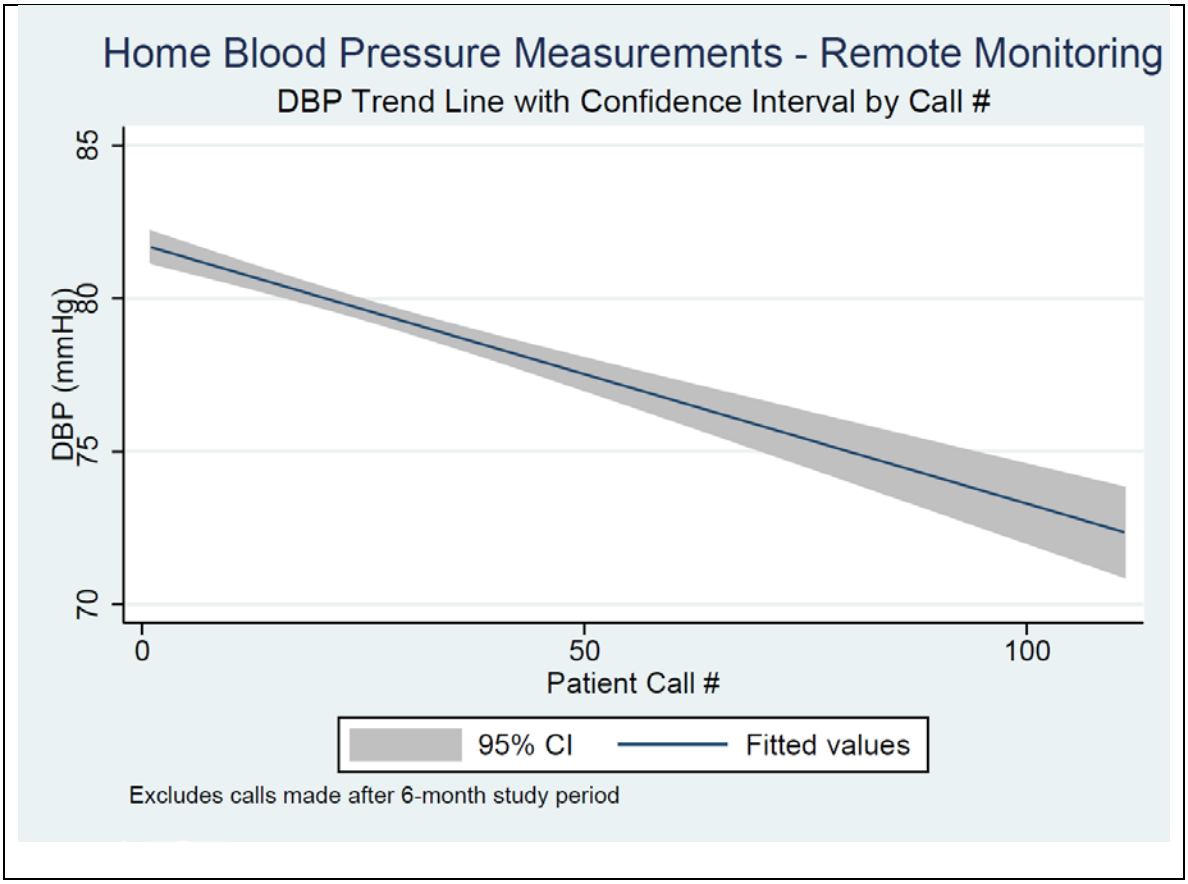

Figure 9: Results – DBP Trend by Telemonitored Call

Can primary care physicians successfully use an automated telephone monitoring system to manage hypertensive patients?

Primary care physicians were given basic training on the telemonitoring system, provided with a laptop computer, and given wireless access to the secure patient database. Physicians were asked the following questions after the three-month and six-month visits. During the last three months did you or other treating physicians use the hypertension management system to guide decisions to:

1. Maintain current anti-hypertensive therapy?
2. Change the dose of an anti-hypertensive therapy?
3. Add a new anti-hypertensive therapy?

4. Discontinue an existing anti-hypertensive therapy?
5. Become aware of a side effect of anti-hypertensive therapy?
6. Recommend patient come to the clinic or go to an Emergency Department?
7. Prompt education of the patient regarding dietary compliance?
8. Prompt education of the patient regarding physical activity?

As noted in the table below, physicians recorded using the hypertension management system to make all 8 specified management decisions; with 86% of study patients having at least one action recorded.

Table 33: Results - Physicians' Use of HTN Management System

Results: Physicians' Use of Hypertension Management System

Variable label / Assessment Action	Obs	Freq.
3M MD Assessment Maintain Therapy	105	76%
3M MD Assessment Change Dose	108	42%
3M MD Assessment Add Therapy	108	24%
3M MD Assessment Stop Therapy	107	28%
3M MD Assessment Side Effects	108	32%
3M MD Assessment Call Pt to Clinic	107	24%
3M MD Assessment Prompt Educ Diet	106	42%
3M MD Assessment Prompt Educ Exercise	106	42%
6M MD Assessment Maintain Therapy	106	66%
6M MD Assessment Change Dose	106	48%
6M MD Assessment Add Therapy	106	35%
6M MD Assessment Stop Therapy	106	34%
6M MD Assessment Side Effects	107	47%
6M MD Assessment Call Pt to Clinic	106	28%
6M MD Assessment Prompt Educ Diet	106	50%
6M MD Assessment Prompt Educ Exercise	105	48%
MD Used System	118	86%

Hypothesis 3: **[Yes]** After receiving basic training, primary care physicians at two public health centres in the Republic of Trinidad and Tobago successfully used an automated

telephone monitoring system over a six-month study period to manage ≥ 80% of the hypertension study patients.

Will hypertension patients respond positively to the use of home blood pressure monitors and telemonitoring in the management of their blood pressure?

To assess the hypertension patient population's response to the use of HBPM and telemonitoring tools, each patient was asked the following questions using a 6 point Likert scale where 1 = Disagree Very Strongly, 2 = Disagree Strongly, 3 = Disagree, 4 = Agree, 5 = Agree Strongly and 6 = Agree Very Strongly.

The home blood pressure monitoring system helped me:

1. improve my blood pressure control.
2. actively participate in the management of my blood pressure.
3. understand how the type of medicine can influence my blood pressure.
4. understand how the dose of medicine can influence my blood pressure.
5. understand how my medication helps control my blood pressure.
6. understand how diet, particularly salt intake, can influence my blood pressure.
7. understand how physical activity can influence my blood pressure.
8. understand my blood pressure goal.
9. identify changes in my blood pressure.
10. communicate with my physician.
11. identify problems with my medication

As noted in the table below, patients had very positive responses to each of the questions. Mean responses for the 11 questions regarding how the home blood pressure monitoring system helped patients were between 4.7 and 5.0.

Table 34: Results - Patient Feedback Regarding HBPM and Telemonitoring

Results: Patient Feedback Regarding the HBPM and Telemonitoring System

Variable Label	Obs	Mean	Std Dev	Min	Max
Helped Pt Improve BP	104	4.9	0.9	3.0	6.0
Helped Pt Actively Participate	104	5.0	0.9	3.0	6.0
Helped Pt Understand Meds	104	4.8	0.9	3.0	6.0
Helped Pt Understand Dose	104	4.7	0.9	3.0	6.0
Helped Pt Understand Med Control	103	4.8	0.9	3.0	6.0
Helped Pt Understand Diet	103	5.0	0.9	3.0	6.0
Helped Pt Understand Phys. Activity	101	4.8	0.9	3.0	6.0
Helped Pt Understand Goal	102	4.8	0.9	3.0	6.0
Helped Pt Identify BP Changes	103	4.8	0.9	3.0	6.0
Helped Pt Communicate w MD	102	4.9	0.9	3.0	6.0
Helped Pt Identify Problems	100	4.7	0.9	3.0	6.0
Pt Prefers Home Monitoring	100	5.2	0.9	3.0	6.0

As noted in the figure below, when presented with the preference statement, "I prefer the home blood pressure monitoring system to the standard hypertension management model", 97% of patients responded favorably.

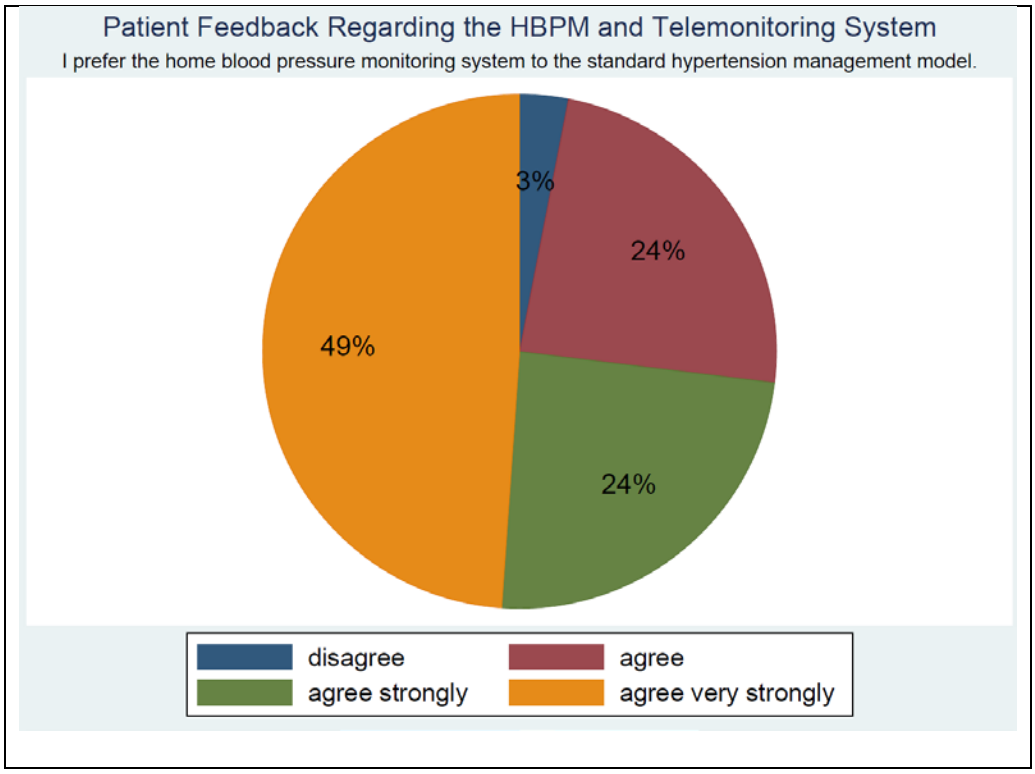

Figure 10: Results – Distribution of Patient Feedback to HBPM and Telemonitoring

Hypothesis 4: **[Yes]** After receiving basic training and using a home blood pressure monitor along with an automated telephone monitoring system for a six-month period, ≥ 80% of the hypertension patients at two public health centres in the Republic of Trinidad and Tobago responded positively to the use of these tools in their hypertension management.

Will home blood pressure monitors and telemonitoring assist patients and physicians in the management of blood pressure?

The table below shows six blood pressure measurements for each of three clinic visits: baseline, three-month and six-month. As discussed earlier, the range of blood pressure values demonstrates the heterogeneity of previous blood pressure management. By the

three-month visit, mean blood pressure readings are lower and there is a tighter distribution of values.

Table 35: Results - Clinic BP Measurements

Results: Clinic-based Blood Pressure Measurements

Variable	Obs	Mean	Conf. Interval		Min	Max
Seated SBP – Baseline	118	140.82	137.07	144.57	82.00	200.00
Seated DBP – Baseline	118	88.41	85.87	90.95	56.00	144.00
Standing SBP - Baseline	116	140.62	136.62	144.63	80.00	196.00
Standing DBP - Baseline	116	93.03	90.66	95.39	60.00	120.50
Seated MAP – Baseline	118	105.88	103.15	108.61	64.67	162.67
Seated PP – Baseline	118	52.41	49.79	55.04	14.00	90.00
Seated SBP - 3M Visit	118	133.06	130.11	136.00	102.00	185.00
Seated DBP - 3M Visit	118	82.57	80.47	84.67	59.00	115.00
Standing SBP - 3M Visit	118	134.18	130.83	137.53	84.00	180.00
Standing DBP - 3M Visit	117	89.53	87.52	91.55	70.00	120.00
Seated MAP - 3M Visit	118	99.40	97.27	101.52	76.67	138.33
Seated PP - 3M Visit	118	50.49	48.05	52.93	10.00	87.00
Seated SBP - 6M Visit	118	131.64	128.50	134.77	97.00	198.00
Seated DBP - 6M Visit	118	81.51	79.32	83.69	55.00	120.00
Standing SBP - 6M Visit	118	132.81	129.37	136.24	79.00	200.00
Standing DBP - 6M Visit	118	89.56	87.32	91.80	60.00	141.00
Seated MAP - 6M Visit	118	98.22	95.89	100.54	71.33	137.33
Seated PP - 6M Visit	118	50.13	47.95	52.31	19.00	91.00

Paired t-tests were used to analyze the changes in blood pressure between the baseline visit and the three-month visit as well as the baseline visit and the six-month visit. The following table shows the results for each blood pressure measurement for each interval.

Table 36: Results - Changes in Clinic BP Measurements

Results: Change in Clinic-based Blood Pressure Measurements

Variable	Obs	Mean	Conf. Interval		t Stat	Pr(T > t)
Δ Seated SBP BL-vs-3M	118	(7.76)	(3.76)	(11.77)	(3.84)	0.0002
Δ Seated DBP BL-vs-3M	118	(5.84)	(3.40)	(8.27)	(4.75)	0.0000
Δ Standing SBP BL-vs-3M	116	(6.40)	(1.90)	(10.90)	(2.82)	0.0057
Δ Standing DBP BL-vs-3M	115	(3.45)	(1.13)	(5.77)	(2.94)	0.0039
Δ Seated MAP BL-vs-3M	118	(6.48)	(3.69)	(9.27)	(4.61)	0.0000
Δ Seated PP BL-vs-3M	118	(1.92)	0.71	(4.56)	(1.45)	0.1507
Δ Seated SBP BL-vs-6M	118	(9.18)	(5.42)	(12.95)	(4.83)	0.0000
Δ Seated DBP BL-vs-6M	118	(6.90)	(4.38)	(9.41)	(5.43)	0.0000
Δ Standing SBP BL-vs-6M	116	(7.72)	(3.53)	(11.90)	(3.65)	0.0004
Δ Standing DBP BL-vs-6M	116	(3.44)	(0.98)	(5.90)	(2.77)	0.0066
Δ Seated MAP BL-vs-6M	**118**	**(7.66)**	**(4.89)**	**(10.43)**	**(5.49)**	**0.0000**
Δ Seated PP BL-vs-6M	118	(2.28)	0.13	(4.70)	(1.87)	0.0637

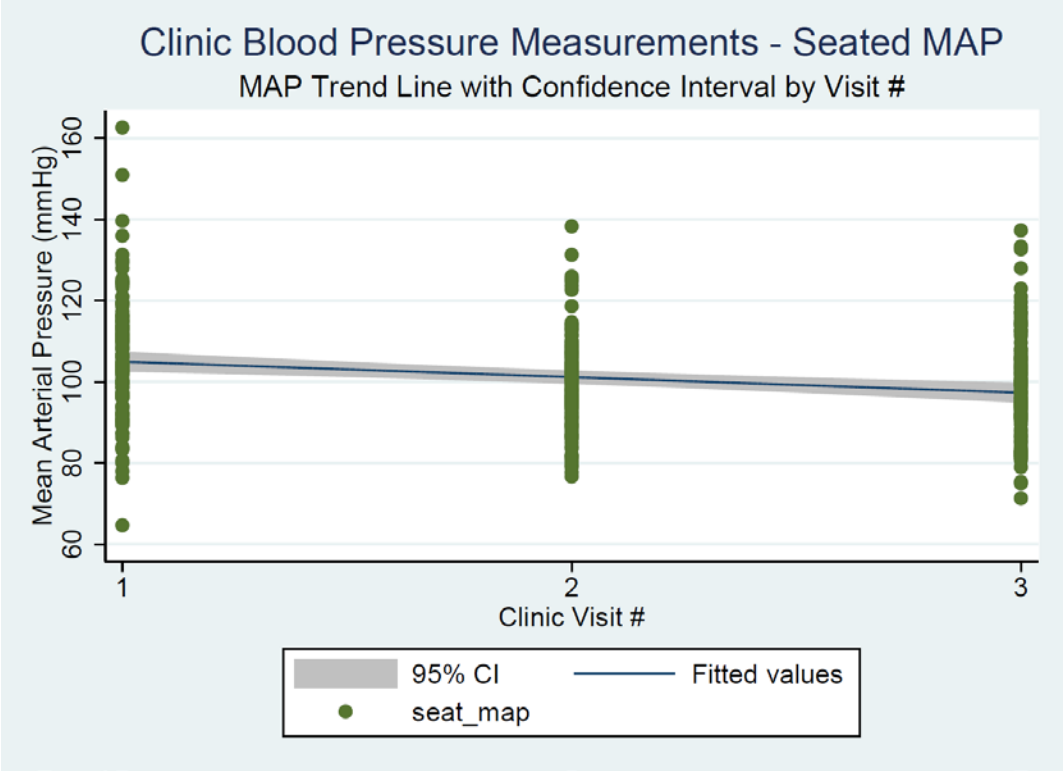

Figure 11: Results - MAP Trend by Clinic Visit

Hypothesis 1a [primary outcome variable]: **[Yes]** Using change in seated MAP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period. Mean arterial pressure decreased by a statistically significant 7.66 mm Hg (95% CI -4.89…-10.43; p=0.0000).

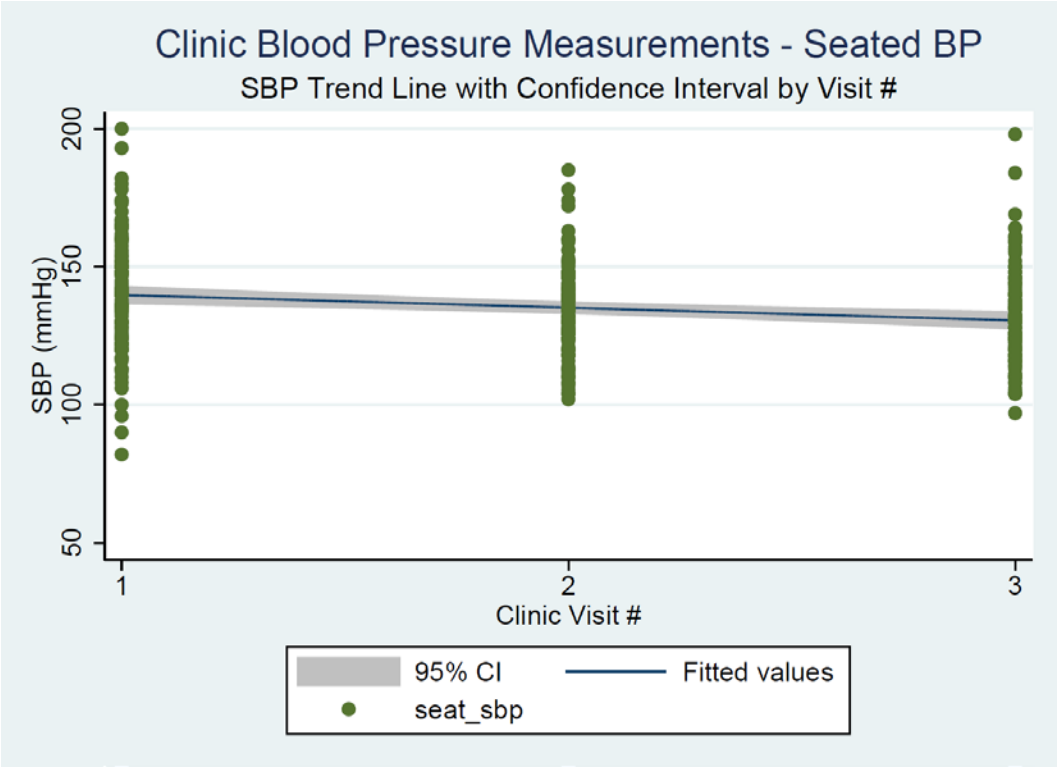

Figure 12: Results - SBP Trend by Clinic Visit

Hypothesis 1b: **[Yes]** Using change in seated SBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago partnered to improve blood pressure management over a six-month study period. Seated systolic blood pressure decreased by a statistically significant 9.18 mm Hg (95% CI -5.42…-12.95; p=0.0000).

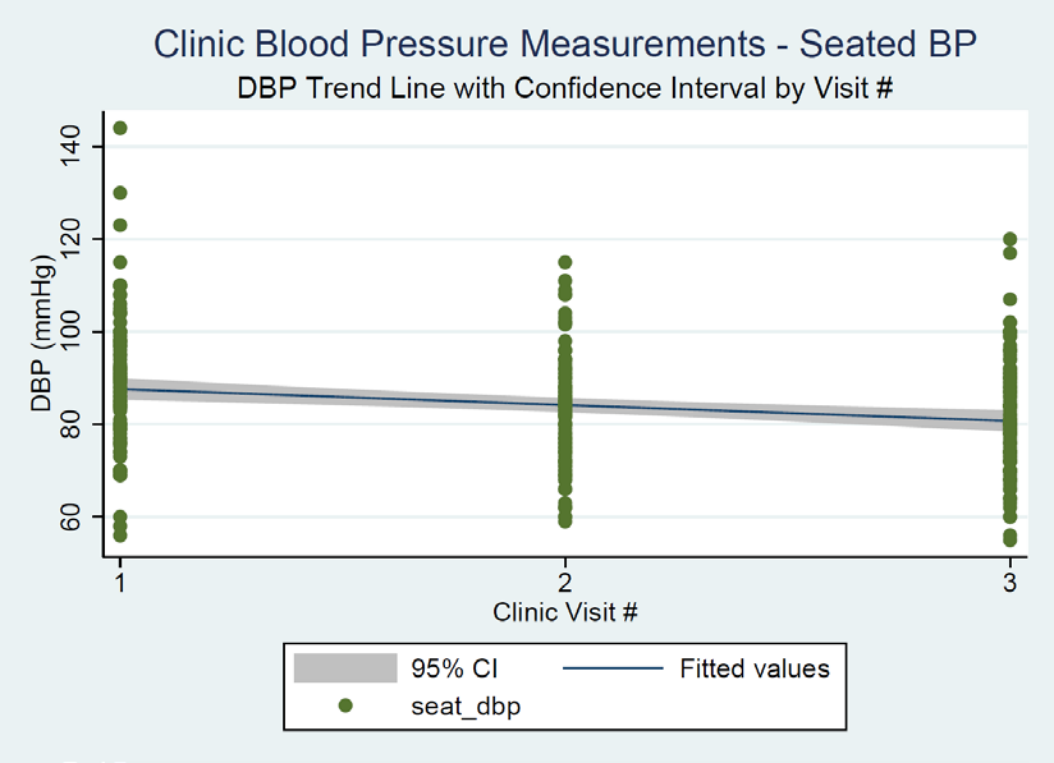

Figure 13: Results - DBP Trend by Clinic Visit

Hypothesis 1c: **[Yes]** Using change in seated DBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago will partner to improve blood pressure management over a six-month study period. Seated diastolic blood pressure decreased by a statistically significant 6.90 mm Hg (95% CI -4.38…-9.41; p=0.0000)

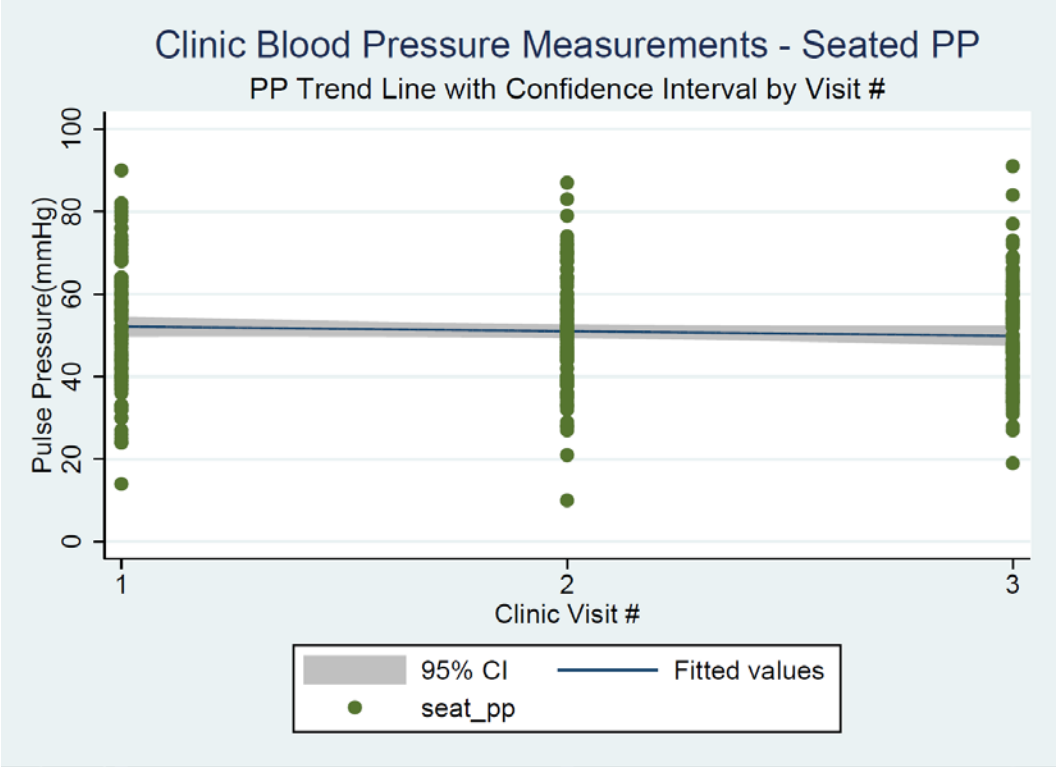

Figure 14: Results - Pulse Pressure Trend by Clinic Visit

Hypothesis 1d: **[No]** Using change in PP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago partnered to improve blood pressure management over a six-month study period. The statistically significant reductions in SBP were partially offset by the statistically significant reductions in DBP resulting in limited changes in pulse pressure. Over the six-month study period, pulse pressure decreased by 2.28 mm Hg, but the change was not statistically significant (95% CI 0.13…-4.70; p=0.0637).

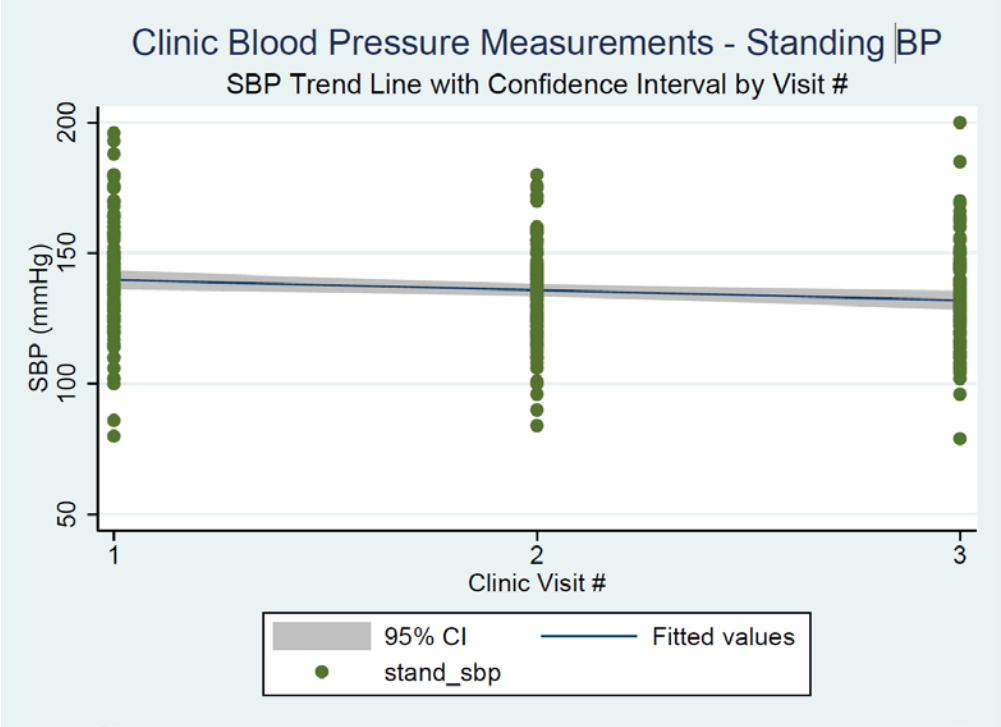

Figure 15: Results - Standing SBP Trend by Clinic Visit

Hypothesis 1e: **[Yes]** Using change in standing SBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago partnered to improve blood pressure management over a six-month study period. Standing systolic blood pressure decreased by a statistically significant 7.72 mm Hg (95% CI -3.53…-11.90; p=0.0004).

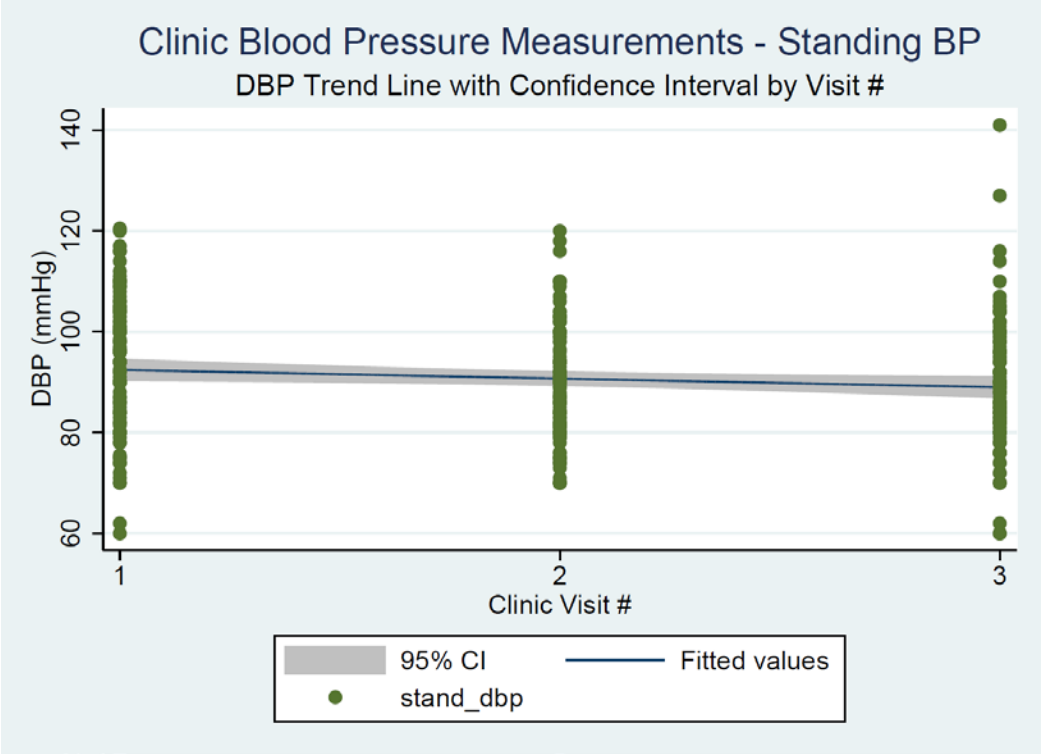

Figure 16: Results - Standing DBP Trend by Clinic Visit

Hypothesis 1f: **[Yes]** Using change in standing DBP as a measure of success, physicians and hypertension patients at two public health centres in the Republic of Trinidad and Tobago partnered to improve blood pressure management over a six-month study period. Standing diastolic blood pressure decreased by a statistically significant 3.44 mm Hg (95% CI -0.98…-5.90; p=0.0066).

To better understand how HBPM and telemonitoring fit within the proposed conceptual model, the study also looked at potential causal variables and intermediate outcome variables. Specifically, the study asked the patients about how they viewed their blood pressure management. Did they know their blood pressure goal? Did they know if their blood pressure was well controlled (at goal)? Did they have faith in their medication and understand how medication type, medication dose, diet and exercise influenced their

blood pressure. The frequent automated encounters associated with HBPM and telemonitoring created an environment where people processed their own blood pressure information (HPBM), applying knowledge (medical advice from their physicians and nurses) and (hopefully) changed preferences and health behaviors. The table below shows the responses to these questions at baseline, three-month visit and six—month visit. In all cases, the responses to these questions shifted toward stronger agreement over the six-month study period.

Table 37: Results - Patient Participation in BP Management

Results: Patient Participation in Blood Pressure Management

	Disagree Very Strongly	Disagree Strongly	Disagree	Agree	Agree Strongly	Agree Very Strongly
My blood pressure is well controlled.						
BL	0%	0%	40%	46%	11%	3%
3M	0%	2%	18%	49%	21%	10%
6M	0%	1%	19%	52%	18%	11%
I actively participate in the management of my blood pressure.						
BL	0%	0%	4%	71%	20%	5%
3M	0%	1%	4%	58%	19%	19%
6M	0%	0%	3%	53%	25%	19%
I understand how the type of medicine can influence my blood pressure.						
BL	0%	0%	5%	67%	18%	9%
3M	0%	1%	4%	62%	24%	10%
6M	0%	0%	3%	54%	23%	21%
I understand how the dose of medicine can influence my blood pressure.						
BL	0%	0%	3%	71%	16%	10%
3M	0%	1%	2%	65%	22%	10%
6M	0%	0%	2%	54%	27%	18%
I believe my medication is working well to control my blood pressure.						
BL	0%	0%	12%	61%	22%	5%
3M	0%	0%	6%	64%	19%	11%
6M	0%	0%	5%	54%	22%	18%
I understand how diet, particularly salt intake, can influence my blood pressure.						
BL	0%	0%	1%	54%	25%	20%
3M	0%	0%	0%	44%	30%	27%
6M	0%	0%	0%	45%	26%	29%
I understand how physical activity can influence my blood pressure.						
BL	0%	0%	1%	57%	24%	18%
3M	0%	0%	2%	43%	27%	29%
6M	0%	0%	0%	45%	21%	34%
I know what my blood pressure goal is.						
BL	0%	0%	4%	52%	24%	19%
3M	0%	0%	2%	52%	27%	19%
6M	0%	0%	1%	55%	19%	26%

As shown in the table below, each of these changes was statistically significant except for the question, "I know what my blood pressure goal is" which had a positive change that was not statistically significant.

Table 38: Results - Change in Patient Participation in BP Management

Results: Patient Participation in Blood Pressure Management

Wilcoxon signed-rank test (baseline visit vs. six-month visit)

	Obs.	Sum Rank	z	Prob > |z|
Δ in "My blood pressure is well controlled"	88	3916	3.244	0.0012
Δ in "I actively participate in the management of my blood pressure"	88	3916	3.366	0.0008
Δ in "I understand how the type of medicine can influence my blood pressure"	87	3828	2.864	0.0042
Δ in "I understand how the dose of medicine can influence my blood pressure"	89	4005	3.191	0.0014
Δ in "I believe my medication is working well to control my blood pressure"	87	3828	3.490	0.0005
Δ in "I understand how diet, particularly salt intake, can influence my blood pressure"	90	4095	2.575	0.0100
Δ in "I understand how physical activity can influence my blood pressure"	89	4005	4.117	0.0000
Δ in "I know what my blood pressure goal is"	87	3828	1.562	0.1184

If patients were in fact more engaged in their blood pressure management and partnering with the physicians and nurses to improve blood pressure control, one would expect to see changes in health behavior. The table below shows changes in patients' adherence to physician prescribed medication. At the six-month visit, patients reported fewer lapses in their adherence for each of the following reasons: forgot, sometimes careless, stopped because feeling better and stopped because feeling worse. Patients achieved a statistically significant improvement in their medication adherence score derived from

these variables. Mean score declined by 0.58 as measured by a paired t-test (95% CI -0.82…-0.34; p=0.0000).

Table 39: Results - Change in Medication Adherence

Results: Medication Adherence

Variable	Freq.	%
Forget to Take Meds - BL	67	58.8%
Careless about Meds - BL	37	32.2%
Stop Meds - Feel Better - BL	42	36.8%
Stop Meds - Feel Worse - BL	41	36.6%
Forget to Take Meds - 6M	50	42.7%
Careless about Meds - 6M	27	23.3%
Stop Meds - Feel Better - 6M	28	24.1%
Stop Meds - Feel Worse - 6M	29	24.8%

Variable	Obs	%	McNemar's X^2	Prob > X^2
Δ Forget to Take Meds	113	-18.6%	11.31	0.0008
Δ Careless about Meds	113	-8.8%	3.57	0.0588
Δ Stop Meds - Feel Better	112	-13.4%	6.08	0.0137
Δ Stop Meds - Feel Worse	111	-11.7%	6.26	0.0124

Variable	Obs	Mean	Conf. Interval		Min	Max
Med Adherence Score - BL	113	1.65	1.41	1.90	0.00	4.00
Med Adherence Score - 6M	99	1.26	1.01	1.52	0.00	4.00

Variable	Obs	Mean	Conf. Interval		t Stat	Pr(T > t)
Δ Med Adherence Score	95	(0.58)	(0.82)	(0.34)	(4.78)	0.0000

If health behaviors like diet and exercise improved as a result of increased engagement and understanding, one would expect these improvements to translate into improved general health as well as improved blood pressure. The table below shows the mean number of days where poor physical and mental health limited activity did, in fact,

decline. The mean number of days limited by poor physical or mental health declined by 1.40 as measured by a paired t-test (95% CI -0.22…-2.59; p=0.0105).

Table 40: Results - Change in Days with Limited Activity

Results: Days with Limited Activity Because of Health

Limited Activity (last 30 days)	Obs	Mean	Conf. Interval		Min	Max
Poor Physical Health - Baseline	111	2.53	1.62	3.44	0.00	30.00
Poor Mental Health - Baseline	114	1.69	0.96	2.42	0.00	25.00
Physical or Mental Health - BL	113	2.54	1.46	3.62	0.00	30.00
Poor Physical Health - 6M	113	1.82	1.18	2.46	0.00	15.00
Poor Mental Health - 6M	113	1.11	0.41	1.80	0.00	30.00
Physical or Mental Health - 6M	113	1.41	0.80	2.02	0.00	14.00
Limited Activity (last 30 days)	Obs	Mean	Conf. Interval		t Stat	Pr(T > t)
Δ Physical or Mental Health	108	(1.40)	(0.22)	(2.59)	(2.34)	0.0105

RESULTS – Health Beliefs and Determinates of Improved Blood Pressure

In addition to evaluating the feasibility of the HBPM and telemonitoring intervention itself, the pilot study sought to help public health officials understand which patients were most likely and least likely to benefit from these tools. And more generally, the study hoped to inform future research in the area of chronic disease management in the Republic of Trinidad and Tobago.

Because health beliefs were assumed to be important to the success or failure of the HBPM and telemonitoring system, a series of established health belief questions were taken from the literature and included in the patients' baseline and six-month surveys. Reference data from a population in the United States (U.S.) were used for general comparisons. The thirty health belief questions used in the study are listed below. Each question was answered using a Likert scale with three or four options.

1. In general, when you get sick, how much does it interfere with your usual activities?
2. You get the kinds of illnesses that worry you a great deal.

If you were to do nothing in particular to protect yourself, how likely is it that you will:

3. … get a mild cold during the next 12 months?
4. … get a new cavity during the next 12 months?
5. … get the very bad cold / seasonal flu during the next 12 months?
6. … have a heart attack during the next 12 months?
7. … be sick enough to spend 3 days in bed during the next 12 months?

8. Compared to other people your age, you get sick more easily.
9. How serious would it be if you got a mild cold in the next 12 months?
10. How serious would it be if you had a heart attack in the next 12 months?
11. How serious would getting a new cavity in your teeth during the next 12 months be?
12. How serious would it be to be sick enough to spend 3 days in a row in bed during the next 12 months?
13. Whenever you get sick, it seems to be very serious.
14. Compared to other people your age, how would you rate your health?
15. In general, how would you describe your health?
16. Sometimes it seems that when you try to prevent illness, it is more trouble than it is worth.
17. If you take care of yourself, you can avoid getting sick.
18. Chances are when you get sick it is because you did not take care of yourself.
19. For most kinds of illness, it is the doctor who can help you the most.
20. Home remedies are often better than the drugs that the doctor prescribed.
21. You seem to get the kinds of illness that doctors can't do much for.

Suppose your doctor were to tell you to take a certain medicine to protect your health. How likely is it that you would stop taking the medicine in each of the following situations;

22. … the medicine was costing a lot of money?
23. … you felt worse when you took the medicine?
24. … taking the medicine was hard to fit into your daily routine?

25. … you heard that taking the medicine might be dangerous to your health, even though your doctor prescribed it for you?
26. If you follow a doctor's advice, you will have less illness in your lifetime.
27. How concerned are you about your health?
28. How good a job are you doing in taking care of your health right now?
29. How likely is it that you will try to do a better job of taking care of your health in the future?
30. Although you are concerned about your health, there are other things that are more important to you.

The table below shows the mean responses from the Trinidad hypertension population and the reference information from a general population in the United States. The two populations are assumed to be different in many ways and the statistical comparison is provided purely as a general reference to encourage hypothesis generation. Example: The population in Trinidad, which was actively engaged in cardiovascular disease treatment, rated the seriousness of a heart attack as low compared to the U.S. population. The difference between the means was 0.506 or half of a Likert scale segment closer to "not serious". This difference was statistically significant (95% CI 1.491…1.922; p=0.0000) and may be worth investigating in a future research study.

Table 41: Results - Health Belief Comparisons

Results: Health Belief Comparisons

#	Variable Description	Min	Min Phrase	Max	Max Phrase	TT Mean	US Mean	Pr(|T| > |t|)
1	Activity Interference	1	not at all	4	great deal	2.1	2.4	0.0011
2	Get Illness that Worries You	1	agree	3	disagree	2.3	2.5	0.0019
3	Likelihood of a Cold	1	very likely	4	very unlikely	2.7	2.1	0.0000
4	Likelihood of a Cavity	1	very likely	4	very unlikely	2.8	2.7	0.2268
5	Likelihood of a Flu	1	very likely	4	very unlikely	2.8	2.6	0.0421
6	Likelihood of a Heart Attack	1	very likely	4	very unlikely	3.2	3.4	0.0015
7	Likelihood of a 3 Days in Bed	1	very likely	4	very unlikely	3.1	3.2	0.1336
8	Get Ill More Easily	1	agree	3	disagree	2.7	2.7	0.9713
9	Severity of a Cold	1	serious	4	not serious	3.5	3.5	0.8197
10	Severity of a Heart Attack	1	serious	4	not serious	1.7	1.2	0.0000
11	Severity of a Cavity	1	serious	4	not serious	2.8	3.1	0.0033
12	Severity of a 3 Days in Bed	1	serious	4	not serious	2.4	2.3	0.6659
13	Get Serious Illness	1	agree	3	disagree	2.5	2.6	0.0519
14	Health Status: Compared to Others	1	better	3	worse	1.4	1.8	0.0000
15	Health Status	1	excellent	4	poor	2.1	1.9	0.0005
16	Prevention More Trouble than Worth	1	agree	3	disagree	2.2	1.7	0.0000
17	Avoid Illness	1	agree	3	disagree	1.1	1.5	0.0000
18	Illness a Lack of Personal Care	1	agree	3	disagree	1.3	2.0	0.0000
19	Doctors Help Most	1	agree	3	disagree	1.3	1.6	0.0000
20	Home Remedies	1	agree	3	disagree	2.4	1.5	0.0000
21	Get Illness Doctors Can't Do Much For	1	agree	3	disagree	2.8	1.5	0.0000
22	Medication Cost	1	very likely	4	very unlikely	2.9	3.1	0.0285
23	Felt Worse	1	very likely	4	very unlikely	2.2	1.9	0.0003
24	Hard to Fin in Routine	1	very likely	4	very unlikely	3.2	3.0	0.0170
25	Heard Dangerous Information	1	very likely	4	very unlikely	2.7	2.3	0.0000
26	Doctor's Advice Prevents Illness	1	agree	3	disagree	1.2	1.5	0.0000
27	Concern about Health	1	very concerned	3	little concerned	1.2	1.7	0.0000
28	Current Care of Health	1	excellent job	4	poor job	2.1	2.0	0.0874
29	Likelihood Improved Care	1	very likely	4	very unlikely	1.2	1.7	0.0000
30	Other Things More Important than Health	1	agree	3	disagree	2.4	1.9	0.0000

While the study design was not focused on measuring change across a comprehensive set of health beliefs, some statistically significant changes were recorded when comparing baseline visit responses to six-month visit responses. As noted in the table below, patients expressed less susceptibility to a minor health concern (simple cold). Patients rated the seriousness of a heart attack as more serious. Patients expressed greater agreement with the statement. “Chances are when you get sick it is because you did not take care of yourself”. And patients rated themselves more critically when asked, “How good a job are you doing in taking care of your health right now”.

Table 42: Results - Change in Health Beliefs

Results: Changes in Health Beliefs

Wilcoxon signed-rank test (baseline visit vs. six-month visit)

	Obs.	Sum Rank	Z	Prob > |z|
Δ in #3 [susceptibility of a cold ... change toward less susceptible]				
	112	6328	2.683	0.0073
Δ in #10 [seriousness of a heart attack ... change toward more serious]				
	103	5356	-3.864	0.0001
Δ in #18 [illness relates to a lack of personal care ... change toward agreement]				
	111	6216	-2.128	0.0333
Δ in #28 [self-rating: taking care of own health ... change toward poorer rating]				
	113	6441	1.995	0.0461

While the constructs of the health belief model, susceptibility, severity, benefits, barriers, and self-efficacy are thought to be universal, caution is recommended when applying a previously validated survey into a new environment or culture. Many studies have shown important differences in health beliefs from one environment to another. The table below shows how factor analysis of the 30 health belief questions in the two populations resulted in noticeably different factor groupings. In the U.S. population, six questions related to susceptibility where demonstrated to be largely condition specific. In the Trinidad population, responses to these same six susceptibility questions were highly correlated and factor analysis grouped them with one additional item into two factors. There are several other notable differences in the factor analysis grouping which underscores the need for further health belief model research in the setting of public health clinics in the Republic of Trinidad and Tobago.

Table 43: Results - Health Belief and Factor Analysis Groupings

Results: Health Belief & Factor Analysis Groupings

#	Variable Description	TT Factor Analysis	US Factor Analysis
1	Activity Interference	General Health Threat	Single Item
2	Get Illness that Worries You	General Health Threat	General Health Threat
3	Likelihood of a Cold	Susceptibility Minor	Single Item
4	Likelihood of a Cavity	Susceptibility Major	Single Item
5	Likelihood of a Flu	Susceptibility Major	Single Item
6	Likelihood of a Heart Attack	Susceptibility Major	General Health Threat
7	Likelihood of a 3 Days in Bed	Susceptibility Major	General Health Threat
8	Get Ill More Easily	Susceptibility Minor	General Health Threat
9	Severity of a Cold	Current Self Care	Severity
10	Severity of a Heart Attack	Severity	Severity
11	Severity of a Cavity	Severity	Severity
12	Severity of a 3 Days in Bed	Severity	Severity
13	Get Serious Illness	General Health Threat	General Health Threat
14	Health Status: Compared to Others	Health Status	Health Status
15	Health Status	Health Status	Health Status
16	Prevention More Trouble than Worth	Health Locus of Control	Single Item
17	Avoid Illness	Current Self Care	Health Locus of Control
18	Illness a Lack of Personal Care	Health Locus of Control	Health Locus of Control
19	Doctors Help Most	Trust in Physicians	Trust in Physicians
20	Home Remedies	Trust in Physicians	Trust in Physicians
21	Get Illness Doctors Can't Do Much For	Susceptibility Major	Health Status
22	Medication Cost	Barriers to Taking Meds	Barriers to Taking Meds
23	Felt Worse	Barriers to Taking Meds	Barriers to Taking Meds
24	Hard to Fin in Routine	Barriers to Taking Meds	Barriers to Taking Meds
25	Heard Dangerous Information	Barriers to Taking Meds	Barriers to Taking Meds
26	Doctor's Advice Prevents Illness	Trust in Physicians	Trust in Physicians
27	Concern about Health	Concern about Health	Concern about Health
28	Current Care of Health	Current Self Care	Concern about Health
29	Likelihood Improved Care	Concern about Health	Concern about Health
30	Other Things More Important than Health	Susceptibility Minor	Concern about Health

To gain insight into which patients are most likely and least likely to benefit from the HBPM and telemonitoring. Simple linear regression was used to examine the relationships between the primary outcome variable, six-month change in MAP, and other patient variables. As one would expect, baseline blood pressure readings are strongly correlated with changes in blood pressure. The figures below show the

relationship between the amount SBP and DBP readings were above or below the patient's goal at baseline and the patients' change in blood pressure over the six-month study period. In a simple linear regression model, the baseline SBP variable explains 38% of the variation in change in SBP from baseline to the six-month visit ($F_{1,116}$=74.81 Prob>F=0.000). In a simple linear regression model, the baseline DBP variable explains 36% of the variation in change in DBP from baseline to the six-month visit (F1,116=68.16 Prob>F=0.000).

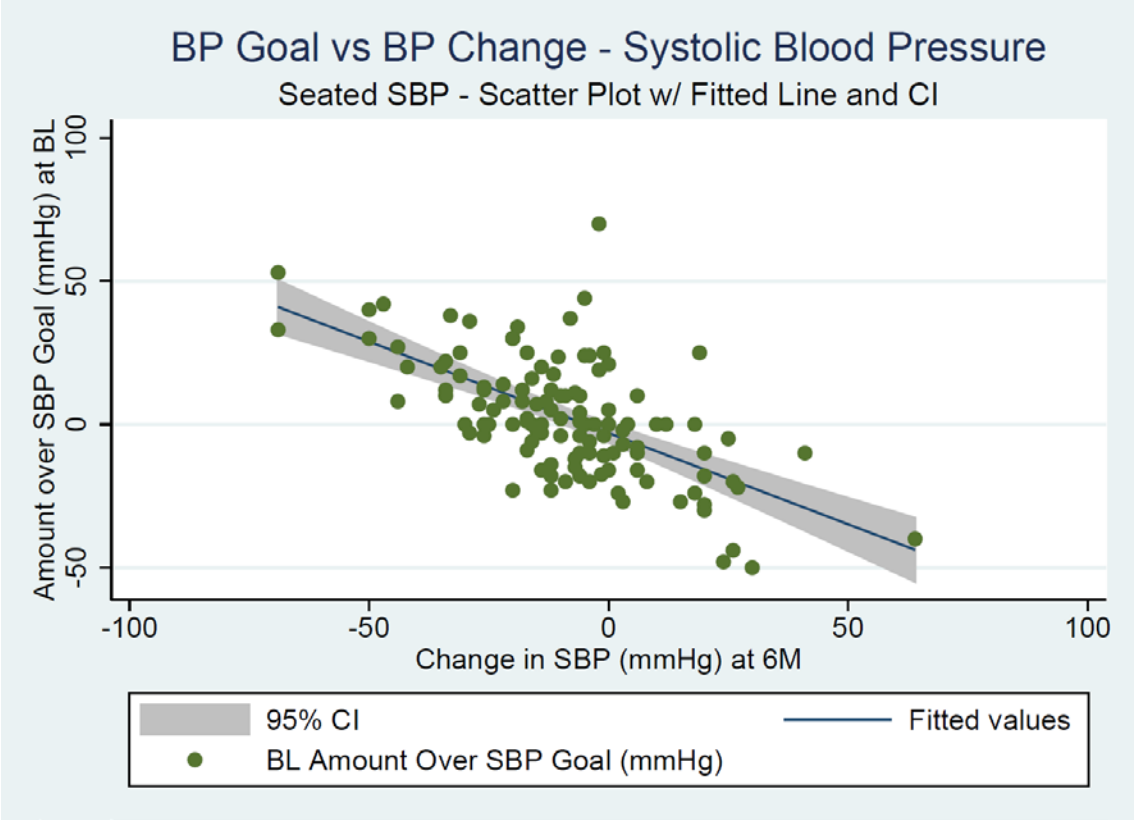

Figure 17: Results - Amount over BP Goal by Change in BP

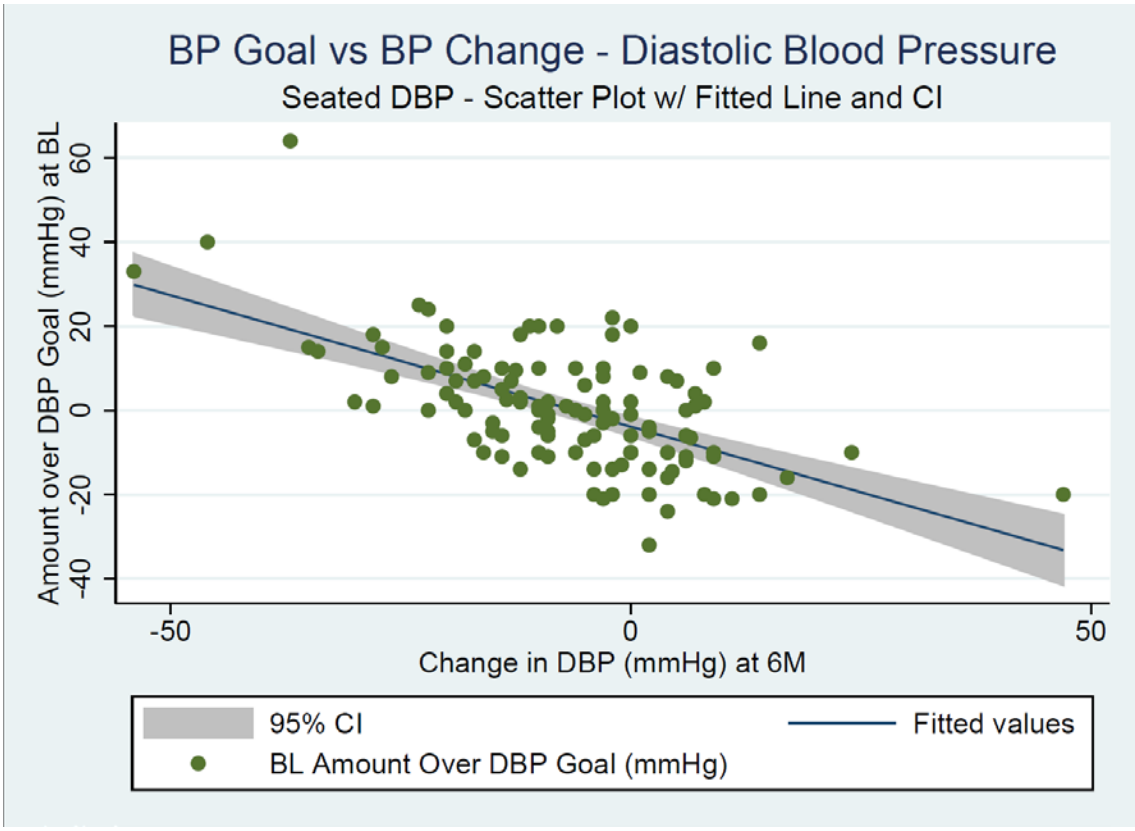

Figure 18: Results - Amount over BP Goal by Change in BP

Using simple linear regression models, more than 30 other variables were found to have statistically significant associations with change in MAP. When using multiple regression models, most of these relationships became insignificant or disappeared completely. Of the variables that retained a statistically significant relationship after controlling for baseline MAP, change in perceived susceptibility to a heart attack had the greatest association with change in MAP. That is to say, changes in the response to the question, "If you were to do nothing in particular to protect yourself, how likely is it that you will have a heart attack during the next 12 months", was predictive of changes in MAP. Those that reassessed doing nothing as leaving them more susceptible realize reductions in MAP. Based on the earlier factor analysis, one could interpret this as a

change in perceived general risk; i.e. risk of heart attack or other significant medical problem. The multiple linear regression model suggests that with each 1.0 mm Hg increase in MAP at baseline, MAP is expected to decline .64 mm Hg over a six-month study period and a one segment Likert scale change to the heart attack susceptibility question would result in a 3.62 mm Hg change in MAP over a six-month study period. Example: A changed response from "Very Unlikely" to "Unlikely" is associated with a 3.62 mm Hg decrease in MAP and a changed response from "Very Unlikely" to "Likely" is associated with a 7.24 mm Hg decrease in MAP.

Table 44: Results - Change in MAP Regression Model

```
. regress ch6_map seat_map1 ch6_hb_f
```

Source	SS	df	MS		
Model	11327.5972	2	5663.79861	Number of obs =	104
Residual	13257.3839	101	131.261227	F(2, 101) =	43.15
				Prob > F =	0.0000
Total	24584.9811	103	238.689137	R-squared =	0.4608
				Adj R-squared =	0.4501
				Root MSE =	11.457

ch6_map	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
seat_map1	-.6394172	.0732756	-8.73	0.000	-.7847762	-.4940581
ch6_hb_f	3.623565	1.500297	2.42	0.018	.6473795	6.59975
_cons	60.72117	7.857034	7.73	0.000	45.13493	76.30741

To examine the results from another perspective, each patient was placed into one of three groups. The "Most Benefit" group was defined as those patients who experienced a reduction in MAP and whose blood pressure was at or below target levels at the six-month visit. The "Middle" group was defined as those patients who either experienced a significant reduction in MAP (≥13.3 mm Hg) or remained at or below target blood

pressure levels without experiencing a reduction in MAP. The "Least Benefit" group was defined as those patients who did not experience a significant reduction in MAP (≥13.3 mm Hg), or were not at or below target blood pressure levels at the six-month visit. The figure below shows the mean change in SBP, DBP and MAP for each of these three groups.

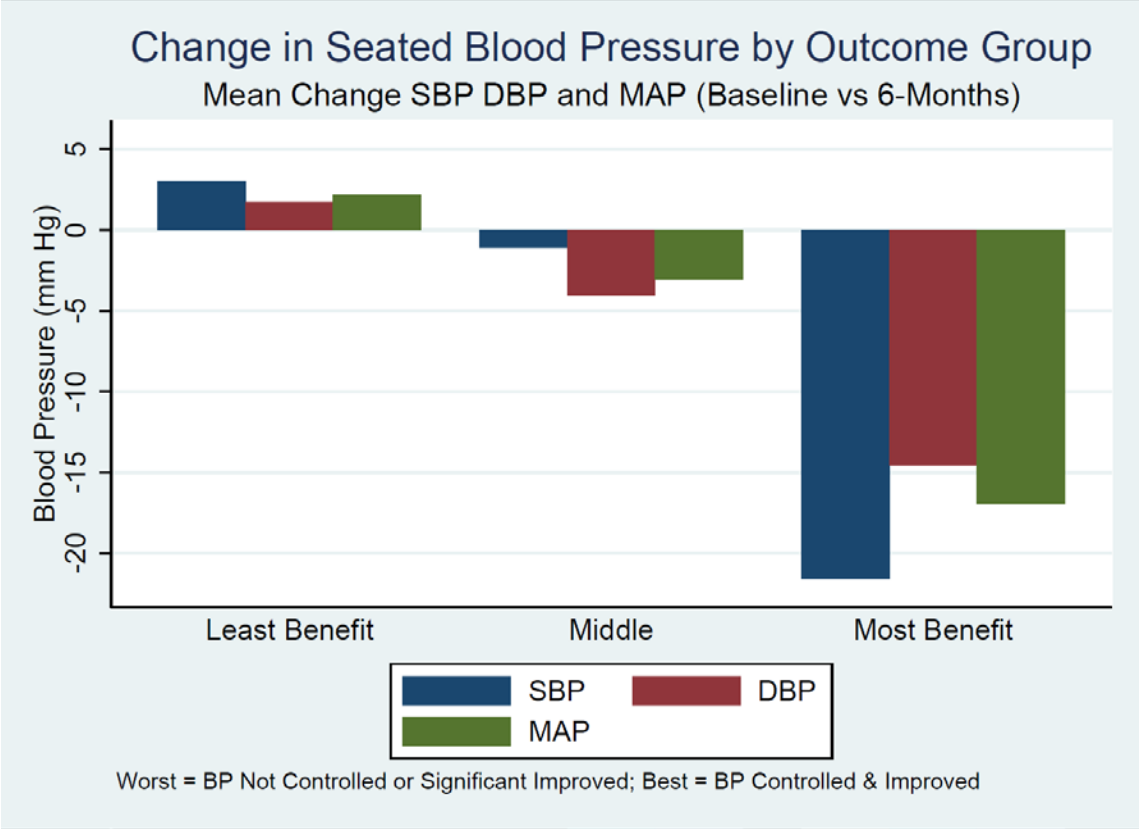

Figure 19: Results - Change in BP by Outcome Group

Ordered logistic regression was used to examine the associations between patient characteristics and the three results groups. As noted in the table below, the baseline understanding of how medication dose influences medication, is associated with the benefit group (Prob>chi2 = 0.0014, Pseudo R2 = 0.0831). Although the statistical significance of the relationship is largely driven by the 3 patients who answered

"disagree" and ultimately ended up in the "least benefit" group, this relationship suggests that patients with a stronger baseline understanding of medications may be more likely to benefit from this intervention or that those with a low baseline understanding of medications may require additional education to get the same amount of benefit.

Table 45: Results - Understanding of Medication Dose by Outcome Group

BL Understand Dose Influence BP	Results Group			
	Least Ben	Middle	Most Bene	Total
disagree	3	0	0	3
	8.82	0.00	0.00	3.26
agree	25	12	28	65
	73.53	80.00	65.12	70.65
agree strongly	1	2	12	15
	2.94	13.33	27.91	16.30
agree very strongly	5	1	3	9
	14.71	6.67	6.98	9.78
Total	34	15	43	92
	100.00	100.00	100.00	100.00

The age group, those ≥55 versus those <55, was also found to have a relationship with benefit group (Prob>chi2 = 0.0203, Pseudo R2 = 0.0221). While age group can only explain about 2% of the variation, it is noteworthy to see that older patients did better than younger patients. These results are encouraging and suggest that older patients can take full advantage of developing technologies such as HBPM and telemonitoring.

Table 46: Results - Age Group Distribution by Outcome Group

Age Group [<=55] or [>55]	Results Group			
	Least Ben	Middle	Most Bene	Total
<= 55	22	8	16	46
	52.38	38.10	29.09	38.98
>55	20	13	39	72
	47.62	61.90	70.91	61.02
Total	42	21	55	118
	100.00	100.00	100.00	100.00

CONCLUSIONS, DISCUSSION AND RECOMMENDATIONS

Conclusions

This feasibility study was based on the assumption that hypertension was a significant public health concern in the Republic of Trinidad and Tobago and set out to test if the benefits of HBPM and automated monitoring systems noted in the literature could be realized in the country's public sector health centres. This study describes a sample of the country's hypertensive patient population and highlights that a high percentage of patients presented to the health centre setting with one or more comorbid conditions including diabetes, dyslipidemia and obesity. The study's comprehensive description of a hypertensive patient population is consistent with epidemiological reports from the Ministry of Health and the World Health Organization. Based on previously published epidemiological data from the Republic of Trinidad and Tobago's Ministry of Health and the World Health Organization and the study's comprehensive description of a hypertensive patient population, which are consistent with the literature, one can quickly conclude that hypertension is a serious public health problem, worthy of significant public health investment. The experiences of one hundred and eighteen patients who were followed for a six-month study period amounted to more than 21,400 monitored patient days and 3,255 successful monitoring phone calls, where patients took an active role in monitoring their blood pressure and transmitting their health information to the health centre via the automated system. The study clearly demonstrated the overwhelming majority of hypertension patients in Republic of Trinidad and Tobago can successfully utilize home blood pressure monitors (place cuff correctly, position sensor

over the brachial artery, position arm at heart level, activate machine correctly, remain calm and still during measurement, and correctly identify systolic and diastolic measures) to properly measure blood pressure. Based on the findings, we can conclude that the benefit of integrating HBPM into hypertension management can be achieved in the Republic of Trinidad and Tobago. The findings also demonstrate that while cost is an important access barrier, study patients can successfully convey their medical information to health centre physicians and staff via an automated telephone monitoring system and that the use of these tools and focused education from practitioners in health centres can help patients in the Republic of Trinidad and Tobago understand how medicine (type and dose), diet and exercise can influence their blood pressure and more actively participate in their blood pressure management. From these findings, we can conclude that the benefits of automated monitoring systems can be realized by patients in the Republic of Trinidad and Tobago. The study examined the use of HBPM and telephone monitoring by physicians and nurses practicing in the public health centres and demonstrate that these tools could be used to make medical decisions (maintain current anti-hypertensive therapy, change the dose of an anti-hypertensive therapy, add a new anti-hypertensive therapy, discontinue an anti-hypertensive therapy, become aware of a side effect of an anti-hypertensive therapy, recommend patient come to the clinic or go to an Emergency Department, prompt education of the patient regarding dietary compliance, prompt education of the patient regarding physical activity) and facilitate significant reductions in blood pressure. In summary, the following key findings demonstrate that HBPM and telemonitoring can be used successfully in the Republic of Trinidad and Tobago to help patients and healthcare providers manage hypertension.

Table 47: Conclusion – Key Findings

Patient Understanding and Active Participation Increased				
Measure	Obs.	Sum Rank	z	Prob > |z|
Δ in "I actively participate in the management of my blood pressure"	88	3916	3.24	0.0008
Δ in "I understand how the type of medication can influence my blood pressure"	87	3828	2.86	0.0042
Δ in "I understand how the dose of medication can influence my blood pressure"	89	4005	3.19	0.0014
Δ in "I understand how diet, particularly salt intake, can influence my blood pressure"	90	4095	2.58	0.0100
Δ in "I understand how physical activity can influence my blood pressure"	89	4005	4.12	0.0000

Patient Medication Adherence Improved					
Measure	Obs.	mean	Conf. Inter.	t Stat	Prob T>t
Δ in Medication Adherence: Morisky Medication Adherence 4-Point Scale	95	-0.58	-0.82 -0.34	-4.78	0.0000

Patient Blood Pressure Improved					
Measure	Obs.	mean	Conf. Inter.	t Stat	Prob T>t
Δ in Mean Arterial Pressure	118	-7.66	-4.89 -10.43	-5.49	0.0000

Based on these findings we conclude it is feasible to successfully integrate HBPM and telephone monitoring into the public sector clinic operations and hypertension treatment protocols of the Republic of Trinidad and Tobago.

Discussion – Implementation Factors

In order to determine if the known benefits of these tools and techniques can be realized in the real-world environment of public sector health centres in the Republic of Trinidad and Tobago, two principal questions had to be tested. First, are the HBPM and automated monitoring tools themselves appropriate for public sector health centre patients and providers in Trinidad and Tobago? Second, is the underlying environment of public sector health centres in the Republic of Trinidad and Tobago conducive to the

deployment and maintenance of these tools? The study's primary findings address the first question and the second question is addressed here in a description of how ten environmental challenges were overcome in the process of conducting the feasibility study. One, a server-based computer system supporting telemonitoring had to be installed, configured and maintained in Trinidad using local providers to record a hypertension question set. It is unlikely that any single organization in Trinidad had the resources or expertise to deploy and maintain this type of system but this environmental challenge was overcome because of a collaborative effort between information technology experts from the University of Trinidad and Tobago, the Ministry of Health, the Regional Health Authorities and consultants from Johns Hopkins. Two, a local computer network with secure wireless internet connection had to be established in each of the health centres to support the physicians and nurses. The absence of internet connections and wireless networks at the health centres speaks to the infrastructure and logistical challenges facing developing countries like the Republic of Trinidad and Tobago. The Republic of Trinidad and Tobago is relatively wealthy compared to other Caribbean nations and while high-speed internet connections are available in some locations, internet connections were not available in the health center clinics. The expense associated with running high-speed cables is a barrier, particularly when attempting to reach rural health centers. The cost associated with deploying and maintaining basic network services is also a barrier. The non-climate-controlled environment, the limited availability of trained IT personnel and the reality that computer equipment tends to "walk away" also contribute to the challenge. Again, these environmental and logistical challenges were overcome through a collaborative effort of

information technology experts from the University of Trinidad and Tobago, the Ministry of Health and consultants from Johns Hopkins. Financial support from the Health Sciences Initiative also facilitated placement of the required internet connections. Three, physicians and nurses with limited computer experience had to be trained to use the laptop computers and the computer monitoring system. Physicians and nurses started their computer training with different comfort levels and worked as a team to overcome challenges associated with using the computerized system. Physician, nursing and support staff assignments were flexible and the team was able to successfully complete the required computer training. If providers weren't comfortable with the computer data entry or reviewing the computer monitoring screens they were able to get others in the health centre to help them with the computer technology. The physicians' and nurses' desire to improve patient care, and their ability to work together as a team, was truly impressive and an important factors in the program's success. While a rigid approach to specific assignments could have easily resulted in a mismatch of job skills and duties, the team approach to the overall goal of improved patient care allowed those with strengths in individual areas to assist those who require assistance, who in turn were able to contribute their individual strengths to the team effort. Four, patients unfamiliar with HBPM and telemonitoring had to be trained to use the equipment and transmit their health information to the clinic. The training associated with the home blood pressure monitors themselves proved to be straightforward. Once patients were provided with a monitor, an appropriately sized cuff, and basic training, they experienced very little difficulty utilizing the monitor. Transmitting health information to the physicians and nurses was less consistent but this challenge was overcome with additional training. The

overwhelming majority of patients demonstrated success with minimal training and those requiring additional training were easily identifiable via the monitoring system when they failed to submit data to the clinic or submitted suspect responses. Five, patients, physicians, nurses and investigators had to manage their expectations and not give up when administrative delays were encountered. Administrative challenges frequently translate to administrative delays in the most developed healthcare environments. The same is true in the Republic of Trinidad and Tobago. When delays were encountered and people became frustrated by the lack of progress, everyone associated with this project stayed focused on the goal of improving patient care for those being served in the public sector health centres. Staying focused on the common goal allowed the study team to remain united and each administrative obstacle was eventually overcome. Six, the financial barriers of lower income patients had to be eliminated whenever possible. Each patient enrolled in the study was provided with a home blood pressure monitor free of charge which removed the financial barriers associated with entering the study but the investigator soon discovered that most patients were using cell phones to transmit their health information to the monitoring system and the cost of these calls was prohibitive for many patients. To overcome this environmental challenge, the study protocol was quickly adjusted to reimburse patients for their telemonitoring calls and low income patients were able to continue to participate in the study. Seven, patients, physicians, nurses and investigators had to manage their expectations and not let up when successes in blood pressure management were initially observed. Many patients experienced significant reductions in blood pressure in the first three months. Physicians and nurses worked hard to manage this environmental challenge, reinforcing to patients that

hypertension was a chronic condition requiring an ongoing commitment to medication compliance and healthy lifestyle choices. Eight, the study team had to monitor and manage the telemonitoring system, ensuring everything was working as intended. To overcome this challenge, the Johns Hopkins consultants provided a dedicated resource that facilitated collaborative efforts among key stakeholders and helped overcome problems as they were identified. They also utilized relatively low-tech technologies that are inexpensive and highly reliable. Other technologies that facilitate communication among blood pressure monitors, smart phones and web-based computer servers were reviewed and not selected for this intervention because the more sophisticated technologies had a higher acquisition cost and required more financial resources from the target population. All of the patients treated at the public health centers had regular access to a telephone but few had access to smart phone technology and fewer still had the financial resources to maintain a data plan with their cell phone providers. Also, the resources available to investigate and resolve technology interface problems were very limited. Nine, the local medical team had to manage the patient's medical information and ensure records were integrated into the larger medical record. At the time of the study, health centre records were maintained on paper. In order to manage this environmental challenge, study documents were created in paper form to largely match the health centre environment. In a future state, blood pressure data and hypertension management reports would be integrated electronically to a primary electronic medical record system. Ten, the study team had to overcome the financial barriers associated with conducting the feasibility study. The Trinidad and Tobago Health Sciences Initiative provided resources to multiple organizations including the Ministry of Health,

the Regional Health Authorities, and the University of Trinidad and Tobago. Each collaborated and contributed resources to help realize the goal of improving patient care for those being served in the public sector health centres.

Discussion – Study Design

Reviewing the study design itself, one finds many positive attributes. It examined the management of hypertension, a significant and under-managed public health concern in the Republic of Trinidad and Tobago, regionally and across the globe. Because the research was conducted in the Republic of Trinidad and Tobago with clinical and operational aspects of the study being managed by the same local primary care teams (physicians and nurses) who routinely treat hypertensive patients in the public sector health centres, the findings are viewed as largely generalizable across the Republic of Trinidad and Tobago and other developing nations throughout the Caribbean where patients and physicians have similar characteristics. Another positive attribute of the study is that it focused on practical tools and techniques that could be quickly deployed across the country with relatively little financial investment. On the critical side of this discussion, the study's three principal design weaknesses included: (1) a non-randomized design which made it impossible to fully control for potential confounding variables; (2) a limited sample size of 118 patients which provided limited statistical power to detect small but potentially significant differences in patient characteristics of those that benefited most from the intervention and those that benefited least and (3) the limited number of enrollment sites which were based in large population centres with high quality primary care physicians. The generalizability of these study findings to the truly

rural areas of the country is less certain. Also, a hypertension management model involving home blood pressure monitors and an automated telephone-information system requires a certain level of investments (a computer server, clinic-based personal computers, home blood pressure monitors, prepaid / reimbursed phone calls to the monitoring system, etc.) which may not be available in developing nations less fortunate than the Republic of Trinidad and Tobago.

Recommendations

Having demonstrated the public health centre environment can successfully support a hypertension management model that includes HBPM and an automated monitoring system and the tools can be used in the Republic of Trinidad and Tobago to significantly lower blood pressure, it is recommended that the government of Trinidad and Tobago invest in HBPM and automated monitoring technologies and techniques. Increasing the number of interactions and the amount of health information flowing between patients and providers can be achieved without overwhelming the limited resources of the public health centres and the health of hypertensive patients throughout the country can be improved. As part of this recommended strategy to address hypertension across the country, it is recommended that home blood pressure monitors be provided free of charge to patients diagnosed with hypertension so they can frequently monitor their largely symptomless condition and actively participate in the disease management process. It is also recommended that HBPM be accompanied by focused patient education that incorporates the health belief model constructs of susceptibility, severity, benefits, barriers, and self-efficacy to help improve blood pressure management.

The following comments are offered to guide the implementation of earlier recommendations and while they are not supported by quantitative data, they are supported by the experiences of the study team. Successful implementation of new hypertension management strategies will most certainly be challenging. It is recommended that inter-ministry collaborations be used to create and leverage an interdisciplinary workgroup, similar to the workgroup created to overcome a broad variety of environmental challenges and facilitate the feasibility study. To overcome the patient access barriers associated with the cost of automated monitoring, it is recommended that the government work with national cell phone carriers to establish a no-charge communication model for relaying health information to the public health centre's medical record system and back to patients. In addition to collecting taxes and airway usage fees the government could negotiate for additional community benefits in the form of toll-free lines for patients to transmit their home monitoring health information into the national medical record system. This negotiated agreement could be a win-win-win in that it would allow cell phone carriers to offer their customers new value-added services and contribute to the public's general health. In order to avoid a fragmented approach to managing different diseases and conditions in a patient population where comorbidities are common and to maximize the impact of limited physician and nursing resources, it is recommended that a single, integrated automated monitoring system be used in each health centre. In order to help physicians and nurses leverage the full strength of the technology, it is recommended that each regional health authority be provided with a dedicated program manager to monitor and maintain the automated monitoring system.

In conclusion, further HBPM and automated telemonitoring research is recommended to validate the feasibility study findings and further explore patient characteristics which contribute to and detract from the successful utilization of these powerful tools. Specifically, while HBPM and automated telemonitoring are being incorporated into the national hypertension management strategy, additional research should be conducted to further our understanding of how these technologies can be best deployed and tailored for specific environments such as rural settings.

APPENDICES

Appendix A

Tele-Watch – Trinidad Hypertension Study
Patient Enrollment Form

Patient Information

First Name:		Gender:	Male ❑, Female ❑
Middle Name:		Ethnicity:	African ❑, Indian, ❑ Mixed ❑, Other ❑
Last Name:		Union Status:	Single ❑, Married ❑, Separated / Divorced / Widowed ❑, Common-law ❑, Other ❑
Address / Village:		Person to assist with healthcare issues:	None ❑, Occasionally ❑, Most Times ❑, Always have some to help as needed ❑
City / District:		Employment:	None ❑, Part-time ❑, Full-time ❑, Retired ❑
1st Cell Phone:		Formal Education: (Highest Completed)	None ❑, Primary ❑, Secondary ❑, Post-Secondary ❑
2nd Cell Phone:		Alternate Contact: (Name)	
Home Phone #:		Alt. Contact Person: (Address / Village)	
Email:		Alt. Contact Person: (Address - District)	
Date of Birth: (Day/Month/Year)		Alt. Contact Person: (Phone)	

Patient Unique Identification & Medical Record Numbers (used for care coordination)

National ID #:		Unique ID (PIN): Electronic Birth Record	
Enrollment Centre: (Health Centre Name)		Enrollment Centre: (Medical Record #)	
Alt Health Centre: (Health Centre Name)		Alt Health Centre: (Medical Record #)	
Treating Hospital #1: (Hospital #1 Name)		Treating Hospital #1: (Medical Record #)	
Treating Hospital #2: (Hospital #2 Name)		Treating Hospital #2: (Medical Record #)	

Enrollment Check List (this section to be completed by physician / nurse)

Study / Treating Physician:		Current Date:	
Other Treating Physician:		Patient Meets Entry Criteria:	Yes ❑ No ❑
Study Nurse:		Patient Reviewed & Signed Consent	Yes ❑ No ❑
Assigned Study #:		Study PIN #:	

Home BP Monitor Serial Number: _____

Patient Signature: _____ Date BP Monitor Received: _____

1

Patient Medical History

Patient Study # _____

1)	Age at which hypertension was diagnosed?				*Age (years)*
2)	History of known coronary artery disease?			Yes ❑, No❑	
	a.	Angina (chest pain)?		Yes ❑, No❑	
		*	Date of Angina onset?		*Month / Year*
	b.	Myocardial Infarction (heart attack)?		Yes ❑, No❑	
		*	Date of 1st Myocardial Infarction (heart attack)?		*Month / Year*
		*	Total number Myocardial Infarctions (heart attack)?		*1-99*
	c.	Cath-documented disease?		Yes ❑, No❑	
		*	Date of 1st Diagnostic Catheterization?		*Month / Year*
		*	Facility?		*Name*
	d.	Percutaneous Coronary Intervention (PCI)?		Yes ❑, No❑	
		*	Date of 1st PCI?		*Month / Year*
		*	Facility?		*Name*
	e.	Coronary Artery Bypass Graft Surgery (CABG)?		Yes ❑, No❑	
		*	Date of 1st CABG?		*Month / Year*
		*	Facility?		*Name*
3)	History of Congestive Heart Failure (CHF)?			Yes ❑, No❑	
	a.	On medical therapy for CHF?		Yes ❑, No❑	
4)	History of Cerebrovascular Disease (Stroke / TIA)?			Yes ❑, No❑	
	a.	Transient Ischemic Attack (TIA)		Yes ❑, No❑	
		*	Date of 1st TIA?		*Month / Year*
	b.	Stroke		Yes ❑, No❑	
		*	Date of 1st Stroke?		*Month / Year*
		*	Hemorrhagic Stroke?	Yes ❑, No❑, ? ❑	*? = Unknown*
		*	Ischemic Stroke?	Yes ❑, No❑, ? ❑	*? = Unknown*
5)	Current diagnosis of Depression?			Yes ❑, No❑	
	a.	On medical therapy for Depression?		Yes ❑, No❑	
6)	Current diagnosis of Diabetes?			Yes ❑, No❑	
		*	On restricted diet alone?	Yes ❑, No❑	
		*	On oral agents?	Yes ❑, No❑	
		*	On insulin?	Yes ❑, No❑	
		*	Prior hypoglycemic episodes (low blood sugar)?	Yes ❑, No❑	
7)	Current diagnosis of Dyslipidemia (high cholesterol)?			Yes ❑, No❑	
	a.	On lipid-lowering therapy?		Yes ❑, No❑	
8)	Current diagnosis of Gout?			Yes ❑, No❑	
9)	Obstructive sleep apnea symptoms?			Yes ❑, No❑	
	a.	Daytime somnolence (sleepiness)?		Yes ❑, No❑	
	b.	Interrupted night breathing?		Yes ❑, No❑	
	c.	Prior sleep study?		Yes ❑, No❑	
10)	Paroxysmal BP elevations, palpitations, and diaphoresis?			Yes ❑, No❑	
11)	History of Peripheral Vascular Disease?			Yes ❑, No❑	
	a.	Claudication?		Yes ❑, No❑	
		*	Current symptoms?	Yes ❑, No❑	
	b.	Prior imaging?		Yes ❑, No❑	
	c.	Prior procedure?		Yes ❑, No❑	
12)	History of renal insufficiency (kidney problems)?			Yes ❑, No❑	

Patient Medical History (continued)

Patient Study # _____

13)	History of Bronchospastic Disease (wheezing)?			Yes ❑, No❑	
14)	Current childbearing potential?			Yes ❑, No❑	
15)	History of urinary obstruction symptoms?			Yes ❑, No❑	
16)	History of cigarette / tobacco use?			Yes ❑, No❑	*Ever Smoker*
	a.	Date of when started?			*Month / Year*
	b.	Current cigarette / tobacco use?		Yes ❑, No❑	
		*	Number of cigarettes / smokes per day?		*1-99*
	c.	Date of when stopped smoking?			*Month / Year*
17)	Current illicit drug use?			Yes ❑, No❑	
	a.	Cocaine?		Yes ❑, No❑	
	b.	Methamphetamines?		Yes ❑, No❑	
	c.	Marijuana?		Yes ❑, No❑	
	d.	Other?		Yes ❑, No❑	
18)	Current Alcohol use?			Yes ❑, No❑	
	a.	Number of drinks per day *(drink = 1oz of alcohol or 1 beer)?*			*1-99*
19)	Add salt to food at the table / while eating?			Yes ❑, No❑	
	a.	Number of meals per day *(where salt is added)?*			*1-99*
20)	Physical Activity (exercise for 30 minutes each week)?			Yes ❑, No❑	
	a.	Number of 30+ min exercise sessions per week?			*1-99*
21)	Medication allergies?			Yes ❑, No❑	
			Sulfa?	Yes ❑, No❑	
			ACE-Inhibitor?	Yes ❑, No❑	
			Angiotensin Receptor Blocker?	Yes ❑, No❑	
			Other?		*List*
22)	Currently Taking Medications (*including oral contraceptives*)?			Yes ❑, No❑	
		1st Medication	2nd Medication		*List*
		Dose & Frequency	Dose & Frequency		*List*
		3rd Medication	4th Medication		*List*
		Dose & Frequency	Dose & Frequency		*List*
		5th Medication	6th Medication		*List*
		Dose & Frequency	Dose & Frequency		*List*
		7th Medication	8nd Medication		*List*
		Dose & Frequency	Dose & Frequency		*List*
		9th Medication	10th Medication		*List*
		Dose & Frequency	Dose & Frequency		*List*
		11th Medication	12th Medication		
		Dose & Frequency	Dose & Frequency		
	Note: Insulin, Non-steroidal anti-inflammatory agents & Thyroid supplements				
23)	Currently Taking Herbal Medications (including supplements)			Yes ❑, No❑	
		1st Supplement	2nd Supplement		*List*
		Dose & Frequency	Dose & Frequency		*List*
		3rd Supplement	4th Supplement		*List*
		Dose & Frequency	Dose & Frequency		*List*
		5th Supplement	6th Supplement		*List*
		Dose & Frequency	Dose & Frequency		*List*
		7th Supplement	8t h Supplement		*List*
		Dose & Frequency	Dose & Frequency		*List*

Patient's Family Medical History

Patient Study # _____

1)	Family history of Cardiovascular Disease (in first degree relative)?			Yes ❑, No❑	
	a.	Family history of Hypertension?		Yes ❑, No❑	
		*	Father - History of Hypertension?	Yes ❑, No❑	
		*	Mother - History of Hypertension?	Yes ❑, No❑	
		*	Sibling - History of Hypertension?	Yes ❑, No❑	
	b.	Family history of MI or Angina (heart attack or chest pain)?		Yes ❑, No❑	
		*	Father - MI or Angina (heart attack or chest pain)?	Yes ❑, No❑	
			Age at onset of MI or Angina (heart attack or chest pain)?		*1-99*
		*	Mother - MI or Angina (heart attack or chest pain)?	Yes ❑, No❑	
			Age at onset of MI or Angina (heart attack or chest pain)?		*1-99*
		*	Sibling - MI or Angina (heart attack or chest pain)?	Yes ❑, No❑	
			Age at onset of MI or Angina (heart attack or chest pain)?		*1-99*
	c.	Family history of Stroke or TIA?		Yes ❑, No❑	
		*	Father - History of Stroke or TIA?	Yes ❑, No❑	
			Age at onset of Stroke or TIA?		*1-99*
		*	Mother - History of Stroke or TIA?	Yes ❑, No❑	
			Age at onset of Stroke or TIA?		*1-99*
		*	Sibling - History of Stroke or TIA?	Yes ❑, No❑	
			Age at onset of Stroke or TIA?		*1-99*
	d.	Family history of Sudden Death?		Yes ❑, No❑	
		*	Father - History of Sudden Death?	Yes ❑, No❑	
			Age at Sudden Death?		*1-99*
		*	Mother - History of Sudden Death?	Yes ❑, No❑	
			Age at Sudden Death?		*1-99*
		*	Sibling - History of Sudden Death?	Yes ❑, No❑	
			Age at Sudden Death (youngest age)?		*1-99*
	e.	Family history of Kidney Dialysis?		Yes ❑, No❑	
		*	Father - History of Kidney Dialysis?	Yes ❑, No❑	
			Age at onset of Kidney Dialysis?		*1-99*
		*	Mother - History of Kidney Dialysis?	Yes ❑, No❑	
			Age at onset of Kidney Dialysis?		*1-99*
		*	Sibling - History of Kidney Dialysis?	Yes ❑, No❑	
			Age at onset of Kidney Dialysis (youngest age)?		*1-99*

Health Beliefs and Medication Adherence Questionnaire Patient Study # _____

Note: There are no wrong answers, just pick the answer that best matches your view.

1)	Do you ever forget to take your medicine?	Yes ❑, No❑	
2)	Are you careless at times about taking your medication?	Yes ❑, No❑	
3)	When you feel better do you sometimes stop taking your medicine?	Yes ❑, No❑	
4)	Sometimes if you feel worse when you take the medicine, do you stop taking it?	Yes ❑, No❑	
5)	Number of "Yes" answers from above.		*0-4*

6)	In general, when you get sick, how much does it interfere with your usual activities?
	Not at All ❑, A Little ❑, A Moderate Amount ❑, A Great Deal ❑
7)	You get the kinds of illnesses that worry you a great deal.
	Agree ❑, Neutral ❑, Disagree ❑
If you were to do nothing in particular to protect yourself, how likely is it that you will	
8)	... **get a mild cold** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
9)	… **get a new cavity** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
10)	... **get the very bad cold** / seasonal flu during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
11)	… **have a heart attack** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
12)	… **be sick enough to spend 3 days in bed** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
13)	Compared to other people your age, you get sick more easily.
	Agree ❑, Neutral ❑, Disagree ❑
14)	How serious would it be if you **got a mild cold** in the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
15)	How serious would it be if you **had a heart attack** in the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
16)	How serious would **getting a new cavity** in your teeth during the next 12 months be?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
17)	How serious would it **be to be sick enough to spend 3 days in a row in bed** during the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
18)	Whenever you get sick it seems to be very serious.
	Agree ❑, Neutral ❑, Disagree ❑
19)	Compared to other people your age, would you rate your health?
	Better ❑, About the Same ❑, Worse ❑
20)	In general, how would you describe your health?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
21)	Sometimes it seems that when you try to prevent illness, it is more trouble than it is worth.
	Agree ❑, Neutral ❑, Disagree ❑
22)	If you take care of yourself, you can avoid getting sick.
	Agree ❑, Neutral ❑, Disagree ❑
23)	Chances are when you get sick it is because you did not take care of yourself.
	Agree ❑, Neutral ❑, Disagree ❑

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Health Beliefs and Medication Adherence Questionnaire (cont.) Patient Study # _____

24)	For most kinds of illness, it is the doctor who can help you the most.
	Agree ❑, Neutral ❑, Disagree ❑
25)	Home remedies are often better than the drugs that the doctor prescribed.
	Agree ❑, Neutral ❑, Disagree ❑
26)	You seem to get the kinds of illness that doctors can't do much for.
	Agree ❑, Neutral ❑, Disagree ❑
Suppose your doctor were to tell you to take a certain medicine to protect your health. How likely is it that you would stop taking the medicine in each of the following situation?	
27)	… the medicine was costing a lot of money
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
28)	… you felt worse when you took the medicine
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
29)	… taking the medicine was hard to fit into your daily routine
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
30)	… you heard that taking the medicine might be dangerous to your health, even though your doctor prescribed it for you
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
31)	If you follow a doctor's advice you will have less illness in your lifetime.
	Agree ❑, Neutral ❑, Disagree ❑
32)	How concerned are you about your health?
	Very Concerned ❑, Somewhat Concerned ❑, A Little Concerned ❑, Not Concerned at All ❑
33)	How good a job are you doing in taking care of your health right now?
	Excellent Job ❑, Good Job ❑, Fair Job ❑, Poor Job❑
34)	How likely is it that you will try to do a better job of taking care of your health in the future?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
35)	Although you are concerned about your health there are other things that are more important to you?
	Agree ❑, Neutral ❑, Disagree ❑
36)	How well do you understand your current medications and how to take them?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
37)	How likely is it that you will be able to take your medications as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
38)	How well do you understand a healthy diet?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
39)	How likely is it that you will be able to maintain a healthy diet as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
40)	How well do you understand a healthy physical activity?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
41)	How likely is it that you will be able to maintain healthy physical activity as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
42)	How many days during the previous 30 days was your physical health "not good".
	_____ Days (0-30)
43)	How many days during the previous 30 days was your mental health "not good".
	_____ Days (0-30)
44)	How many days during the previous 30 days was your daily activity limited because of poor physical or mental health?
	_____ Days (0-30)

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Patient Exam (Initial Visit) Patient Study # _____

1)	**Anthropomorphics**							
	Height (cm)		• BMI Underweight = <18.5					
	Weight (kg)		• BMI Normal weight = 18.5-24.9					
	Waist (cm)		• BMI Overweight = 25-29.9					
	BMI (Calculated)		• BMI Obesity = BMI of 30 or greater					
2)	**Blood Pressure & Pulse Readings** *(no caffeine, no alcohol or exercise in last 30 min, rest for at least 5 min)*							
	Syphgmomanometer – Right Arm		Non-Dominant Arm			*Non-Dominate If BP differs by >5mm Hg*		
	Seated #1		Seated #2			Seated #3		
	Systolic		Systolic			Systolic		
	Diastolic		Diastolic			Diastolic		
	Pulse		Pulse			Pulse		
	Syphgmomanometer – Left Arm							
	Seated #1		Right Ankle			Left Ankle		
	Systolic		Systolic			Systolic		
	Diastolic							
	Pulse							
	Home Monitor – Non-Dominant Arm (Left ❑ , Right ❑)					*If systolic BP differs by >5mm Hg*		
	Seated #1		Seated #2			Seated #3		
	Systolic		Systolic			Systolic		
	Diastolic		Diastolic			Diastolic		
	Pulse		Pulse			Pulse		
	Syphgmomanometer – Non-Dominant Arm					*If systolic BP differs by >5mm Hg*		
	Standing #1		Standing #2			Standing #3		
	Systolic		Systolic			Systolic		
	Diastolic		Diastolic			Diastolic		
	Pulse		Pulse			Pulse		
	Home Monitor – Non-Dominant Arm					*If BP differs by >5mm Hg*		
	Standing #1		Standing #2			Standing #3		
	Systolic		Systolic			Systolic		
	Diastolic		Diastolic			Diastolic		
	Pulse		Pulse			Pulse		
3)	**Retinopathy**	Yes ❑ No ❑	Prior ophthalmology opinion	Yes ❑ No ❑				
4)	**Carotid Bruits**	Yes ❑ No ❑	Prior ultrasound	Yes ❑ No ❑				
5)	**Thyromegaly**	Yes ❑ No ❑	Prior thyroid function test	Yes ❑ No ❑		Prior ultrasound	Yes ❑ No ❑	
6)	**Wheezes**	Yes ❑ No ❑	S3 Gallop	Yes ❑ No ❑		S4 Gallop	Yes ❑ No ❑	
7)	**Volume Overload**	Yes ❑ No ❑	Rales	Yes ❑ No ❑		Pedal edema (N/A or Grade 1-4)		
8)	**Abnormal cardiac exam**	Yes ❑ No ❑	Displaced PMI	Yes ❑ No ❑		Systolic murmur	Yes ❑ No ❑	
9)	**Diastolic murmur**	Yes ❑ No ❑	Other	Yes ❑ No ❑				

Patient Exam (Initial Visit continued) Patient Study # _____

10)	**Abdominal pulse below umbilicus**	Yes ❑ No ❑		Prior abdominal ultrasound if >65	Yes ❑ No ❑			
11)	**Abdominal bruit**	Yes ❑ No ❑						
12)	**Renal bruit**	Yes ❑ No ❑						
13)	**Abnormal pedal pulses**	Yes ❑ No ❑		One or both diminished	Yes ❑ No ❑		One or both absent	Yes ❑ No ❑

Patient Laboratory Tests (Initial Visit)

1)	**Creatinine**				
2)	**BUN**				
3)	**Potassium**				
4)	**Sodium**				
5)	**Fasting Lipid Panel**				
	HDL				
	LDL				
	Triglycerides				
	Total Cholesterol				
	VLDL				
6)	**Fasting glucose**				
7)	**Fasting insulin**				
8)	**High Sensitivity C-Reactive Protein**				
9)	**Urinalysis**				
	Proteinuria				
	Albumin / Creatinine Ratio				
10)	**Abnormal ECG**				
	LVH by Voltage	Yes ❑, No ❑			
	LVH by ST-T Changes	Yes ❑, No ❑			
	Q-Waves for MI	Yes ❑, No ❑			
	Non-Specific ST-T Changes	Yes ❑, No ❑			
	Left Axis Deviation	Yes ❑, No ❑			
	Resting Rate <55	Yes ❑, No ❑			
	Heart Block	Yes ❑, No ❑	List Degree (1-3)		
	Right Bundle Branch Block	Yes ❑, No ❑			
	Left Bundle Branch Block	Yes ❑, No ❑			

Appendix B

Tele-Watch – Trinidad Hypertension Study
Supplemental Data Collection Form

Indicate Visit: [❑ Baseline], [❑ 3-Month], [❑ 6-Month] Patient Study # _____

Date of Completion: _____

A)	Proper use of blood pressure machine			
	1)	Healthcare provider assessment of patient ("No" indicates patient was unable to demonstrate skill with or without supplemental training)		
		a)	Is the cuff placed correctly?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
		b)	Is the sensor positioned over the biracial artery?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
		c)	Is the arm position at heart level?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
		d)	Is the machine activated correctly?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
		e)	Is patient calm and still during measurement?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
		f)	Are the systolic and diastolic measures correctly identified?	Yes ❑, Yes (w/ supplemental training) ❑, No❑
	2)	Patient assessment:		
		a)	Do you believe that you know how to use the blood pressure machine properly?	Yes ❑, No❑

B) Patient Survey: Managing My Hypertension

[Study Patients] Please check the box that best reflects your view ☑.

1) My blood pressure is well controlled.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
2) I actively participate in the management of my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
3) I understand how the type of medicine can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
4) I understand how the dose of medicine can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
5) I believe my medication is working well to control my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
6) I understand how diet, particularly salt intake, can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
7) I understand how physical activity can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
8) I know what my blood pressure goal is.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly

1

Appendix C

Tele-Watch – Trinidad Hypertension Study
3-Month Visit – Data Collection Form

Date of Completion: _____ Patient Study # _____

Assessing Use of Hypertension Management System				
	1)	Physician assessment of hypertension management system to help manage patient		
		During the last three months did you or other treating physicians use the hypertension management system to guide decisions to:		
		a)	Maintain current anti-hypertensive therapy?	Yes ❑, No❑
		b)	Change the dose of an anti-hypertensive therapy?	Yes ❑, No❑
		c)	Add a new anti-hypertensive therapy?	Yes ❑, No❑
		d)	Discontinue an existing anti-hypertensive therapy?	Yes ❑, No❑
		e)	Become aware of a side effect of anti-hypertensive therapy?	Yes ❑, No❑
		f)	Recommend patient come to the clinic or go to an Emergency Department?	Yes ❑, No❑
		g)	Prompt education of the patient regarding dietary compliance?	Yes ❑, No❑
		h)	Prompt education of the patient regarding physical activity?	Yes ❑, No❑

Patient Exam								
1)	**Anthropomorphics**							
	Height (cm)			• BMI Underweight = <18.5				
	Weight (kg)			• BMI Normal weight = 18.5-24.9				
	Waist (cm)			• BMI Overweight = 25-29.9				
	BMI (Calculated)			• BMI Obesity = BMI of 30 or greater				
2)	**Blood Pressure & Pulse Readings** *(no caffeine, no alcohol or exercise in last 30 min, rest for at least 5 min)*							
	Syphgmomanometer – Non-Dominant Arm (Left ❑ , Right ❑)							
	Seated #1			Seated #2			Seated #3	
	Systolic			Systolic			Systolic	
	Diastolic			Diastolic			Diastolic	
	Pulse							
	Syphgmomanometer – Non-Dominant Arm							
	Standing #1			Standing #2			Standing #3	
	Systolic			Systolic			Systolic	
	Diastolic			Diastolic			Diastolic	
	Pulse							
	Most Recent Home Monitor Readings – Non-Dominant Arm							
	Seated #1			Seated #2			Seated #3	
	Systolic			Systolic			Systolic	
	Diastolic			Diastolic			Diastolic	
	Pulse			Pulse			Pulse	
	Most Recent Home Monitor Readings – Non-Dominant Arm							
	Standing #1			Standing #2			Standing #3	
	Systolic			Systolic			Systolic	
	Diastolic			Diastolic			Diastolic	
	Pulse			Pulse			Pulse	

1

3-Month Visit – Data Collection Form (page 2)

Patient Study # _____

3)	**Medication Use**					
	a)	Able to take medications regularly				Yes ❑, No❑
		If "No"				
		b)	Side Effects:			
		c)	Difficulty obtaining medications			Yes ❑, No❑
		d)	Sometimes forgets to take medication			Yes ❑, No❑
		e)	Feels medication are not helping him / her			Yes ❑, No❑
		f)	Other:			
	g)	Assessment of medication compliance (estimated % of prescribed doses taken correctly)				%
4)	**Healthcare Visits**					
	a)	Interim clinic visits related to hypertension (number)				
	b)	Interim A&E visits related to hypertension (number)				
	c)	Interim hospital admissions related to hypertension (number of admissions)				
	d)	Interim hospital admissions related to hypertension (total days in hospital)				
5)	**Lifestyle Issues**					
	a)	Self-assessment of dietary compliance			Excellent ❑, Good ❑, Fair ❑, Poor ❑	
	b)	Self-assessment of physical activity compliance			Excellent ❑, Good ❑, Fair ❑, Poor ❑	
	c)	Ability to perform physical activity (past 3 month)			Increased ❑, No Change ❑, Decreased ❑	
	d)	Number of day in prior 30 that physical activity was limited by health (0-30)				
	e)	Cigarette Use	Yes ❑, No❑	If "Yes"	Number of cigarettes smoked per day: _____	
	f)	Alcohol Use	Yes ❑, No❑	If "Yes"	Number of drinks per day: _____	
	g)	Illicit Drug Use	Yes ❑, No❑	If "Yes"	Increased ❑, No Change ❑, Decreased ❑	
6)	**Self-assessment of general state of health**				Excellent ❑, Good ❑, Fair ❑, Poor ❑	

Appendix D

Tele-Watch – Trinidad Hypertension Study
6-Month Visit – Data Collection Form

Date of Completion: _____ Patient Study # _____

Assessing Use of Hypertension Management System				
	1)	Physician assessment of hypertension management system to help manage patient		
		During the last three months did you or other treating physicians use the hypertension management system to guide decisions to:		
		a)	Maintain current anti-hypertensive therapy?	Yes ❑, No❑
		b)	Change the dose of an anti-hypertensive therapy?	Yes ❑, No❑
		c)	Add a new anti-hypertensive therapy?	Yes ❑, No❑
		d)	Discontinue an existing anti-hypertensive therapy?	Yes ❑, No❑
		e)	Become aware of a side effect of anti-hypertensive therapy?	Yes ❑, No❑
		f)	Recommend patient come to the clinic or go to an Emergency Department?	Yes ❑, No❑
		g)	Prompt education of the patient regarding dietary compliance?	Yes ❑, No❑
		h)	Prompt education of the patient regarding physical activity?	Yes ❑, No❑

Patient Exam									
1)	**Anthropomorphics**								
	Height (cm)			• BMI Underweight = <18.5					
	Weight (kg)			• BMI Normal weight = 18.5-24.9					
	Waist (cm)			• BMI Overweight = 25-29.9					
	BMI (Calculated)			• BMI Obesity = BMI of 30 or greater					
2)	**Blood Pressure & Pulse Readings** *(no caffeine, no alcohol or exercise in last 30 min, rest for at least 5 min)*								
	Syphgmomanometer – Non-Dominant Arm (Left ❑ , Right ❑)								
	Seated #1			Seated #2			Seated #3		
	Systolic			Systolic			Systolic		
	Diastolic			Diastolic			Diastolic		
	Pulse								
	Syphgmomanometer – Non-Dominant Arm								
	Standing #1			Standing #2			Standing #3		
	Systolic			Systolic			Systolic		
	Diastolic			Diastolic			Diastolic		
	Pulse								
	Most Recent Home Monitor Readings – Non-Dominant Arm								
	Seated #1			Seated #2			Seated #3		
	Systolic			Systolic			Systolic		
	Diastolic			Diastolic			Diastolic		
	Pulse			Pulse			Pulse		
	Most Recent Home Monitor Readings – Non-Dominant Arm								
	Standing #1			Standing #2			Standing #3		
	Systolic			Systolic			Systolic		
	Diastolic			Diastolic			Diastolic		
	Pulse			Pulse			Pulse		

1

6-Month Visit – Data Collection Form (page 2)

Patient Study # _____

3)	**Medication Use**					
	a)	Able to take medications regularly				Yes ❑, No❑
		If "No"				
		b)	Side Effects:			
		c)	Difficulty obtaining medications			Yes ❑, No❑
		d)	Sometimes forgets to take medication			Yes ❑, No❑
		e)	Feels medication are not helping him / her			Yes ❑, No❑
		f)	Other:			
	g)	Assessment of medication compliance (estimated % of prescribed doses taken correctly)				%
4)	**Healthcare Visits**					
	a)	Interim clinic visits related to hypertension (number)				
	b)	Interim A&E visits related to hypertension (number)				
	c)	Interim hospital admissions related to hypertension (number of admissions)				
	d)	Interim hospital admissions related to hypertension (total days in hospital)				
5)	**Lifestyle Issues**					
	a)	Self-assessment of dietary compliance			Excellent ❑, Good ❑, Fair ❑, Poor ❑	
	b)	Self-assessment of physical activity compliance			Excellent ❑, Good ❑, Fair ❑, Poor ❑	
	c)	Ability to perform physical activity (past 3 month)			Increased ❑, No Change ❑, Decreased ❑	
	d)	Number of day in prior 30 that physical activity was limited by health (0-30)				
	e)	Cigarette Use	Yes ❑, No❑	If "Yes"	Number of cigarettes smoked per day: _____	
	f)	Alcohol Use	Yes ❑, No❑	If "Yes"	Number of drinks per day: _____	
	g)	Illicit Drug Use	Yes ❑, No❑	If "Yes"	Increased ❑, No Change ❑, Decreased ❑	
6)	**Self-assessment of general state of health**				Excellent ❑, Good ❑, Fair ❑, Poor ❑	

2

6-Month Health Beliefs and Medication Adherence Questionnaire

Patient Study #_____

Note: There are no wrong answers, just pick the answer that best matches your view.

1)	Do you ever forget to take your medicine?	Yes ❑, No❑	
2)	Are you careless at times about taking your medication?	Yes ❑, No❑	
3)	When you feel better do you sometimes stop taking your medicine?	Yes ❑, No❑	
4)	Sometimes if you feel worse when you take the medicine, do you stop taking it?	Yes ❑, No❑	
5)	Number of "Yes" answers from above.		*0-4*

6)	In general, when you get sick, how much does it interfere with your usual activities?
	Not at All ❑, A Little ❑, A Moderate Amount ❑, A Great Deal ❑
7)	You get the kinds of illnesses that worry you a great deal.
	Agree ❑, Neutral ❑, Disagree ❑
If you were to do nothing in particular to protect yourself, how likely is it that you will	
8)	... **get a mild cold** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
9)	… **get a new cavity** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
10)	... **get the very bad cold** / seasonal flu during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
11)	… **have a heart attack** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
12)	… **be sick enough to spend 3 days in bed** during the next 12 months?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
13)	Compared to other people your age, you get sick more easily.
	Agree ❑, Neutral ❑, Disagree ❑
14)	How serious would it be if you **got a mild cold** in the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
15)	How serious would it be if you **had a heart attack** in the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
16)	How serious would **getting a new cavity** in your teeth during the next 12 months be?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
17)	How serious would it **be to be sick enough to spend 3 days in a row in bed** during the next 12 months?
	Not Serious ❑, A Little Serious ❑, Somewhat Serious ❑, Serious ❑
18)	Whenever you get sick it seems to be very serious.
	Agree ❑, Neutral ❑, Disagree ❑
19)	Compared to other people your age, would you rate your health?
	Better ❑, About the Same ❑, Worse ❑
20)	In general, how would you describe your health?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
21)	Sometimes it seems that when you try to prevent illness, it is more trouble than it is worth.
	Agree ❑, Neutral ❑, Disagree ❑
22)	If you take care of yourself, you can avoid getting sick.
	Agree ❑, Neutral ❑, Disagree ❑
23)	Chances are when you get sick it is because you did not take care of yourself.
	Agree ❑, Neutral ❑, Disagree ❑

Health Beliefs and Medication Adherence Questionnaire (cont.) Patient Study #_____

24)	For most kinds of illness, it is the doctor who can help you the most.
	Agree ❑, Neutral ❑, Disagree ❑
25)	Home remedies are often better than the drugs that the doctor prescribed.
	Agree ❑, Neutral ❑, Disagree ❑
26)	You seem to get the kinds of illness that doctors can't do much for.
	Agree ❑, Neutral ❑, Disagree ❑
Suppose your doctor were to tell you to take a certain medicine to protect your health. How likely is it that you would stop taking the medicine in each of the following situation?	
27)	… the medicine was costing a lot of money
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
28)	… you felt worse when you took the medicine
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
29)	… taking the medicine was hard to fit into your daily routine
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
30)	… you heard that taking the medicine might be dangerous to your health, even though your doctor prescribed it for you
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
31)	If you follow a doctor's advice you will have less illness in your lifetime.
	Agree ❑, Neutral ❑, Disagree ❑
32)	How concerned are you about your health?
	Very Concerned ❑, Somewhat Concerned ❑, A Little Concerned ❑, Not Concerned at All ❑
33)	How good a job are you doing in taking care of your health right now?
	Excellent Job ❑, Good Job ❑, Fair Job ❑, Poor Job❑
34)	How likely is it that you will try to do a better job of taking care of your health in the future?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
35)	Although you are concerned about your health there are other things that are more important to you?
	Agree ❑, Neutral ❑, Disagree ❑
36)	How well do you understand your current medications and how to take them?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
37)	How likely is it that you will be able to take your medications as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
38)	How well do you understand a healthy diet?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
39)	How likely is it that you will be able to maintain a healthy diet as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
40)	How well do you understand a healthy physical activity?
	Excellent ❑, Good ❑, Fair ❑, Poor ❑
41)	How likely is it that you will be able to maintain healthy physical activity as directed by your doctor?
	Very Likely ❑, Likely ❑, Unlikely ❑, Very Unlikely ❑
42)	How many days during the previous 30 days was your physical health "not good".
	_____ Days (0-30)
43)	How many days during the previous 30 days was your mental health "not good".
	_____ Days (0-30)
44)	How many days during the previous 30 days was your daily activity limited because of poor physical or mental health?
	_____ Days (0-30)

Appendix E

Patient Survey: Impact of Home BP Monitoring

Completed with final patient visit

Patient Study # _____ Date of Completion: _____

[Study Patients] Please check the box that best reflects your view ☑.

1)	The home blood pressure monitoring system helped me improved my blood pressure controlled.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
2)	The home blood pressure monitoring system helped me actively participate in the management of my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
3)	The home blood pressure monitoring system helped me understand how the type of medicine can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
4)	The home blood pressure monitoring system helped me understand how the dose of medicine can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
5)	The home blood pressure monitoring system helped me understand how my medication helps control my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
6)	The home blood pressure monitoring system helped me understand how diet, particularly salt intake, can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
7)	The home blood pressure monitoring system helped me understand how physical activity can influence my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
8)	The home blood pressure monitoring system helped me understand what my blood pressure goal.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
9)	The home blood pressure monitoring system helped me identify changes in my blood pressure.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
10)	The home blood pressure monitoring system helped me communicate with my physician.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
11)	The home blood pressure monitoring system helped me identify problems with my medication.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	
12)	I prefer the home blood pressure monitoring system to the standard hypertension management model.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly	

1

Appendix F

Healthcare Provider Survey: Impact of Home BP Monitoring

Completed with final patient visit

Provider Name: _____ Date of Completion: _____

☑ Please check the box that best reflects your view as a provider.					
1) The system was helpful to monitor home blood pressure readings.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
2) The system was helpful to monitor frequent blood pressure readings.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
3) The system was helpful to more easily identify patients who required more attention.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
4) The system was helpful to more easily become aware of the need to change the dose of medication.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
5) The system was helpful to more easily become aware of the need to change the type of medication.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
6) The system was helpful to identify medication compliance issues.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
7) The system was helpful to identify dietary compliance issues.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
8) The system was helpful to identify physical activity compliance issues.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
9) The system was helpful to know when patients were treated in an Emergency Department.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
10) The system was helpful to know when patients were admitted to a hospital.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly
11) The integration of this system into your practice was of benefit in managing hypertension.					
☐ Disagree Very Strongly	☐ Disagree Strongly	☐ Disagree	☐ Agree	☐ Agree Strongly	☐ Agree Very Strongly

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Appendix G

Trinidad and Tobago Hypertension Project
Automated Telephone Question Set

					Phone Tree Algorithm					
Line #	QID	Question	Data Description	Data Type	If	Go To	If	Go To	If	Go To
1	801	Hypertension Intro								
2	802	Instructions	* = repeat question, **=previous question, #=skip							
3										
4	804	Are you having any problems in using your blood pressure blood pressure monitor?	1=Yes, 2=No	Categorical	Yes		No	13		
5	805	Is it a problem with understanding how to use machine	1=Yes, 2=No	Categorical	Yes		No			
6	806	Is it because to you lost the machine?	1=Yes, 2=No	Categorical	Yes		No			
7	807	Do you suspect that it is not working properly?	1=Yes, 2=No	Categorical	Yes		No			
8	808	Is there another reason?	1=Yes, 2=No	Categorical	Yes		No	13		
9	809	At the tone please say the reason. Then press the pound key.	Text	Categorical						
10										
11										
12										
13	810	Please enter your sitting systolic, the higher, blood pressure number, followed by the pound sign.	Numeric	Continuous						
14	811	Please enter your sitting diastolic, the lower, blood pressure, followed by the pound sign.	Numeric	Continuous						
15	812	Please enter your sitting heart rate, or pulse, followed by the pound sign.	Numeric	Continuous						
17	814	Please enter your standing systolic, the higher, blood pressure, followed by the pound sign.	Numeric	Continuous						
18	815	Please enter your standing diastolic, the lower, blood pressure.	Numeric	Continuous						
19	816	Please enter your standing heart rate, or pulse.	Numeric	Continuous						
20										
21	818	How many blood pressure pills do you take per day?	Numeric	Continuous						
22										
23										
24	820	Are you having problems taking any of your medications?	1=Yes, 2=No	Categorical	Yes		No	34		
25	821	Is it because you are having difficulty obtaining them?	1=Yes, 2=No	Categorical	Yes		No			
26	822	Do you have a problem remembering to take them?	1=Yes, 2=No	Categorical	Yes		No			
27	823	Is it because you don't believe they are helping you?	1=Yes, 2=No	Categorical	Yes		No			
28	824	Is it because you do not feel you need them any longer	1=Yes, 2=No	Categorical	Yes		No			
30	826	Is there another reason?	1=Yes, 2=No	Categorical	Yes		No	34		

Trinidad and Tobago Hypertension Project
Automated Telephone Question Set

					Phone Tree Algorithm					
Line #	QID	Question	Data Description	Data Type	If	Go To	If	Go To	If	Go To
31	827	At the tone please say the reason. Then press the pound key.	Text	Non-Categorical						
32										
33										
34	829	Have you changed your blood pressure medications?	1=Yes, 2=No	Categorical	Yes		No	37		
35	830	At the tone, please record the change, then press the pound key.	Text	Non-Categorical						
36										
37	831	Have you changed any of your other medications?	1=Yes, 2=No	Categorical	Yes		No	40		
38	832	At the tone, please record the change, then press the pound key.	Text	Non-Categorical						
39										
40	834	Are you having any problems with your diet	1=Yes, 2=No	Categorical	Yes		No			
41										
42	836	Have you missed any clinic appointments?	1=Yes, 2=No	Categorical	Yes		No	52		
43	837	Is it because you had difficulty getting transportation?	1=Yes, 2=No	Categorical	Yes		No			
44	838	Is it because you didn`t remember to go?	1=Yes, 2=No	Categorical	Yes		No			
45	839	Is it because you didn`t think it was helping you ?	1=Yes, 2=No	Categorical	Yes		No			
46	841	Is it because you were feeling so good you didn`t need to go?	1=Yes, 2=No	Categorical	Yes		No			
47	842	Is it because you were in the hospital?	1=Yes, 2=No	Categorical	Yes		No			
48	843	Is it because you had to work that day?	1=Yes, 2=No	Categorical	Yes		No			
49	845	Is there another reason?	1=Yes, 2=No	Categorical	Yes		No	52		
50	846	At the tone please say the reason. Then press the pound key.	Text	Non-Categorical						
51										
52	847	How much physical activity did you have in the past week?	1=None, 2=Light, 3=Moderate, 4=More	Categorical	None	56	Light	56	Moderate or More	
53	848	Minutes of activity	Numeric	Continuous						
54										
55										
56	850	Have you been in the hospital since the last phone call?	1=Yes, 2=No	Categorical	Yes		No			
57										
58	851	Have you visited the Emergency Department since the last phone call?	1=Yes, 2=No	Categorical	Yes		No			
59										
60										

Trinidad and Tobago Hypertension Project
Automated Telephone Question Set

					Phone Tree Algorithm					
Line #	QID	Question	Data Description	Data Type	If	Go To	If	Go To	If	Go To
61	853	Would you like to speak with the nurse?	1=Yes, 2=No	Categorical	Yes		No			
62	854	Would you like to speak with the doctor?	1=Yes, 2=No	Categorical	Yes		No			
63		leave message								
64	90	<End of Questions - Exit>								

Appendix H

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1	patient_id	int	%8.0g		System Gen Pt ID	118	5,307.4	2,646.0	1,062.0	9,944.0	7,001,278.0	0.066	1.767
2	age_at_en	byte	%8.0g		Age at Enrollment	118	57.5	10.0	29.0	81.0	100.9	(0.379)	3.321
3	birth_year	int	%8.0g		Birth Year	118	1,952.9	10.1	1,929.0	1,983.0	102.3	0.366	3.402
4	birth_month	byte	%8.0g		Birth Month	118	6.6	3.5	1.0	12.0	12.5	(0.007)	1.655
5	birth_day	byte	%8.0g		Birth Day	118	16.5	9.6	1.0	31.0	91.7	(0.124)	1.638
6	en_pg1_11	str9	%9s		Excel Date of Birth	0					-	0.203	0.982
7	gender	byte	%8.0g	Gender	Gender	118	0.3	0.5	-	1.0	0.2	0.982	1.964
8	race	byte	%8.0g	Race	Ethnicity	115	1.7	0.9	1.0	3.0	0.8	0.509	1.532
9	union_status	byte	%26.0g	Union Status	Union_Status	115	2.0	0.8	1.0	4.0	0.6	0.517	3.046
10	assistance	byte	%11.0g	Assistance	Person to Assist	103	3.3	1.1	1.0	4.0	1.3	(1.195)	2.786
11	employment	byte	%9.0g	Employment	Employment	112	2.7	1.1	1.0	4.0	1.3	(0.385)	1.737
12	education	byte	%14.0g	Education	Formal_Education	111	2.8	0.8	1.0	4.0	0.6	0.244	1.994
13	en_centre	byte	%9.0g	Enroll_Center	Enrollment Health Centre	118	0.2	0.4	-	1.0	0.2	1.181	2.395
14	jhu_number	int	%8.0g		JHU Assigned Number	118	225.7	64.7	102.0	308.0	4,184.6	(0.661)	2.081
15	en_year	int	%8.0g		Enrollment Year	118	2,010.3	0.7	2,009.0	2,012.0	0.5	(0.318)	2.429
16	en_month	byte	%8.0g		Enrollment Month	118	6.8	3.5	1.0	12.0	12.2	(0.075)	1.906
17	en_day	byte	%8.0g		Enrollment Day	118	15.1	8.5	1.0	31.0	72.5	0.192	1.928
18	en_pg1_36	str11	%11s		Excel Enrollment Date	0					-	-	-
19	en_comment	str32	%32s		Enrollment Comment	0					-	-	.
20	bp_at_bl	byte	%8.0g	Y_N	BP Measured at BL	118	1.0	-	1.0	1.0	-	.	.
21	bp_at_3m	byte	%8.0g	Y_N	BP Measured at 3M	118	1.0	-	1.0	1.0	-	.	.
22	bp_at_6m	byte	%8.0g	Y_N	BP Measured at 6M	118	1.0	-	1.0	1.0	-	.	.
23	bp_3x	byte	%8.0g	Y_N	BP Measured at_BL 3M_6M	118	1.0	-	1.0	1.0	-	.	.
24	en_pg1_37	byte	%8.0g	Y_N	Pt Meets Entry Criteria	106	1.0	-	1.0	1.0	-	.	.
25	en_pg1_38	byte	%8.0g	Y_N	Pt Signed Consent	105	1.0	-	1.0	1.0	-	.	.
26	en_pg1_39	long	%8.0g		System Study PIN	110	5,433.6	2,577.6	1,018.0	9,945.0	6,643,921.0	0.141	1.889
27	en_pg1_40	byte	%8.0g		BP Monitor Serial Number	118	-	-	-	-	-	.	.
28	en_pg1_41	str7	%9s		Excel Date_Monitor Received	0					-	137.322	(0.458)
29	en_pg2_1	byte	%8.0g		Age at HTN Dx	107	45.6	11.7	17.0	74.0	137.3	(0.458)	3.109
30	en_pg2_2	byte	%8.0g	Y_N	Pt History CAD	116	0.2	0.4	-	1.0	0.2	1.583	3.507
31	en_pg2_3	byte	%8.0g	Y_N	Pt History Angina	106	0.2	0.4	-	1.0	0.1	1.851	4.426
32	en_pg2_4	str9	%9s		Excel Date of_Angina_Onset	0					-	0.035	5.004
33	en_pg2_5	byte	%8.0g	Y_N	Pt History MI	112	0.0	0.2	-	1.0	0.0	5.004	26.037
34	en_pg2_6	long	%8.0g		Excel Date of 1st MI	3	2,006.7	2.5	2,004.0	2,009.0	6.3	(0.239)	1.500
35	en_pg2_7	byte	%8.0g		Pt History Total Number of MIs	4	1.8	1.0	1.0	3.0	0.9	0.493	1.628
36	en_pg2_8	byte	%8.0g	Y_N	Pt History Cath Documented Disease	105	-	-	-	-	-	.	.
37	en_pg2_9	byte	%8.0g		Excel Date of 1st Diag Cath	0					-	-	-
38	en_pg2_10	byte	%8.0g		Facility Diag Cath	0					-	-	.
39	en_pg2_11	byte	%8.0g	Y_N	Pt History PCI	105	-	-	-	-	-	.	.
40	en_pg2_12	byte	%8.0g		Excel Date of 1st PCI	0					-	-	0.009
41	en_pg2_13	byte	%8.0g		Facility PCI	0					-	0.009	10.247
42	en_pg2_14	byte	%8.0g	Y_N	Pt History CABG Surgery	108	0.0	0.1	-	1.0	0.0	10.247	106.009
43	en_pg2_15	long	%8.0g		Excel Date of 1st CABG	1	38,565.0	.	38,565.0	38,565.0	.	.	.
44	en_pg2_16	str3	%9s		Facility CABG	0					-	0.009	10.631
45	en_pg2_17	byte	%8.0g	Y_N	Pt History CHF	116	0.0	0.1	-	1.0	0.0	10.631	114.009
46	en_pg2_18	byte	%8.0g	Y_N	Pt On Meds for CHF	92	0.0	0.1	-	1.0	0.0	9.435	90.011
47	en_pg2_19	byte	%8.0g	Y_N	Pt History of Stroke or TIA	114	0.0	0.1	-	1.0	0.0	10.536	112.009
48	en_pg2_20	byte	%8.0g	Y_N	Pt History TIA	99	0.0	0.2	-	1.0	0.0	5.480	31.031
49	en_pg2_21	str10	%10s		Excel Date of 1st TIA	0					-	0.009	10.199
50	en_pg2_22	byte	%8.0g	Y_N	Pt History of Stroke	107	0.0	0.1	-	1.0	0.0	10.199	105.009
51	en_pg2_23	str9	%9s		Excel Date of 1st Stroke	0					-	-	.
52	en_pg2_24	byte	%8.0g	Y_N	Pt History of Hemorrhagic Stroke	94	-	-	-	-	-	.	.
53	en_pg2_25	byte	%8.0g	Y_N	Pt History of Ischemic Stroke	91	-	-	-	-	-	.	.
54	en_pg2_26	byte	%8.0g	Y_N	Pt Current Dx of Depression	115	0.0	0.2	-	1.0	0.0	4.477	21.045

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
55	en_pg2_27	byte	%8.0g	Y_N	Pt On Meds for Depression	98	0.0	0.1	-	1.0	0.0	6.784	47.021
56	en_pg2_28	byte	%8.0g	Y_N	Pt Current Dx of Diabetes	118	0.2	0.4	-	1.0	0.2	1.474	3.172
57	en_pg2_29	byte	%8.0g	Y_N	Diabetes - Pt On Restricted Diet Alone	102	0.1	0.3	-	1.0	0.1	3.412	12.645
58	en_pg2_30	byte	%8.0g	Y_N	Diabetes - Pt On Oral Agents	101	0.2	0.4	-	1.0	0.2	1.439	3.072
59	en_pg2_31	byte	%8.0g	Y_N	Diabetes - Pt On Insulin	100	0.0	0.2	-	1.0	0.0	5.510	31.364
60	en_pg2_32	byte	%8.0g	Y_N	Pt Prior Hypoglycemic Episodes	97	0.1	0.3	-	1.0	0.1	3.307	11.935
61	en_pg2_33	byte	%8.0g	Y_N	Pt Current Dx of Dyslipidemia	113	0.4	0.5	-	1.0	0.2	0.416	1.173
62	en_pg2_34	byte	%8.0g	Y_N	Dyslipidemia - On Lipid Lowering Therapy	105	0.3	0.5	-	1.0	0.2	0.662	1.438
63	en_pg2_35	byte	%8.0g	Y_N	Pt Current Dx of Gout	115	0.0	0.1	-	1.0	0.0	10.583	113.009
64	en_pg2_36	byte	%8.0g	Y_N	Pt Obstructive Sleep Apnea Symptoms	113	0.2	0.4	-	1.0	0.1	1.693	3.865
65	en_pg2_37	byte	%8.0g	Y_N	Sleep Apnea - Daytime somnlence	111	0.4	0.5	-	1.0	0.2	0.582	1.338
66	en_pg2_38	byte	%8.0g	Y_N	Sleep Apnea - Interrupted Night Breathing	108	0.1	0.3	-	1.0	0.1	3.015	10.091
67	en_pg2_39	byte	%8.0g	Y_N	Sleep Apnea - Prior Sleep Study	109	0.1	0.2	-	1.0	0.1	3.902	16.225
68	en_pg2_40	byte	%8.0g	Y_N	Paroxysmal BP Elevations	112	0.3	0.4	-	1.0	0.2	0.998	1.996
69	en_pg2_41	byte	%8.0g	Y_N	Pt History of PVD	112	0.1	0.3	-	1.0	0.1	2.700	8.291
70	en_pg2_42	byte	%8.0g	Y_N	PVD - Claudication	99	-	-	-	-	-	.	.
71	en_pg2_43	byte	%8.0g	Y_N	PVD - Current Symptoms	100	0.0	0.1	-	1.0	0.0	9.849	98.010
72	en_pg2_44	byte	%8.0g	Y_N	PVD - Prior Imaging	101	-	-	-	-	-	.	.
73	en_pg2_45	byte	%8.0g	Y_N	PVD - Prior Procedure	101	-	-	-	-	-	.	.
74	en_pg2_46	byte	%8.0g	Y_N	Pt History of Renal Insufficiency	116	0.0	0.2	-	1.0	0.0	5.974	36.693
75	en_pg3_1	byte	%8.0g	Y_N	Pt History of Bronchospastic Disease	112	0.2	0.4	-	1.0	0.1	1.679	3.817
76	en_pg3_2	byte	%8.0g	Y_N	Pt Current Childbearing Potential	111	0.3	0.5	-	1.0	0.2	0.984	1.968
77	en_pg3_3	byte	%8.0g	Y_N	Pt History of Urinary Obstruction Symptoms	115	0.0	0.2	-	1.0	0.0	5.078	26.786
78	en_pg3_4	byte	%8.0g	Y_N	Pt History of Tobacco Use	113	0.2	0.4	-	1.0	0.2	1.473	3.169
79	en_pg3_5	str12	%12s		Excel Date started Tobacco	0					-	0.092	2.633
80	en_pg3_6	byte	%8.0g	Y_N	Current Tobacco Use	108	0.1	0.3	-	1.0	0.1	2.633	7.932
81	en_pg3_7	byte	%8.0g		Number of Cigarettes per Day	12	8.2	7.9	-	20.0	62.9	0.611	1.797
82	en_pg3_8	long	%8.0g		Excel Date Stopped Tobacco	9	13,612.7	17,698.6	1,985.0	40,756.0	313,000,000.0	0.796	1.733
83	en_pg3_9	byte	%8.0g	Y_N	Current Illicit Drug Use	114	0.0	0.1	-	1.0	0.0	10.536	112.009
84	en_pg3_10	byte	%8.0g	Y_N	Illicit Drug - Cocaine	103	-	-	-	-	-	.	.
85	en_pg3_11	byte	%8.0g	Y_N	Illicit Drug - Methamphetamines	101	-	-	-	-	-	.	.
86	en_pg3_12	byte	%8.0g	Y_N	Illicit Drug - Marijuana	105	0.0	0.2	-	1.0	0.0	5.659	33.029
87	en_pg3_13	byte	%8.0g	Y_N	Illicit Drug - Other	102	-	-	-	-	-	.	.
88	en_pg3_14	byte	%8.0g	Y_N	Current Alcohol Use	111	0.4	0.5	-	1.0	0.2	0.502	1.252
89	en_pg3_15	float	%8.0g		Number of Drinks per Day	37	0.5	1.5	-	8.5	2.1	4.687	25.755
90	en_pg3_16	byte	%8.0g	Y_N	Salt Added to Food	115	0.1	0.3	-	1.0	0.1	2.588	7.700
91	en_pg3_17	float	%8.0g		Salt Added - # of Meals per Day	59	1.1	0.9	-	3.5	0.8	0.597	2.835
92	en_pg3_18	byte	%8.0g	Y_N	Weekly Physical Activity	114	0.5	0.5	-	1.0	0.3	(0.176)	1.031
93	en_pg3_19	float	%8.0g		Physical Activity - Sessions per Week	68	2.5	2.2	-	7.0	5.0	0.387	2.059
94	en_pg3_20	byte	%8.0g	Y_N	Medication Allergies	111	0.1	0.3	-	1.0	0.1	2.381	6.671
95	en_pg3_21	byte	%8.0g	Y_N	Allergies Sulfa	102	0.0	0.1	-	1.0	0.0	6.930	49.020
96	en_pg3_22	byte	%8.0g	Y_N	Allergies ACE Inhibitor	103	0.0	0.2	-	1.0	0.0	4.774	23.790
97	en_pg3_23	byte	%8.0g	Y_N	Allergies ARB	103	0.0	0.2	-	1.0	0.0	5.600	32.363
98	en_pg3_24	str22	%22s		Allergies Other	0					-	0.009	(10.677)
99	en_pg3_25	byte	%8.0g	Y_N	Currently Taking Medications	117	1.0	0.1	-	1.0	0.0	(10.677)	115.009
100	en_pg3_26	str15	%15s		Current Med 1 Name	0					-	-	-
101	en_pg3_27	str20	%20s		Current Med 1 Dose/Freq	0					-	-	-
102	en_pg3_28	str19	%19s		Current Med 2 Name	0					-	-	-
103	en_pg3_29	str20	%20s		Current Med 2 Dose/Freq	0					-	-	-
104	en_pg3_30	str19	%19s		Current Med 3 Name	0					-	-	-
105	en_pg3_31	str18	%18s		Current Med 3 Dose/Freq	0					-	-	-
106	en_pg3_32	str19	%19s		Current Med 4 Name	0					-	-	-
107	en_pg3_33	str21	%21s		Current Med 4 Dose/Freq	0					-	-	-
108	en_pg3_34	str20	%20s		Current Med 5 Name	0					-	-	-

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
109	en_pg3_35	str24	%24s		Current Med 5 Dose/Freq	0					-	-	-
110	en_pg3_36	str16	%16s		Current Med 6 Name	0					-	-	-
111	en_pg3_37	str24	%24s		Current Med 6 Dose/Freq	0					-	-	-
112	en_pg3_38	str16	%16s		Current Med 7 Name	0					-	-	-
113	en_pg3_39	str20	%20s		Current Med 7 Dose/Freq	0					-	-	-
114	en_pg3_40	str17	%17s		Current Med 8 Name	0					-	-	-
115	en_pg3_41	str16	%16s		Current Med 8 Dose/Freq	0					-	-	-
116	en_pg3_42	str18	%18s		Current Med 9 Name	0					-	-	-
117	en_pg3_43	str9	%9s		Current Med 9 Dose/Freq	0					-	-	-
118	en_pg3_44	str11	%11s		Current Med 10 Name	0					-	-	-
119	en_pg3_45	str8	%9s		Current Med 10 Dose/Freq	0					-	-	-
120	en_pg3_46	str14	%14s		Current Med 11 Name	0					-	-	-
121	en_pg3_47	str4	%9s		Current Med 11 Dose/Freq	0					-	-	-
122	en_pg3_48	str10	%10s		Current Med 12 Name	0					-	-	0.245
123	en_pg3_49	str5	%9s		Current Med 12 Dose/Freq	0					-	0.245	0.354
124	en_pg3_50	byte	%8.0g	Y_N	Currently Taking Supplements	109	0.4	0.5	-	1.0	0.2	0.354	1.125
125	en_pg3_51	str23	%23s		Current Supp 1 Name	0					-	-	-
126	en_pg3_52	str24	%24s		Current Supp 1 Dose/Freq	0					-	-	-
127	en_pg3_53	str22	%22s		Current Supp 2 Name	0					-	-	-
128	en_pg3_54	str17	%17s		Current Supp 2 Dose/Freq	0					-	-	-
129	en_pg3_55	str35	%35s		Current Supp 3 Name	0					-	-	-
130	en_pg3_56	str10	%10s		Current Supp 3 Dose/Freq	0					-	-	-
131	en_pg3_57	str17	%17s		Current Supp 4 Name	0					-	-	-
132	en_pg3_58	str24	%24s		Current Supp 4 Dose/Freq	0					-	-	-
133	en_pg3_59	str14	%14s		Current Supp 5 Name	0					-	-	-
134	en_pg3_60	str10	%10s		Current Supp 5 Dose/Freq	0					-	-	-
135	en_pg3_61	str11	%11s		Current Supp 6 Name	0					-	-	-
136	en_pg3_62	str11	%11s		Current Supp 6 Dose/Freq	0					-	-	-
137	en_pg3_63	str8	%9s		Current Supp 7 Name	0					-	-	-
138	en_pg3_64	str2	%9s		Current Supp 7 Dose/Freq	0					-	-	-
139	en_pg3_65	str14	%14s		Current Supp 8 Name	0					-	-	0.116
140	en_pg3_66	str2	%9s		Current Supp 8 Dose/Freq	0					-	0.116	(2.165)
141	en_pg4_1	byte	%8.0g	Y_N	Fam Hist CV Disease	113	0.9	0.3	-	1.0	0.1	(2.165)	5.686
142	en_pg4_2	byte	%8.0g	Y_N	Fam Hist of Hypertension	111	0.9	0.4	-	1.0	0.1	(2.026)	5.106
143	en_pg4_3	byte	%8.0g	Y_N	Fam Hist Father Hypertension	103	0.4	0.5	-	1.0	0.2	0.500	1.250
144	en_pg4_4	byte	%8.0g		Fam Hist Father Age at HTN Dx	1	62.0	.	62.0	62.0	.	.	.
145	en_pg4_5	byte	%8.0g	Y_N	Fam Hist Mother Hypertension	109	0.6	0.5	-	1.0	0.2	(0.593)	1.352
146	en_pg4_6	byte	%8.0g		Fam Hist Mother Age at HTN Dx	2	57.0	18.4	44.0	70.0	338.0	-	1.000
147	en_pg4_7	byte	%8.0g	Y_N	Fam Hist Sibling Hypertension	106	0.5	0.5	-	1.0	0.3	(0.113)	1.013
148	en_pg4_8	byte	%8.0g		Fam Hist Sibling Age at HTN Dx	1	55.0	.	55.0	55.0	.	.	.
149	en_pg4_9	byte	%8.0g	Y_N	Fam Hist of MI or Angina	109	0.3	0.5	-	1.0	0.2	0.766	1.587
150	en_pg4_10	byte	%8.0g	Y_N	Fam Hist Father MI or Angina	97	0.1	0.3	-	1.0	0.1	2.149	5.616
151	en_pg4_11	byte	%8.0g		Fam Hist Father Age at MI or Angina	7	64.0	17.2	37.0	85.0	296.7	(0.353)	1.904
152	en_pg4_12	byte	%8.0g	Y_N	Fam Hist Mother MI or Angina	99	0.2	0.4	-	1.0	0.2	1.650	3.722
153	en_pg4_13	byte	%8.0g		Fam Hist Mother Age at MI or Angina	9	58.4	12.9	45.0	87.0	166.3	1.285	3.713
154	en_pg4_14	byte	%8.0g	Y_N	Fam Hist Sibling MI or Angina	98	0.2	0.4	-	1.0	0.1	1.822	4.320
155	en_pg4_15	byte	%8.0g		Fam Hist Sibling Age at MI or Angina	13	40.7	16.0	12.0	61.0	256.9	(0.437)	1.838
156	en_pg4_16	byte	%8.0g	Y_N	Fam Hist of Stroke or TIA	110	0.3	0.5	-	1.0	0.2	0.826	1.683
157	en_pg4_17	byte	%8.0g	Y_N	Fam Hist Father Stroke or TIA	100	0.1	0.3	-	1.0	0.1	2.339	6.470
158	en_pg4_18	byte	%8.0g		Fam Hist Father Age at Stroke or TIA	5	54.6	13.9	37.0	72.0	194.3	0.063	1.667
159	en_pg4_19	byte	%8.0g	Y_N	Fam Hist Mother Stroke or TIA	102	0.1	0.3	-	1.0	0.1	2.108	5.445
160	en_pg4_20	byte	%8.0g		Fam Hist Mother Age at Stroke or TIA	10	67.1	13.1	51.0	86.0	171.2	0.259	1.643
161	en_pg4_21	byte	%8.0g	Y_N	Fam Hist Sibling Stroke or TIA	99	0.1	0.2	-	1.0	0.0	4.105	17.853
162	en_pg4_22	byte	%8.0g		Fam Hist Sibling Age at Stroke or TIA	5	53.8	7.5	45.0	65.0	55.7	0.456	2.212

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
163	en_pg4_23	byte	%8.0g	Y_N	Fam Hist of Sudden Death	113	0.2	0.4	-	1.0	0.2	1.168	2.365
164	en_pg4_24	byte	%8.0g	Y_N	Fam Hist Father Sudden Death	101	0.1	0.3	-	1.0	0.1	2.685	8.210
165	en_pg4_25	byte	%8.0g		Fam Hist Father Age at Sudden_Death	8	56.0	10.5	37.0	68.0	109.4	(0.716)	2.382
166	en_pg4_26	byte	%8.0g	Y_N	Fam Hist Mother Sudden Death	103	0.1	0.3	-	1.0	0.1	2.922	9.540
167	en_pg4_27	byte	%8.0g		Fam Hist Mother Age at Sudden Death	6	70.2	12.5	52.0	87.0	157.4	(0.117)	1.914
168	en_pg4_28	byte	%8.0g	Y_N	Fam Hist Sibling Sudden Death	101	0.1	0.3	-	1.0	0.1	2.356	6.551
169	en_pg4_29	byte	%8.0g		Fam Hist Sibling Age at Sudden Death	9	53.0	17.2	17.0	75.0	295.0	(0.818)	3.274
170	en_pg4_30	byte	%8.0g	Y_N	Fam Hist of Kidney Dialysis	112	0.1	0.3	-	1.0	0.1	3.328	12.077
171	en_pg4_31	byte	%8.0g	Y_N	Fam Hist Father Kidney Dialysis	99	0.0	0.1	-	1.0	0.0	9.798	97.010
172	en_pg4_32	byte	%8.0g		Fam Hist Father Age at Kidney Dialysis	1	66.0	.	66.0	66.0	.	.	.
173	en_pg4_33	byte	%8.0g	Y_N	Fam Hist Mother Kidney Dialysis	101	-	-	-	-	-	.	.
174	en_pg4_34	byte	%8.0g		Fam Hist Mother Age at Kidney Dialysis	0					-	0.065	3.392
175	en_pg4_35	byte	%8.0g	Y_N	Fam Hist Sibling Kidney Dialysis	101	0.1	0.3	-	1.0	0.1	3.392	12.503
176	en_pg4_36	byte	%8.0g		Fam Hist Sibling Age at Kidney Dialysis	6	53.5	20.4	13.0	67.0	415.1	(1.591)	3.831
177	med_a_forget1	byte	%8.0g	Y_N	BL Med Adherence Forget	114	0.6	0.5	-	1.0	0.2	(0.356)	1.127
178	med_a_careless1	byte	%8.0g	Y_N	BL Med Adherence Careless	115	0.3	0.5	-	1.0	0.2	0.763	1.582
179	med_better1	byte	%8.0g	Y_N	BL Med Adherence Feeling Better	114	0.4	0.5	-	1.0	0.2	0.546	1.298
180	med_worse1	byte	%8.0g	Y_N	BL Med Adherence_Feeling Worse	112	0.4	0.5	-	1.0	0.2	0.556	1.309
181	med_a_score1	byte	%8.0g		BL Med Adherence Score 1 to 4	113	1.7	1.3	-	4.0	1.7	0.463	2.094
182	hb_a1	byte	%17.0g	BH6	BL HB Severity Activity Interference	115	2.1	0.8	1.0	4.0	0.7	0.548	2.899
183	hb_b1	byte	%8.0g	BH7	BL HB Severity Get Worrisome Illnesses	112	2.3	0.8	1.0	3.0	0.6	(0.497)	1.853
184	hb_c1	byte	%13.0g	BH8	BL HB Susceptibility Mild Cold	114	2.7	0.9	1.0	4.0	0.9	(0.185)	2.132
185	hb_d1	byte	%13.0g	BH8	BL HB Susceptibility Cavity	111	2.8	0.9	1.0	4.0	0.8	(0.402)	2.508
186	hb_e1	byte	%13.0g	BH8	BL HB Susceptibility Seasonal Flu	114	2.8	0.9	1.0	4.0	0.8	(0.362)	2.433
187	hb_f1	byte	%13.0g	BH8	BL HB Susceptibility Heart Attack	108	3.2	0.8	1.0	4.0	0.6	(0.882)	3.783
188	hb_g1	byte	%13.0g	BH8	BL HB Susceptibility 3Days in Bed	113	3.1	0.8	1.0	4.0	0.7	(0.861)	3.375
189	hb_h1	byte	%8.0g	BH7	BL HB Susceptibility Ease of Illness	116	2.7	0.5	1.0	3.0	0.3	(1.428)	4.074
190	hb_i1	byte	%16.0g	BH14	BL HB Severity Mild Cold	112	1.5	0.8	1.0	4.0	0.7	1.573	4.655
191	hb_j1	byte	%16.0g	BH14	BL HB Severity Heart Attack	109	3.3	1.1	1.0	4.0	1.3	(1.208)	2.776
192	hb_k1	byte	%16.0g	BH14	BL HB Severity Cavity	114	2.2	1.2	1.0	4.0	1.5	0.411	1.569
193	hb_l1	byte	%16.0g	BH14	BL HB Severity 3Days in Bed	114	2.6	1.3	1.0	4.0	1.6	(0.179)	1.393
194	hb_m1	byte	%8.0g	BH7	BL HB Severity Get Serious Illnesses	113	2.5	0.8	1.0	3.0	0.6	(0.984)	2.447
195	hb_n1	byte	%14.0g	BH19	BL HB Health Status Compared to Other	114	1.4	0.5	1.0	3.0	0.3	0.637	2.146
196	hb_o1	byte	%9.0g	BH20	BL HB Health Status Describe your Health	114	2.1	0.6	1.0	4.0	0.4	0.167	3.202
197	hb_p1	byte	%8.0g	BH7	BL HB Barriers Too Much Effort	114	2.2	0.8	1.0	3.0	0.7	(0.321)	1.501
198	hb_q1	byte	%8.0g	BH7	BL HB Locus of Control Avoidance	115	1.1	0.3	1.0	3.0	0.1	4.169	20.653
199	hb_r1	byte	%8.0g	BH7	BL HB Locus of Control Personal Care	115	1.3	0.7	1.0	3.0	0.4	1.966	5.180
200	hb_s1	byte	%8.0g	BH7	BL HB Trust in MD Doctors Help Most	115	1.3	0.6	1.0	3.0	0.4	1.639	4.526
201	hb_t1	byte	%8.0g	BH7	BL HB Trust in MD Home Remedies	114	2.4	0.6	1.0	3.0	0.4	(0.489)	2.337
202	hb_u1	byte	%8.0g	BH7	BL HB Trust in MD Doctors Can't Help	115	2.8	0.5	1.0	3.0	0.2	(2.264)	7.458
203	hb_v1	byte	%13.0g	BH8	BL HB Barriers Med Costs	115	2.9	0.9	1.0	4.0	0.8	(0.544)	2.571
204	hb_w1	byte	%13.0g	BH8	BL HB Barriers Felt Worse	113	2.2	0.9	1.0	4.0	0.9	0.506	2.497
205	hb_x1	byte	%13.0g	BH8	BL HB Barriers Inconvenient	113	3.2	0.9	1.0	4.0	0.7	(0.987)	3.463
206	hb_y1	byte	%13.0g	BH8	BL HB Barriers Heard Meds Dangerous	114	2.7	1.0	1.0	4.0	1.0	(0.351)	2.105
207	hb_z1	byte	%8.0g	BH7	BL HB Trust in MD Doctors Prevent Illness	114	1.2	0.4	1.0	3.0	0.2	1.532	4.110
208	hb_aa1	byte	%20.0g	BH32	BL HB Health Concern How Concerned	116	1.2	0.5	1.0	3.0	0.3	2.762	9.503
209	hb_ab1	byte	%13.0g	BH33	BL HB Health Concern Current Self-Care	114	2.1	0.8	1.0	4.0	0.7	0.347	2.634
210	hb_ac1	byte	%13.0g	BH8	BL HB Health Concern Improved Self-Care	115	1.2	0.5	1.0	4.0	0.2	2.486	11.409
211	hb_ad1	byte	%8.0g	BH7	BL HB Health Concern More Important Things	114	2.4	0.8	1.0	3.0	0.6	(0.926)	2.329
212	under_med1	byte	%9.0g	BH20	BL Understand Meds	111	1.8	0.6	1.0	4.0	0.4	0.411	3.342
213	likely_med1	byte	%13.0g	BH8	BL Likely to Take Meds	116	1.4	0.6	1.0	4.0	0.3	1.888	8.028
214	under_diet1	long	%9.0g	BH20	BL Understand Healthy Diet	116	1.7	0.6	1.0	4.0	0.4	0.495	3.299
215	likely_diet1	byte	%13.0g	BH8	BL Likely to Maintain Diet	115	1.6	0.6	1.0	4.0	0.3	0.726	4.044
216	under_exer1	byte	%9.0g	BH20	BL Understand Healthy Phys Activity	116	1.7	0.6	1.0	3.0	0.4	0.226	2.375

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
217	likely_exer1	byte	%13.0g	BH8	BL Likely to Maintain Physical Activity	116	1.6	0.6	1.0	4.0	0.3	0.620	3.977
218	limit_phy1	byte	%8.0g		BL Last 30 Days Poor Physical Health	111	2.5	4.8	-	30.0	23.4	3.534	17.710
219	limit_ment1	float	%8.0g		BL Last 30 Days Poor Mental Health	114	1.7	4.0	-	25.0	15.6	3.504	17.148
220	limit_all1	float	%8.0g		BL_Last 30 Days Limited by Health	113	2.5	5.8	-	30.0	33.8	3.103	12.778
221	height_cm1	float	%8.0g		BL Height cm	117	165.9	9.3	144.8	188.0	85.8	0.311	2.594
222	weight_kg1	float	%8.0g		BL Weight kg	117	79.9	17.0	46.0	125.0	288.3	0.478	2.746
223	waist_cm1	float	%8.0g		BL Waist cm	114	96.6	11.5	70.5	124.0	133.0	0.237	2.909
224	bmi1	float	%8.0g		BL BMI calculated	117	29.0	5.7	18.0	47.9	32.4	0.971	4.410
225	n_seat_bp1	byte	%8.0g		BL Seated BP Measurements	118	2.4	0.5	1.0	3.0	0.3	(0.072)	1.751
226	n_seat_p1	byte	%8.0g		BL Seated Pulse Measurements	118	1.9	0.8	-	3.0	0.6	0.068	2.006
227	seat_sbp1	float	%8.0g		BL Seated SBP - Primary	118	140.8	20.6	82.0	200.0	423.7	0.035	3.342
228	seat_dbp1	float	%8.0g		BL Seated DBP - Primary	118	88.4	13.9	56.0	144.0	194.1	0.674	4.722
229	seat_pulse1	float	%8.0g		BL Seated Pulse - Primary	116	73.0	10.7	56.0	104.0	113.6	0.797	3.291
230	seat_pp1	float	%8.0g		BL Seated PP - Primary	118	52.4	14.4	14.0	90.0	207.3	0.030	2.802
231	seat_map1	float	%8.0g		BL Seated MAP - Primary	118	105.9	15.0	64.7	162.7	224.6	0.514	4.457
232	htn_x_bp1	byte	%8.0g		HTN Uncontrolled at BL - Primary	118	0.7	0.5	-	1.0	0.2	(0.804)	1.646
233	n_stand_bp1	byte	%8.0g		BL Standing BP Measurements	118	2.3	0.6	1.0	3.0	0.3	(0.009)	2.552
234	n_stand_p1	byte	%8.0g		BL Standing Pulse Measurements	118	1.8	0.7	-	3.0	0.5	0.052	2.416
235	stand_sbp1	float	%8.0g		BL Standing SBP - Primary	116	140.6	21.8	80.0	196.0	474.3	0.109	3.075
236	stand_dbp1	float	%8.0g		BL Standing DBP - Primary	116	93.0	12.9	60.0	120.5	165.5	(0.092)	2.484
237	stand_pulse1	float	%8.0g		BL Standing Pulse - Primary	113	75.7	13.5	52.0	125.0	181.9	1.272	5.106
238	ss_sbp1	float	%8.0g		BL Standing less Seated SBP	116	(0.4)	10.9	(32.5)	31.0	118.5	(0.406)	3.672
239	ss_dbp1	float	%8.0g		BL Standing less Seated DBP	116	4.4	9.7	(35.0)	32.0	93.3	(0.411)	5.336
240	bl_pulse	int	%8.0g		BL Pulse Average	118	73.5	11.7	56.0	127.0	137.0	1.385	5.993
241	a_sbp1	int	%8.0g		BL SBP Average	118	142.5	19.9	90.0	208.0	396.8	0.270	3.552
242	a_dbp1	int	%8.0g		BL DBP Average	118	88.0	12.5	59.0	124.0	157.0	0.338	3.264
243	a_controlled1	byte	%8.0g		BL HTN Not Controlled Average	118	0.7	0.5	-	1.0	0.2	(0.762)	1.580
244	h_sbp1	int	%8.0g		BL SBP Highest Reading	118	149.4	20.8	94.0	217.0	432.8	0.357	3.457
245	h_dbp1	int	%8.0g		BL DBP Highest Reading	118	92.7	14.1	60.0	150.0	198.5	0.846	5.682
246	h_controlled1	byte	%8.0g		BL HTN Not Controlled Highest Reading	118	0.8	0.4	-	1.0	0.1	(1.845)	4.402
247	l_sbp1	int	%8.0g		BL SBP Last Reading	118	141.0	21.0	80.0	200.0	442.5	0.034	3.457
248	l_dbp1	int	%8.0g		BL DBP Last Reading	118	88.4	14.7	52.0	150.0	215.2	0.985	6.142
249	l_controlled1	byte	%8.0g		BL HTN Not Controlled Last Reading	118	0.7	0.5	-	1.0	0.2	(0.804)	1.646
250	target_sbp	int	%8.0g		Pt SBP Target	118	138.0	4.0	130.0	140.0	16.3	(1.474)	3.172
251	target_dbp	byte	%8.0g		Pt DBP Target	118	88.0	4.0	80.0	90.0	16.3	(1.474)	3.172
252	en_pg7_5	int	%8.0g		BL SBP Sphyg Arm Seated 1	116	146.3	21.0	94.0	217.0	440.2	0.501	3.575
253	en_pg7_6	int	%8.0g		BL DBP Sphyg Arm Seated 1	116	88.4	12.9	60.0	122.0	166.4	0.352	3.232
254	en_pg7_7	int	%8.0g		BL Pulse Sphyg Arm Seated 1	115	73.8	12.6	56.0	130.0	159.0	1.379	5.698
255	en_pg7_8	int	%8.0g		BL SBP Sphyg Arm Seated 2	117	141.0	20.9	84.0	200.0	436.2	0.115	3.151
256	en_pg7_9	int	%8.0g		BL DBP Sphyg Arm Seated 2	117	88.5	13.6	58.0	144.0	186.1	0.575	4.422
257	en_pg7_10	int	%8.0g		BL Pulse Sphyg Arm Seated 2	79	72.7	10.7	56.0	104.0	113.8	0.575	2.650
258	en_pg7_11	int	%8.0g		BL SBP Sphyg Arm Seated 3	54	138.8	21.6	80.0	196.0	468.1	(0.046)	3.500
259	en_pg7_12	int	%8.0g		BL DBP Sphyg Arm Seated 3	54	86.2	15.2	52.0	150.0	229.8	1.148	7.440
260	en_pg7_13	int	%8.0g		BL Pulse Sphyg Arm Seated 3	29	71.8	13.6	50.0	125.0	185.7	1.995	9.186
261	en_pg7_14	int	%8.0g		BL SBP Sphyg Other Arm Seated 1	115	141.8	20.0	86.0	207.0	399.8	0.289	3.664
262	en_pg7_15	int	%8.0g		BL DBP Sphyg Other Arm Seated 1	115	86.9	12.9	50.0	116.0	165.2	(0.237)	2.934
263	en_pg7_16	int	%8.0g		BL Pulse Sphyg Other Arm Seated 1	115	73.5	12.2	54.0	125.0	147.7	1.166	4.990
264	en_pg7_17	int	%8.0g		BL SBP Sphyg R Ankle	104	149.6	18.6	102.0	203.0	347.1	0.311	3.007
265	en_pg7_18	int	%8.0g		BL SBP Sphyg L Ankle	102	148.6	19.7	100.0	209.0	388.5	0.352	3.322
266	en_pg7_19	int	%8.0g		BL SBP HM Arm Seated 1	116	141.2	19.8	92.0	205.0	393.6	0.154	3.267
267	en_pg7_20	int	%8.0g		BL DBP HM Arm Seated 1	116	91.1	12.5	58.0	123.0	155.4	(0.010)	3.118
268	en_pg7_21	int	%8.0g		BL Pulse HM Arm Seated 1	115	74.0	13.8	52.0	124.0	191.1	0.737	3.466
269	en_pg7_22	int	%8.0g		BL SBP HM Arm Seated 2	117	139.4	21.4	86.0	207.0	456.7	0.317	3.300
270	en_pg7_23	int	%8.0g		BL DBP HM Arm Seated 2	117	89.6	13.0	55.0	134.0	169.1	0.304	3.569

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#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
271	en_pg7_24	int	%8.0g		BL Pulse HM Arm Seated 2	116	72.1	12.5	47.0	111.0	156.5	0.676	3.198
272	en_pg7_25	int	%8.0g		BL SBP HM Arm Seated 3	48	140.0	21.3	98.0	187.0	454.4	0.374	2.481
273	en_pg7_26	int	%8.0g		BL DBP HM Arm Seated 3	48	89.4	15.0	59.0	123.0	226.0	0.028	2.558
274	en_pg7_27	int	%8.0g		BL Pulse HM Arm Seated 3	49	71.2	13.7	46.0	122.0	187.1	1.047	5.482
275	en_pg7_28	int	%8.0g		BL SBP Sphyg Arm Standing 1	115	140.8	21.6	90.0	198.0	465.0	0.338	2.974
276	en_pg7_29	int	%8.0g		BL DBP Sphyg Arm Standing 1	115	92.7	13.8	60.0	150.0	190.6	0.420	4.526
277	en_pg7_30	int	%8.0g		BL Pulse Sphyg Arm Standing 1	114	76.8	13.7	53.0	125.0	186.6	1.241	4.320
278	en_pg7_31	int	%8.0g		BL SBP Sphyg Arm Standing 2	113	140.9	22.8	80.0	196.0	518.2	0.142	3.000
279	en_pg7_32	int	%8.0g		BL DBP Sphyg Arm Standing 2	113	92.9	13.3	60.0	124.0	175.9	(0.008)	2.532
280	en_pg7_33	int	%8.0g		BL Pulse Sphyg_Arm Standing 2	76	75.0	13.6	52.0	124.0	184.3	0.980	4.293
281	en_pg7_34	int	%8.0g		BL SBP Sphyg Arm Standing 3	39	143.4	22.5	104.0	190.0	507.2	0.352	2.396
282	en_pg7_35	int	%8.0g		BL DBP Sphyg Arm Standing 3	39	96.1	13.3	66.0	125.0	178.2	(0.063)	2.582
283	en_pg7_36	int	%8.0g		BL Pulse Sphyg Arm Standing 3	22	70.8	12.3	52.0	104.0	150.3	0.914	3.969
284	en_pg7_37	int	%8.0g		BL SBP HM Arm Standing 1	115	141.2	19.7	94.0	195.0	386.3	0.448	3.294
285	en_pg7_38	int	%8.0g		BL DBP HM Arm Standing 1	115	97.7	12.9	66.0	134.0	166.4	0.005	3.063
286	en_pg7_39	int	%8.0g		BL Pulse HM Arm Standing 1	113	78.3	14.8	46.0	125.0	219.7	0.634	3.221
287	en_pg7_40	int	%8.0g		BL SBP HM Arm Standing 2	114	140.7	20.7	96.0	210.0	428.3	0.628	3.750
288	en_pg7_41	int	%8.0g		BL DBP HM Arm Standing 2	114	96.1	13.0	65.0	131.0	167.9	0.094	2.996
289	en_pg7_42	int	%8.0g		BL Pulse HM Arm Standing 2	110	78.7	14.3	53.0	126.0	203.5	0.761	3.470
290	en_pg7_43	int	%8.0g		BL SBP_HM Arm Standing 3	37	141.8	21.8	107.0	195.0	476.6	0.708	3.297
291	en_pg7_44	int	%8.0g		BL DBP HM Arm Standing 3	37	96.4	13.9	71.0	138.0	194.2	0.455	3.833
292	en_pg7_45	int	%8.0g		BL Pulse HM Arm Standing 3	37	75.1	13.9	56.0	116.0	193.3	0.987	3.477
293	en_pg7_46	byte	%8.0g	Y_N	Retinpathy	71	0.2	0.4	-	1.0	0.1	1.907	4.638
294	en_pg7_47	byte	%8.0g	Y_N	Prior Ophthalmology Opinion	102	0.1	0.4	-	1.0	0.1	1.993	4.972
295	en_pg7_48	byte	%8.0g	Y_N	Carotid Bruits	113	0.0	0.1	-	1.0	0.0	7.316	54.518
296	en_pg7_49	byte	%8.0g	Y_N	Prior Ultrasound	106	-	-	-	-	-	.	.
297	en_pg7_50	byte	%8.0g	Y_N	Thyromegaly	113	0.0	0.2	-	1.0	0.0	5.029	26.287
298	en_pg7_51	byte	%8.0g	Y_N	Prior Thyroid Function Test	106	0.1	0.2	-	1.0	0.1	3.495	13.214
299	en_pg7_52	byte	%8.0g	Y_N	Prior Ultrasound 2	106	0.0	0.2	-	1.0	0.0	5.689	33.362
300	en_pg7_53	byte	%8.0g	Y_N	Wheezes	115	0.0	0.1	-	1.0	0.0	10.583	113.009
301	en_pg7_54	byte	%8.0g	Y_N	S3 Gallop	97	0.0	0.1	-	1.0	0.0	9.696	95.010
302	en_pg7_55	byte	%8.0g	Y_N	S4 Gallop	97	-	-	-	-	-	.	.
303	en_pg7_56	byte	%8.0g	Y_N	Volume Overload	114	0.0	0.2	-	1.0	0.0	5.918	36.027
304	en_pg7_57	byte	%8.0g	Y_N	Rales	109	-	-	-	-	-	.	.
305	en_pg7_58	str12	%12s		Pedal Edema	0					-	0.095	2.572
306	en_pg7_59	byte	%8.0g	Y_N	Abnormal Cardiac Exam	114	0.1	0.3	-	1.0	0.1	2.572	7.618
307	en_pg7_60	byte	%8.0g	Y_N	Displaced PMI	115	0.1	0.2	-	1.0	0.1	3.673	14.493
308	en_pg7_61	byte	%8.0g	Y_N	Systolic Murmur	113	0.1	0.3	-	1.0	0.1	3.105	10.642
309	en_pg7_62	byte	%8.0g	Y_N	Diastolic Murmur	112	0.0	0.2	-	1.0	0.0	5.004	26.037
310	en_pg7_63	byte	%8.0g	Y_N	Gallop	15	0.1	0.3	-	1.0	0.1	3.474	13.071
311	en_pg7_64	byte	%8.0g	Y_N	Other Cardiac Abormality	92	-	-	-	-	-	.	.
312	en_pg8_1	byte	%8.0g	Y_N	Abdominal Pulse Below Umbilicus	113	0.0	0.1	-	1.0	0.0	7.316	54.518
313	en_pg8_2	byte	%8.0g	Y_N	Prior Abdominal Ultrasound if 65	77	0.0	0.2	-	1.0	0.0	4.765	23.707
314	en_pg8_3	byte	%8.0g	Y_N	Abdominal Bruit	115	0.0	0.1	-	1.0	0.0	10.583	113.009
315	en_pg8_4	byte	%8.0g	Y_N	Renal Bruit	116	-	-	-	-	-	.	.
316	en_pg8_5	byte	%8.0g	Y_N	Abnormal PedalPulses	115	0.1	0.3	-	1.0	0.1	2.314	6.353
317	en_pg8_6	byte	%8.0g	Y_N	Pedal Pulses Diminished	107	0.1	0.3	-	1.0	0.1	2.189	5.793
318	en_pg8_7	byte	%8.0g	Y_N	Pedal Pulses Absent	96	0.0	0.2	-	1.0	0.0	4.587	22.043
319	en_pg8_8	float	%8.0g		Creatinine	34	1.2	1.6	0.6	10.0	2.5	5.409	30.863
320	en_pg8_9	float	%8.0g		BUN	33	14.5	3.4	8.6	24.0	11.7	0.759	3.222
321	en_pg8_10	float	%8.0g		Potassium	27	6.0	7.0	2.5	41.0	49.7	4.787	24.313
322	en_pg8_11	int	%8.0g		Sodium	27	141.5	4.2	133.0	150.0	17.3	(0.060)	2.416
323	en_pg8_12	byte	%8.0g		Fasting Lipid Panel HDL	30	50.7	11.7	33.0	90.0	136.2	1.209	5.483
324	en_pg8_13	float	%8.0g		Fasting Lipid Panel LDL	28	131.8	43.4	56.0	225.0	1,884.8	0.273	2.369

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
325	en_pg8_14	int	%8.0g		Fasting Lipid Panel Triglycerides	35	112.2	66.8	46.0	402.0	4,460.3	2.644	11.420
326	en_pg8_15	int	%8.0g		Fasting Lipid Panel Total_Cholesterol	35	209.5	42.5	138.0	316.0	1,802.4	0.302	2.510
327	en_pg8_16	int	%8.0g		Fasting Lipid Panel VLDL	31	34.5	44.9	11.0	229.0	2,020.0	3.274	13.421
328	en_pg8_17	int	%8.0g		Fasting Glucose	29	100.4	25.7	30.0	184.0	660.1	0.531	6.486
329	en_pg8_18	byte	%8.0g		Fasting Insulin	1	100.0	.	100.0	100.0	.	.	.
330	en_pg8_19	float	%8.0g		High Sensitivity C-Reactive Protein	16	8.2	9.5	1.0	41.0	90.9	2.776	10.125
331	en_pg8_20	byte	%8.0g		Urinalysis	0					-	-	23,892.980
332	en_pg8_21	str8	%9s		Proteinuria	0					-	23,892.980	-
333	en_pg8_22	float	%8.0g		Albumin-Creatinine Ratio	2	135.3	154.6	26.0	244.6	23,893.0	-	1.000
334	en_pg8_24	byte	%8.0g	Y_N	Abnormal ECG LVH by Voltage	41	0.1	0.3	-	1.0	0.1	2.713	8.358
335	en_pg8_25	byte	%8.0g	Y_N	Abnormal ECG LVH by ST-T Changes	42	0.1	0.3	-	1.0	0.1	2.353	6.535
336	en_pg8_26	byte	%8.0g	Y_N	Abnormal ECG Q-Waves for MI	42	0.1	0.3	-	1.0	0.1	2.758	8.605
337	en_pg8_27	byte	%8.0g	Y_N	Abnormal ECG Specific ST-T Changes	44	0.3	0.5	-	1.0	0.2	1.021	2.042
338	en_pg8_28	byte	%8.0g	Y_N	Abnormal ECG Left Axis Deviation	40	0.1	0.2	-	1.0	0.0	4.129	18.053
339	en_pg8_29	byte	%8.0g	Y_N	Abnormal ECG Resting Rate <55	43	0.0	0.2	-	1.0	0.0	4.307	19.549
340	en_pg8_30	byte	%8.0g	Y_N	Abnormal ECG Heart Block	42	0.0	0.2	-	1.0	0.0	4.249	19.050
341	en_pg8_31	byte	%8.0g	Y_N	Abnormal ECG Right Bundle Branch Block	34	-	-	-	-	-	.	.
342	en_pg8_32	byte	%8.0g	Y_N	Abnormal ECG Left Bundle Branch Block	34	-	-	-	-	-	.	.
343	pt_use_cuff1	byte	%10.0g	Monitor_Use	BL Proper Use Cuff Placement	87	1.0	0.2	-	2.0	0.1	0.693	17.333
344	bl_sdf_pg1_2	byte	%8.0g	Y_N	BL Proper Use Cuff Placement Supp	4	1.0	-	1.0	1.0	-	.	.
345	pt_use_sensor1	byte	%10.0g	Monitor_Use	BL Proper Use Sensor Position	85	1.0	0.3	-	2.0	0.1	-	14.167
346	bl_sdf_pg1_4	byte	%8.0g	Y_N	BL Proper Use Sensor Position Supp	4	1.0	-	1.0	1.0	-	.	.
347	pt_use_arm1	byte	%10.0g	Monitor_Use	BL Proper Use Arm Position	88	1.0	0.2	-	2.0	0.0	1.630	29.132
348	bl_sdf_pg1_6	byte	%8.0g	Y_N	BL Proper Use Arm Position Supp	3	1.0	-	1.0	1.0	-	.	.
349	pt_use_machine1	byte	%10.0g	Monitor_Use	BL Proper Use Machine Activation	87	1.0	0.2	-	2.0	0.0	1.619	28.799
350	bl_sdf_pg1_8	byte	%8.0g	Y_N	BL Proper Use Machine Activation Supp	3	1.0	-	1.0	1.0	-	.	.
351	pt_use_pt_calm1	byte	%10.0g	Monitor_Use	BL Proper Use Patient Calm	87	1.0	0.2	-	2.0	0.0	1.619	28.799
352	bl_sdf_pg1_10	byte	%8.0g	Y_N	BL Proper Use Patient Calm Supp	3	1.0	-	1.0	1.0	-	.	.
353	pt_use_sbp_dbp1	byte	%10.0g	Monitor_Use	BL Proper Use SBP-DBP Identified	86	1.0	0.2	-	2.0	0.0	1.608	28.466
354	bl_sdf_pg1_12	byte	%8.0g	Y_N	BL Proper Use SBP-DBP Identified_Supp	3	1.0	-	1.0	1.0	-	.	.
355	pt_use_unders~1	byte	%8.0g	Y_N	BL Proper Use Pt Confirms Understanding	87	0.9	0.3	-	1.0	0.1	(3.402)	12.574
356	pt_controlled1	byte	%22.0g	Likert6	BL BP Well Controlled	92	3.8	0.8	3.0	6.0	0.6	0.846	3.443
357	pt_participate1	byte	%22.0g	Likert6	BL Actively Participate BP Mgmt	92	4.3	0.6	3.0	6.0	0.4	1.095	4.431
358	pt_u_meds1	byte	%22.0g	Likert6	BL Understand Meds Influence BP	92	4.3	0.7	3.0	6.0	0.5	0.997	3.786
359	pt_u_dose1	byte	%22.0g	Likert6	BL Understand Dose Influence BP	92	4.3	0.7	3.0	6.0	0.5	1.225	3.942
360	pt_meds_work1	byte	%22.0g	Likert6	BL Believe Meds Working	92	4.2	0.7	3.0	6.0	0.5	0.565	3.449
361	pt_u_diet1	byte	%22.0g	Likert6	BL Understand Diet Influence BP	93	4.6	0.8	3.0	6.0	0.7	0.611	1.990
362	pt_u_exer1	byte	%22.0g	Likert6	BL Understand Phys Activity Influence BP	93	4.6	0.8	3.0	6.0	0.6	0.734	2.188
363	pt_knows_goal1	byte	%22.0g	Likert6	BL Know_BP Goal	90	4.6	0.8	3.0	6.0	0.7	0.478	2.206
364	tmv_pg1_1	byte	%8.0g	Y_N	3M MD Assessment Maintain Therapy	105	0.8	0.4	-	1.0	0.2	(1.230)	2.513
365	tmv_pg1_2	byte	%8.0g	Y_N	3M MD Assessment Change Dose	108	0.4	0.5	-	1.0	0.2	0.338	1.114
366	tmv_pg1_3	byte	%8.0g	Y_N	3M MD Assessment Add Therapy	108	0.2	0.4	-	1.0	0.2	1.213	2.471
367	tmv_pg1_4	byte	%8.0g	Y_N	3M MD Assessment Stop Therapy	107	0.3	0.5	-	1.0	0.2	0.978	1.956
368	tmv_pg1_5	byte	%8.0g	Y_N	3M MD Assessment Side Effects	108	0.3	0.5	-	1.0	0.2	0.752	1.565
369	tmv_pg1_6	byte	%8.0g	Y_N	3M MD Assessment Call Pt to Clinic	107	0.2	0.4	-	1.0	0.2	1.198	2.436
370	tmv_pg1_7	byte	%8.0g	Y_N	TM MD Assessment Prompt Educ Diet	106	0.4	0.5	-	1.0	0.2	0.305	1.093
371	tmv_pg1_8	byte	%8.0g	Y_N	3M MD Assessment Prompt Educ Exercise	106	0.4	0.5	-	1.0	0.2	0.305	1.093
372	md_uses2	byte	%8.0g		3M MD Used Syst for 1-8 Reasons	118	2.8	2.8	-	8.0	7.7	0.802	2.311
373	md_used2	byte	%8.0g		3M MD Used Syst Y/N	118	0.8	0.4	-	1.0	0.2	(1.235)	2.525
374	height_cm2	float	%8.0g		3M Height cm	115	166.0	9.4	149.0	188.0	89.0	0.433	2.428
375	weight_kg2	float	%8.0g		3M Weight kg	118	79.8	17.6	44.0	127.0	310.4	0.584	2.894
376	waist_cm2	float	%8.0g		3M Waist cm	117	95.3	14.3	26.3	123.0	204.5	(1.293)	8.328
377	bmi2	float	%8.0g		3M BMI calculated	115	28.7	5.8	17.2	47.9	33.2	1.044	4.692
378	n_seat_bp2	byte	%8.0g		3M Seated BP Measurements	118	2.5	0.5	2.0	3.0	0.3	-	1.000

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
379	n_seat_p2	byte	%8.0g		3M Seated Pulse Measurements	118	1.0	-	1.0	1.0	-	.	.
380	seat_sbp2	float	%8.0g		3M Seated SBP - Primary	118	133.1	16.2	102.0	185.0	261.6	0.555	3.472
381	seat_dbp2	float	%8.0g		3M Seated DBP - Primary	118	82.6	11.5	59.0	115.0	132.8	0.335	3.077
382	seat_pulse2	int	%8.0g		3M Seated Pulse - Primary	118	74.3	12.0	54.0	117.0	143.4	0.870	3.666
383	seat_pp2	float	%8.0g		3M Seated PP - Primary	118	50.5	13.4	10.0	87.0	179.3	0.120	3.134
384	seat_map2	float	%8.0g		3M Seated MAP - Primary	118	99.4	11.7	76.7	138.3	135.9	0.540	3.632
385	htn_x_bp2	byte	%8.0g		HTN Uncontrolled at 3M - Primary	118	0.5	0.5	-	1.0	0.3	(0.102)	1.010
386	n_stand_bp2	byte	%8.0g		3M Standing BP Measurements	118	2.5	0.5	1.0	3.0	0.3	(0.016)	1.446
387	n_stand_p2	byte	%8.0g		3M Standing Pulse Measurements	118	1.0	0.2	-	1.0	0.0	(6.030)	37.359
388	stand_sbp2	float	%8.0g		3M Standing SBP - Primary	118	134.2	18.4	84.0	180.0	337.4	0.126	3.103
389	stand_dbp2	float	%8.0g		3M Standing DBP - Primary	117	89.5	11.0	70.0	120.0	121.0	0.354	2.817
390	stand_pulse2	int	%8.0g		3M Standing Pulse - Primary	115	78.4	13.9	54.0	136.0	194.0	1.050	4.316
391	ss_sbp2	float	%8.0g		3M Standing less Seated SBP	118	1.1	11.0	(42.0)	42.0	121.7	(0.442)	5.557
392	ss_dbp2	float	%8.0g		3M Standing less Seated DBP	117	6.9	7.7	(14.0)	29.0	59.1	0.109	3.543
393	a_sbp2	int	%8.0g		3M SBP Average	118	133.5	16.2	103.0	185.0	261.5	0.535	3.452
394	a_dbp2	int	%8.0g		3M DBP Average	118	82.7	11.4	59.0	115.0	128.8	0.404	3.185
395	a_controlled2	byte	%8.0g	Y_N	3M HTN Not Controlled Avg Reading	118	0.6	0.5	-	1.0	0.2	(0.204)	1.042
396	h_sbp2	int	%8.0g		3M SBP Highest	118	137.6	16.8	104.0	190.0	283.5	0.469	3.227
397	h_dbp2	int	%8.0g		3M DBP Highest	118	85.8	12.4	60.0	130.0	153.1	0.759	4.291
398	h_controlled2	byte	%8.0g	Y_N	3M HTN Not Controlled Highest Reading	118	0.7	0.5	-	1.0	0.2	(0.680)	1.463
399	l_sbp2	int	%8.0g		3M SBP Last Reading	118	133.1	16.5	104.0	180.0	270.8	0.571	3.259
400	l_dbp2	int	%8.0g		3M DBP Last Reading	118	82.4	11.9	46.0	118.0	140.7	0.134	3.659
401	l_controlled2	byte	%8.0g	Y_N	3M HTN Not Controlled Last Reading	118	0.5	0.5	-	1.0	0.3	(0.136)	1.018
402	tmv_pg1_13	int	%8.0g		3M SBP Sphyg Arm Seated 1	118	134.3	17.4	98.0	186.0	302.3	0.344	3.196
403	tmv_pg1_14	int	%8.0g		3M DBP Sphyg Arm Seated 1	118	82.9	12.2	60.0	130.0	147.8	0.694	4.491
404	tmv_pg1_15	int	%8.0g		3M Pulse Sphyg Arm Seated 1	118	74.3	12.0	54.0	117.0	143.4	0.870	3.666
405	tmv_pg1_16	int	%8.0g		3M SBP Sphyg Arm Seated 2	118	133.0	16.6	100.0	190.0	275.6	0.599	3.771
406	tmv_pg1_17	int	%8.0g		3M DBP Sphyg Arm Seated 2	118	82.7	12.0	60.0	120.0	143.7	0.402	3.351
407	tmv_pg1_18	int	%8.0g		3M SBP Sphyg Arm Seated 3	59	134.0	16.7	104.0	180.0	279.1	0.372	3.009
408	tmv_pg1_19	int	%8.0g		3M DBP Sphyg Arm Seated 3	59	81.3	13.9	46.0	118.0	193.2	0.269	3.358
409	tmv_pg1_20	int	%8.0g		3M SBP Sphyg Arm Standing 1	118	134.3	18.7	78.0	194.0	348.4	0.184	3.884
410	tmv_pg1_21	int	%8.0g		3M DBP Sphyg Arm Standing 1	118	89.0	13.6	58.0	158.0	183.7	1.081	7.796
411	tmv_pg1_22	int	%8.0g		3M Pulse Sphyg Arm Standing 1	115	78.4	13.9	54.0	136.0	194.0	1.050	4.316
412	tmv_pg1_23	int	%8.0g		3M SBP Sphyg Arm Standing 2	117	134.6	17.9	84.0	180.0	321.3	0.169	3.000
413	tmv_pg1_24	int	%8.0g		3M DBP Sphyg Arm Standing 2	116	89.9	11.3	70.0	120.0	128.4	0.380	2.906
414	tmv_pg1_25	int	%8.0g		3M SBP Sphyg Arm Standing 3	55	139.2	17.2	110.0	180.0	294.7	0.191	2.356
415	tmv_pg1_26	int	%8.0g		3M DBP Sphyg Arm Standing 3	55	90.1	10.7	70.0	116.0	113.6	0.211	2.686
416	tmv_pg1_27	int	%8.0g		3M SBP HM Arm Seated 1	111	130.6	20.0	12.0	179.0	400.4	(1.578)	12.675
417	tmv_pg1_28	int	%8.0g		3M DBP HM Arm Seated 1	111	84.8	12.2	60.0	119.0	149.6	0.355	2.884
418	tmv_pg1_29	int	%8.0g		3M Pulse HM Arm Seated 1	111	76.2	13.1	50.0	116.0	171.3	0.347	2.863
419	tmv_pg1_30	int	%8.0g		3M SBP HM Arm Seated 2	93	131.8	17.3	104.0	177.0	299.8	0.577	2.855
420	tmv_pg1_31	int	%8.0g		3M DBP HM Arm Seated 2	93	85.6	13.1	60.0	116.0	172.0	0.396	2.860
421	tmv_pg1_32	int	%8.0g		3M Pulse HM Arm Seated 2	93	74.3	12.7	52.0	109.0	160.6	0.505	2.726
422	tmv_pg1_33	int	%8.0g		3M SBP HM Arm Seated 3	78	133.3	15.6	100.0	187.0	244.2	0.382	3.588
423	tmv_pg1_34	int	%8.0g		3M DBP HM Arm Seated 3	78	88.3	12.3	59.0	131.0	151.2	0.484	4.280
424	tmv_pg1_35	int	%8.0g		3M Pulse HM Arm Seated 3	77	75.7	13.0	53.0	112.0	168.4	0.490	2.960
425	tmv_pg1_36	int	%8.0g		3M SBP HM Arm Standing 1	108	131.2	16.8	95.0	185.0	282.7	0.348	3.000
426	tmv_pg1_37	int	%8.0g		3M DBP HM Arm Standing 1	107	89.7	13.8	53.0	127.0	191.5	0.231	3.168
427	tmv_pg1_38	int	%8.0g		3M Pulse HM Arm Standing 1	107	80.6	13.6	54.0	114.0	185.3	0.167	2.362
428	tmv_pg1_39	int	%8.0g		3M SBP HM Arm Standing 2	91	134.6	16.3	106.0	178.0	267.1	0.350	2.569
429	tmv_pg1_40	int	%8.0g		3M DBP HM Arm Standing 2	90	91.6	11.9	63.0	127.0	142.0	0.364	3.380
430	tmv_pg1_41	int	%8.0g		3M Pulse HM Arm Standing 2	89	79.6	12.8	44.0	106.0	164.4	0.165	2.709
431	tmv_pg1_42	int	%8.0g		3M SBP HM Arm Standing 3	78	134.8	17.8	102.0	194.0	315.8	0.505	3.489
432	tmv_pg1_43	int	%8.0g		3M DBP HM Arm Standing 3	77	91.5	13.3	61.0	130.0	176.1	0.117	3.102

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
433	tmv_pg1_44	int	%8.0g		3M Pulse HM Arm Standing 3	77	80.0	12.8	55.0	114.0	163.1	0.355	2.600
434	pt_takes_meds2	byte	%8.0g	Y_N	3M Pt Takes Meds Regularly	112	0.9	0.3	-	1.0	0.1	(2.268)	6.143
435	tmv_pg2_2	str30	%30s		3M Pt Med Problems Side Effects	0					-	0.166	1.442
436	pt_prob_obtair2	byte	%8.0g	Y_N	3M Pt Med Problems Obtaining	106	0.2	0.4	-	1.0	0.2	1.442	3.080
437	pt_prob_forget2	byte	%8.0g	Y_N	3M Pt Med Problems Forget	107	0.3	0.5	-	1.0	0.2	0.648	1.420
438	pt_prob_no_he~2	byte	%8.0g	Y_N	3M Pt Med Problems Not Helping	105	0.2	0.4	-	1.0	0.2	1.500	3.250
439	pt_prob_other2	str34	%34s		3M Pt Med Problems Other	0					-	446.938	(1.870)
440	pt_med_compl2	byte	%8.0g		3M Pt Estimated Compliance_%	86	86.3	21.1	-	100.0	446.9	(1.870)	6.742
441	tmv_pg2_8	byte	%8.0g		3M Interim Clinic Visits Related to HTN	99	1.0	1.2	-	5.0	1.6	1.026	3.032
442	tmv_pg2_9	byte	%8.0g		3M Interim ED Visits Related to HTN	105	0.1	0.3	-	2.0	0.1	4.630	25.619
443	tmv_pg2_10	byte	%8.0g		3M Interim Hospitalizations Related to HTN	104	0.0	0.2	-	1.0	0.0	4.800	24.040
444	tmv_pg2_11	byte	%8.0g		3M Interim Hospital Days Related to HTN	104	0.1	0.7	-	6.0	0.5	7.265	58.630
445	pt_diet_compl2	byte	%9.0g	BH20	3M Pt Assess Dietary Compliance	111	2.2	0.6	1.0	4.0	0.4	0.473	3.714
446	pt_exer_compl2	byte	%9.0g	BH20	3M Pt Access Physical ActivityCompliance	111	2.4	0.8	1.0	4.0	0.7	0.386	2.589
447	pt_phys_abili~2	byte	%9.0g	V5C	3M Ability to Perform Physical Activity	110	1.7	0.6	1.0	3.0	0.3	0.023	2.572
448	pt_limited_da~2	byte	%8.0g		3M Limited Days Physical Activity	81	2.0	4.9	-	25.0	24.2	3.102	12.546
449	tmv_pg2_16	byte	%8.0g	Y_N	3M Cigarette Use	113	0.1	0.3	-	1.0	0.1	3.105	10.642
450	tmv_pg2_17	byte	%8.0g		3M Cigs Smoked per Day	13	6.7	7.2	-	20.0	52.4	0.753	2.415
451	tmv_pg2_18	byte	%8.0g	Y_N	3M Alcohol Use	112	0.3	0.4	-	1.0	0.2	0.998	1.996
452	tmv_pg2_19	str20	%20s		3M Drinks Consumed per Day	0					-	0.026	5.890
453	tmv_pg2_20	byte	%8.0g	Y_N	3M Illicit Drug Use	113	0.0	0.2	-	1.0	0.0	5.890	35.694
454	tmv_pg2_21	byte	%9.0g	V5C	3M Illicit Drug Use Change	6	2.5	0.5	2.0	3.0	0.3	-	1.000
455	pt_health2	byte	%9.0g	BH20	3M Pt Assess General State of Health	110	2.2	0.6	1.0	3.0	0.3	0.051	2.922
456	pt_use_cuff2	byte	%10.0g	Monitor_Use	3M Proper Use Cuff Placement	116	1.0	0.2	-	2.0	0.0	1.921	38.460
457	tm_sdf_pg1_2	byte	%8.0g	Y_N	3M Proper Use Cuff Placement Supp	4	0.5	0.6	-	1.0	0.3	-	1.000
458	pt_use_sensor2	byte	%10.0g	Monitor_Use	3M Proper Use Sensor Position	115	1.0	0.1	-	1.0	0.0	(7.384)	55.518
459	tm_sdf_pg1_4	byte	%8.0g	Y_N	3M Proper Use Sensor Position Supp	3	0.3	0.6	-	1.0	0.3	0.707	1.500
460	pt_use_arm2	byte	%10.0g	Monitor_Use	3M Proper Use Arm Position	115	1.0	0.2	-	2.0	0.0	(1.911)	38.127
461	tm_sdf_pg1_6	byte	%8.0g	Y_N	3M Proper Use Arm Position Supp	4	0.5	0.6	-	1.0	0.3	-	1.000
462	pt_use_machine2	byte	%10.0g	Monitor_Use	3M Proper Use Machine Activation	116	1.0	0.1	-	1.0	0.0	(10.631)	114.009
463	tm_sdf_pg1_8	byte	%8.0g	Y_N	3M Proper Use Machine Activation Supp	3	0.3	0.6	-	1.0	0.3	0.707	1.500
464	pt_use_pt_calm2	byte	%10.0g	Monitor_Use	3M Proper Use Patient Calm	116	1.0	-	1.0	1.0	-		
465	tm_sdf_pg1_10	byte	%8.0g	Y_N	3M Proper Use Patient Calm Supp	3	0.3	0.6	-	1.0	0.3	0.707	1.500
466	pt_use_sbp_dbp2	byte	%10.0g	Monitor_Use	3M Proper Use SBP-DBP Identified	115	1.0	0.1	-	1.0	0.0	(10.583)	113.009
467	tm_sdf_pg1_12	byte	%8.0g	Y_N	3M Proper Use SBP-DBP Identified Supp	3	0.3	0.6	-	1.0	0.3	0.707	1.500
468	pt_use_unders~2	byte	%8.0g	Y_N	3M Proper Use Pt Confirms Understanding	106	1.0	0.1	-	1.0	0.0	(10.149)	104.010
469	pt_controlled2	byte	%22.0g	Likert6	3M BP Well Controlled	114	4.2	0.9	2.0	6.0	0.8	0.271	2.853
470	pt_participate2	byte	%22.0g	Likert6	3M Actively Participate BP Mgmt	113	4.5	0.9	2.0	6.0	0.8	0.450	2.628
471	pt_u_meds2	byte	%22.0g	Likert6	3M Understand Meds Influence BP	112	4.4	0.8	2.0	6.0	0.6	0.529	3.654
472	pt_u_dose2	byte	%22.0g	Likert6	3M Understand Dose Influence BP	117	4.4	0.7	2.0	6.0	0.5	0.707	3.836
473	pt_meds_work2	byte	%22.0g	Likert6	3M Believe Meds Working	116	4.4	0.8	3.0	6.0	0.6	0.861	3.253
474	pt_u_diet2	byte	%22.0g	Likert6	3M Understand Diet Influence BP	117	4.8	0.8	4.0	6.0	0.7	0.324	1.561
475	pt_u_exer2	byte	%22.0g	Likert6	3M Understand Phys Activity Influence BP	115	4.8	0.9	3.0	6.0	0.8	0.183	1.655
476	pt_knows_goal2	byte	%22.0g	Likert6	3M Know BP Goal	114	4.6	0.8	3.0	6.0	0.7	0.541	2.070
477	smv_pg1_1	byte	%8.0g	Y_N	6M MD Assessment Maintain Therapy	106	0.7	0.5	-	1.0	0.2	(0.677)	1.459
478	smv_pg1_2	byte	%8.0g	Y_N	6M MD Assessment Change Dose	106	0.5	0.5	-	1.0	0.3	0.076	1.006
479	smv_pg1_3	byte	%8.0g	Y_N	6M MD Assessment Add Therapy	106	0.3	0.5	-	1.0	0.2	0.633	1.401
480	smv_pg1_4	byte	%8.0g	Y_N	6M MD Assessment Stop Therapy	106	0.3	0.5	-	1.0	0.2	0.677	1.459
481	smv_pg1_5	byte	%8.0g	Y_N	6M MD Assessment Side Effects	107	0.5	0.5	-	1.0	0.3	0.131	1.017
482	smv_pg1_6	byte	%8.0g	Y_N	6M MD Assessment Call Pt to Clinic	106	0.3	0.5	-	1.0	0.2	0.963	1.928
483	smv_pg1_7	byte	%8.0g	Y_N	6M MD Assessment Prompt Educ Diet	106	0.5	0.5	-	1.0	0.3	-	1.000
484	smv_pg1_8	byte	%8.0g	Y_N	6M MD Assessment Prompt Educ Exercise	105	0.5	0.5	-	1.0	0.3	0.095	1.009
485	md_uses3	byte	%8.0g		6M MD Used Syst for 1-8 Reasons	118	3.2	3.1	-	8.0	9.5	0.533	1.794
486	md_used3	byte	%8.0g		6M MD Used Syst Y/N	118	0.7	0.5	-	1.0	0.2	(0.847)	1.717

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
487	height_cm3	float	%8.0g		6M Height cm	113	166.2	9.3	149.0	188.0	85.9	0.426	2.501
488	weight_kg3	float	%8.0g		6M Weight kg	117	79.8	16.9	45.2	127.5	285.3	0.560	2.914
489	waist_cm3	float	%8.0g		6M Waist cm	117	96.8	11.4	69.0	125.0	130.6	0.283	2.949
490	bmi3	float	%8.0g		6M BMI calculated	113	29.0	5.8	17.7	49.1	33.7	1.098	4.654
491	n_seat_bp3	byte	%8.0g		6M Seated BP Measurements	118	2.4	0.5	2.0	3.0	0.2	0.415	1.173
492	n_seat_p3	byte	%8.0g		6M Seated Pulse Measurements	118	1.0	0.1	-	1.0	0.0	(10.724)	116.009
493	seat_sbp3	int	%8.0g		6M Seated SBP - Primary	118	131.6	17.2	97.0	198.0	296.2	0.808	4.260
494	seat_dbp3	int	%8.0g		6M Seated DBP - Primary	118	81.5	12.0	55.0	120.0	143.8	0.404	3.376
495	seat_pulse3	int	%8.0g		6M Seated Pulse - Primary	117	73.8	10.2	54.0	108.0	104.4	0.569	3.298
496	seat_pp3	byte	%8.0g		6M Seated PP - Primary	118	50.1	12.0	19.0	91.0	142.9	0.416	3.574
497	seat_map3	float	%8.0g		6M Seated MAP - Primary	118	98.2	12.8	71.3	137.3	162.8	0.587	3.393
498	htn_x_bp3	byte	%8.0g		HTN Uncontrolled at 6M - Primary	118	0.4	0.5	-	1.0	0.2	0.344	1.118
499	n_stand_bp3	byte	%8.0g		6M Standing BP Measurements	118	2.4	0.5	2.0	3.0	0.2	0.344	1.118
500	n_stand_p3	byte	%8.0g		6M Standing Pulse Measurements	118	1.0	0.2	-	1.0	0.0	(5.151)	27.535
501	stand_sbp3	int	%8.0g		6M Standing SBP - Primary	118	132.8	18.8	79.0	200.0	354.2	0.354	3.882
502	stand_dbp3	int	%8.0g		6M Standing DBP - Primary	118	89.6	12.3	60.0	141.0	150.7	0.631	5.259
503	stand_pulse3	int	%8.0g		6M Standing Pulse - Primary	114	76.5	11.7	52.0	112.0	137.4	0.955	3.970
504	ss_sbp3	byte	%8.0g		6M Standing less Seated SBP	118	1.2	11.8	(69.0)	28.0	138.7	(1.692)	12.546
505	ss_dbp3	byte	%8.0g		6M Standing less Seated DBP	118	8.1	7.6	(8.0)	47.0	58.2	1.143	7.841
506	a_sbp3	int	%8.0g		6M SBP Average	118	132.7	17.4	98.0	198.0	302.6	0.809	4.128
507	a_dbp3	int	%8.0g		6M DBP Average	118	82.3	12.5	55.0	130.0	155.7	0.731	4.400
508	a_controlled3	byte	%8.0g	Y_N	6M HTN Not Controlled Average	118	0.4	0.5	-	1.0	0.2	0.380	1.144
509	h_sbp3	int	%8.0g		6M SBP Highest Reading	118	136.4	18.6	100.0	198.0	347.6	0.768	3.792
510	h_dbp3	int	%8.0g		6M DBP Highest Reading	118	84.7	13.8	56.0	160.0	190.9	1.483	9.370
511	h_controlled3	byte	%8.0g	Y_N	6M HTN Not Controlled Highest Reading	118	0.6	0.5	-	1.0	0.2	(0.204)	1.042
512	l_sbp3	int	%8.0g		6M SBP Last Reading	118	131.5	17.2	96.0	198.0	296.9	0.827	4.259
513	l_dbp3	int	%8.0g		6M DBP Last Reading	118	81.4	12.1	54.0	120.0	145.3	0.361	3.282
514	l_controlled3	byte	%8.0g	Y_N	6M HTN Not Controlled Last Reading	118	0.4	0.5	-	1.0	0.2	0.344	1.118
515	smv_pg1_13	int	%8.0g		6M SBP Sphyg Arm Seated 1	118	134.1	18.5	100.0	198.0	343.1	0.852	4.121
516	smv_pg1_14	int	%8.0g		6M DBP Sphyg Arm Seated 1	118	83.1	13.8	54.0	160.0	191.0	1.577	9.935
517	smv_pg1_15	int	%8.0g		6M Pulse_Sphyg_Arm_Seated 1	117	73.8	10.2	54.0	108.0	104.4	0.569	3.298
518	smv_pg1_16	int	%8.0g		6M SBP_Sphyg_Arm_Seated 2	118	131.8	17.5	98.0	198.0	306.5	0.805	4.146
519	smv_pg1_17	int	%8.0g		6M DBP_Sphyg_Arm_Seated 2	118	81.6	12.1	56.0	120.0	145.8	0.437	3.406
520	smv_pg1_18	int	%8.0g		6M SBP_Sphyg_Arm_Seated 3	47	132.9	16.4	96.0	168.0	267.4	0.154	2.707
521	smv_pg1_19	int	%8.0g		6M DBP_Sphyg_Arm_Seated 3	46	82.6	12.7	54.0	116.0	162.4	0.074	2.802
522	smv_pg1_20	int	%8.0g		6M SBP_Sphyg_Arm_Standing 1	117	134.2	19.7	96.0	203.0	386.6	0.509	3.685
523	smv_pg1_21	int	%8.0g		6M DBP_Sphyg_Arm_Standing 1	118	89.2	13.8	54.0	151.0	190.0	0.783	5.876
524	smv_pg1_22	int	%8.0g		6M Pulse_Sphyg_Arm_Standing 1	114	76.5	11.7	52.0	112.0	137.4	0.955	3.970
525	smv_pg1_23	int	%8.0g		6M SBP_Sphyg_Arm_Standing 2	118	132.6	19.2	79.0	200.0	369.7	0.323	3.588
526	smv_pg1_24	int	%8.0g		6M DBP_Sphyg_Arm_Standing 2	118	89.5	13.1	54.0	141.0	172.1	0.610	5.079
527	smv_pg1_25	int	%8.0g		6M SBP_Sphyg_Arm_Standing 3	50	135.3	18.7	83.0	190.0	349.0	0.139	4.112
528	smv_pg1_26	int	%8.0g		6M DBP_Sphyg_Arm_Standing 3	50	92.0	11.6	64.0	133.0	134.3	0.779	5.857
529	smv_pg1_27	int	%8.0g		6M SBP_HM_Arm_Seated 1	107	128.2	15.7	80.0	169.0	245.2	0.022	3.432
530	smv_pg1_28	int	%8.0g		6M DBP_HM_Arm_Seated 1	106	84.6	11.6	56.0	121.0	135.2	0.351	3.211
531	smv_pg1_29	int	%8.0g		6M Pulse_HM_Arm_Seated 1	105	77.2	11.8	52.0	107.0	139.3	0.288	2.519
532	smv_pg1_30	int	%8.0g		6M SBP_HM_Arm_Seated 2	94	128.0	14.7	99.0	170.0	217.1	0.551	2.995
533	smv_pg1_31	int	%8.0g		6M DBP_HM_Arm_Seated 2	94	84.6	11.0	55.0	116.0	121.7	0.293	3.108
534	smv_pg1_32	int	%8.0g		6M Pulse_HM_Arm_Seated 2	92	77.3	12.6	52.0	109.0	158.8	0.253	2.478
535	smv_pg1_33	int	%8.0g		6M SBP_HM_Arm_Seated 3	82	128.3	15.4	96.0	170.0	235.8	0.394	2.870
536	smv_pg1_34	int	%8.0g		6M DBP_HM_Arm_Seated 3	82	84.6	12.7	62.0	120.0	160.7	0.339	3.029
537	smv_pg1_35	int	%8.0g		6M Pulse_HM_Arm_Seated 3	82	74.4	11.8	50.0	109.0	140.2	0.332	2.864
538	smv_pg1_36	int	%8.0g		6M SBP_HM_Arm_Standing 1	104	129.7	16.0	96.0	171.0	256.0	0.293	3.155
539	smv_pg1_37	int	%8.0g		6M DBP_HM_Arm_Standing 1	103	89.8	12.9	58.0	125.0	165.6	0.327	3.083
540	smv_pg1_38	int	%8.0g		6M Pulse_HM_Arm_Standing 1	103	80.6	11.8	49.0	115.0	139.1	0.171	3.379

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
541	smv_pg1_39	int	%8.0g		6M SBP_HM_Arm_Standing 2	93	129.8	14.8	100.0	165.0	219.5	0.342	2.644
542	smv_pg1_40	int	%8.0g		6M DBP_HM_Arm_Standing 2	92	88.6	13.0	47.0	121.0	168.7	0.098	3.425
543	smv_pg1_41	int	%8.0g		6M Pulse_HM_Arm_Standing 2	92	80.7	11.1	56.0	117.0	123.6	0.368	3.358
544	smv_pg1_42	int	%8.0g		6M SBP_HM_Arm_Standing 3	84	129.8	15.2	91.0	172.0	231.0	0.257	3.261
545	smv_pg1_43	int	%8.0g		6M DBP_HM_Arm_Standing 3	84	89.9	12.4	63.0	130.0	154.6	0.498	3.968
546	smv_pg1_44	int	%8.0g		6M Pulse_HM_Arm_Standing 3	84	80.4	13.1	49.0	118.0	170.3	0.384	3.049
547	pt_takes_meds3	byte	%8.0g	Y_N	6M Pt_Takes_Meds_Regularly	114	0.9	0.3	-	1.0	0.1	(3.123)	10.752
548	smv_pg2_2	byte	%8.0g	Y_N	6M Pt_Med_Problems_Side_Effects	10	0.4	0.5	-	1.0	0.3	0.408	1.167
549	pt_prob_obtai~3	byte	%8.0g	Y_N	6M Pt_Med_Problems_Obtaining	106	0.2	0.4	-	1.0	0.1	1.950	4.803
550	pt_prob_forget3	byte	%8.0g	Y_N	6M Pt_Med_Problems_Forget	106	0.4	0.5	-	1.0	0.2	0.465	1.216
551	pt_prob_no_he~3	byte	%8.0g	Y_N	6M Pt_Med_Problems_Not_Helping	102	0.2	0.4	-	1.0	0.1	1.697	3.881
552	pt_prob_other3	str38	%38s		6M Pt_Med_Problems_Other	0					-	383.793	(2.920)
553	pt_med_compl3	byte	%8.0g		6M Pt_Estimated_Compliance_%	79	89.7	19.6	10.0	100.0	383.8	(2.920)	11.459
554	smv_pg2_8	byte	%8.0g		6M Interim_Clinic_Visits_related_to_HTN	96	1.4	2.0	-	12.0	4.1	2.523	12.245
555	smv_pg2_9	byte	%8.0g		6M Interim_ED_Visits_related_to_HTN	95	0.1	0.2	-	1.0	0.1	4.007	17.056
556	smv_pg2_10	byte	%8.0g		6M Interim_Hospitalizations_related_to_HTN	96	0.0	0.2	-	1.0	0.0	4.587	22.043
557	smv_pg2_11	byte	%8.0g		6M Interim_Hospital_Days_related_to_HTN	95	0.1	0.8	-	6.0	0.6	6.608	45.576
558	pt_diet_compl3	byte	%9.0g	BH20	6M Pt_Assess_Dietary_Compliance	115	2.2	0.6	1.0	4.0	0.4	0.270	3.279
559	pt_exer_compl3	byte	%9.0g	BH20	6M Pt_Access_Physical_Activity_Compliance	115	2.2	0.7	1.0	4.0	0.5	0.577	3.507
560	pt_phys_abili~3	byte	%9.0g	V5C	6M Ability_to_Perform_Physical_Activity	108	1.7	0.7	1.0	3.0	0.4	0.440	2.278
561	pt_limited_da~3	byte	%8.0g		6M Limited Days_Physical_Activity	84	1.4	3.6	-	21.0	12.9	3.343	15.170
562	smv_pg2_16	byte	%8.0g	Y_N	6M Cigarette Use	115	0.1	0.3	-	1.0	0.1	3.384	12.450
563	smv_pg2_17	byte	%8.0g		6M Cigs Smoked per Day	10	6.4	6.4	-	20.0	41.4	0.774	2.890
564	smv_pg2_18	byte	%8.0g	Y_N	6M Alcohol Use	114	0.3	0.5	-	1.0	0.2	0.976	1.953
565	smv_pg2_19	str18	%18s		6M Drinks Consumed per Day	0					-	0.034	5.078
566	smv_pg2_20	byte	%8.0g	Y_N	6M Illicit Drug Use	115	0.0	0.2	-	1.0	0.0	5.078	26.786
567	smv_pg2_21	byte	%9.0g	V5C	6M Illicit Drug Use Change	5	2.8	0.4	2.0	3.0	0.2	(1.500)	3.250
568	pt_health3	byte	%9.0g	BH20	6M Pt Assess General State of Health	115	2.0	0.6	1.0	3.0	0.4	-	2.738
569	med_a_forget3	byte	%8.0g	Y_N	6M Med Adherence Forget	117	0.4	0.5	-	1.0	0.2	0.294	1.086
570	med_a_careless3	byte	%8.0g	Y_N	6M Med Adherence Careless	116	0.2	0.4	-	1.0	0.2	1.265	2.600
571	med_better3	byte	%8.0g	Y_N	6M Med Adherence Feeling Better	116	0.2	0.4	-	1.0	0.2	1.209	2.461
572	med_worse3	byte	%8.0g	Y_N	6M Med Adherence Feeling Worse	117	0.2	0.4	-	1.0	0.2	1.168	2.364
573	med_a_score3	byte	%8.0g		6M MedAdherence Score 1-4	99	1.3	1.3	-	4.0	1.6	0.618	2.236
574	hb_a3	byte	%17.0g	BH6	6M HB Severity Activity Interference	117	2.0	0.8	1.0	4.0	0.6	0.578	3.284
575	hb_b3	byte	%8.0g	BH7	6M HB Severity Get Worrisome Illnesses	116	2.3	0.7	1.0	3.0	0.5	(0.424)	1.963
576	hb_c3	byte	%13.0g	BH8	6M HB Susceptibility Mild Cold	116	2.4	0.9	1.0	4.0	0.7	(0.118)	2.318
577	hb_d3	byte	%13.0g	BH8	6M HB Susceptibility Cavity	117	2.9	0.8	1.0	4.0	0.7	0.067	1.885
578	hb_e3	byte	%13.0g	BH8	6M HB Susceptibility Seasonal Flu	117	2.7	0.8	1.0	4.0	0.6	(0.372)	2.791
579	hb_f3	byte	%13.0g	BH8	6M HB Susceptibility Heart Attack	113	3.1	0.7	1.0	4.0	0.5	(0.304)	2.611
580	hb_g3	byte	%13.0g	BH8	6M HB Susceptibility 3Days in Bed	116	3.1	0.7	1.0	4.0	0.5	(0.605)	3.560
581	hb_h3	byte	%8.0g	BH7	6M HB Susceptibility Ease of Illness	117	2.7	0.5	1.0	3.0	0.3	(1.591)	4.581
582	hb_i3	byte	%16.0g	BH14	6M HB Severity Mild Cold	114	1.3	0.6	1.0	4.0	0.4	2.469	9.222
583	hb_j3	long	%16.0g	BH14	6M HB Severity Heart Attack	111	2.3	1.3	1.0	4.0	1.7	0.283	1.363
584	hb_k3	byte	%16.0g	BH14	6M HB Severity Cavity	114	2.2	1.2	1.0	4.0	1.4	0.450	1.645
585	hb_l3	byte	%16.0g	BH14	6M HB Severity 3Days in Bed	117	2.4	1.2	1.0	4.0	1.5	0.113	1.421
586	hb_m3	byte	%8.0g	BH7	6M HB Severity Get Serious Illnesses	117	2.5	0.7	1.0	3.0	0.5	(0.953)	2.518
587	hb_n3	byte	%14.0g	BH19	6M HB Health Status Compared to Other	115	1.4	0.5	1.0	3.0	0.3	0.456	1.665
588	hb_o3	byte	%9.0g	BH20	6M HB Health Status Describe your Health	117	2.1	0.6	1.0	3.0	0.4	(0.026)	2.792
589	hb_p3	byte	%8.0g	BH7	6M HB Barriers Too Much Effort	117	2.2	0.8	1.0	3.0	0.6	(0.458)	1.697
590	hb_q3	byte	%8.0g	BH7	6M HB Locus of Control Avoidance	116	1.1	0.4	1.0	3.0	0.1	3.665	16.539
591	hb_r3	byte	%8.0g	BH7	6M HB Locus of Control Personal Care	114	1.4	0.7	1.0	3.0	0.5	1.341	3.379
592	hb_s3	byte	%8.0g	BH7	6M HB Trust in MD Doctors Help Most	117	1.3	0.6	1.0	3.0	0.4	1.717	4.786
593	hb_t3	byte	%8.0g	BH7	6M HB Trust in MD Home Remedies	115	2.4	0.6	1.0	3.0	0.4	(0.495)	2.331
594	hb_u3	byte	%8.0g	BH7	6M HB Trust in MD Doctors Can't Help	115	2.8	0.5	1.0	3.0	0.3	(2.372)	7.580

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
595	hb_v3	byte	%13.0g	BH8	6M HB Barriers Med Costs	116	2.9	0.8	1.0	4.0	0.7	(0.609)	3.025
596	hb_w3	byte	%13.0g	BH8	6M HB Barriers Felt Worse	113	2.5	1.0	1.0	4.0	0.9	0.094	2.084
597	hb_x3	byte	%13.0g	BH8	6M HB Barriers Inconvenient	114	3.2	0.7	1.0	4.0	0.5	(0.768)	4.043
598	hb_y3	byte	%13.0g	BH8	6M HB Barriers Heard Meds Dangerous	113	2.8	0.8	1.0	4.0	0.7	(0.186)	2.301
599	hb_z3	byte	%8.0g	BH7	6M HB Trust in MD Doctors Prevent Illness	117	1.3	0.5	1.0	3.0	0.3	1.795	5.358
600	hb_aa3	byte	%20.0g	BH32	6M HB Health Concern How Concerned	117	1.2	0.5	1.0	3.0	0.2	2.853	10.453
601	hb_ab3	byte	%13.0g	BH33	6M HB Health Concern Current Self-Care	117	2.0	0.6	1.0	3.0	0.4	0.024	2.390
602	hb_ac3	byte	%13.0g	BH8	6M HB Health Concern Improved Self-Care	116	1.2	0.5	1.0	4.0	0.2	2.703	12.835
603	hb_ad3	byte	%8.0g	BH7	6M HB Health Concern More Important Things	116	2.4	0.8	1.0	3.0	0.6	(0.826)	2.103
604	under_med3	byte	%9.0g	BH20	6M Understand Meds	116	1.7	0.6	1.0	3.0	0.3	0.167	2.319
605	likely_med3	byte	%13.0g	BH8	6M Likely to Take Meds	114	1.4	0.6	1.0	4.0	0.4	1.786	7.247
606	under_diet3	byte	%9.0g	BH20	6M Understand Healthy Diet	114	1.8	0.6	1.0	3.0	0.3	0.110	2.525
607	likely_diet3	byte	%13.0g	BH8	6M Likely to Maintain Diet	116	1.7	0.6	1.0	4.0	0.4	0.566	3.655
608	under_exer3	byte	%9.0g	BH20	6M Understand Healthy Phys Activity	117	1.8	0.6	1.0	3.0	0.3	0.042	2.579
609	likely_exer3	byte	%13.0g	BH8	6M Likely to Maintain Physical Activity	117	1.7	0.6	1.0	4.0	0.4	0.507	3.688
610	limit_phy3	float	%8.0g		6M Last 30 Days Poor Physical Health	113	1.8	3.5	-	15.0	11.9	2.334	8.176
611	limit_ment3	byte	%8.0g		6M Last 30 Days Poor Mental Health	113	1.1	3.7	-	30.0	13.8	5.345	37.013
612	limit_all3	float	%8.0g		6M Last 30 Days Limited by Health	113	1.4	3.3	-	14.0	10.8	2.628	9.288
613	pt_use_cuff3	byte	%10.0g	Monitor_Use	6M Proper Use Cuff Placement	112	1.0	0.1	1.0	2.0	0.0	10.441	110.009
614	sm_sdf_pg1_2	byte	%8.0g	Y_N	6M Proper Use Cuff Placement Supp	4	0.3	0.5	-	1.0	0.3	1.155	2.333
615	pt_use_sensor3	byte	%10.0g	Monitor_Use	6M Proper Use Sensor Position	112	1.0	0.1	1.0	2.0	0.0	10.441	110.009
616	sm_sdf_pg1_4	byte	%8.0g	Y_N	6M Proper Use Sensor Position Supp	4	0.3	0.5	-	1.0	0.3	1.155	2.333
617	pt_use_arm3	byte	%10.0g	Monitor_Use	6M Proper Use Arm Position	112	1.0	-	1.0	1.0	-	.	.
618	sm_sdf_pg1_6	byte	%8.0g	Y_N	6M Proper Use Arm Position Supp	3	-	-	-	-	-	.	.
619	pt_use_machine3	byte	%10.0g	Monitor_Use	6M Proper Use Machine Activation	112	1.0	-	1.0	1.0	-	.	.
620	sm_sdf_pg1_8	byte	%8.0g	Y_N	6M Proper Use Machine Activation Supp	3	-	-	-	-	-	.	.
621	pt_use_pt_calm3	byte	%10.0g	Monitor_Use	6M Proper Use Patient Calm	112	1.0	-	1.0	1.0	-	.	.
622	sm_sdf_pg1_10	byte	%8.0g	Y_N	6M Proper Use Patient Calm_Supp	3	-	-	-	-	-	.	.
623	pt_use_sbp_dbp3	byte	%10.0g	Monitor_Use	6M Proper Use SBP-DBP Identified	111	1.0	-	1.0	1.0	-	.	.
624	sm_sdf_pg1_12	byte	%8.0g	Y_N	6M Proper Use SBP-DBP Identified Supp	3	-	-	-	-	-	.	.
625	pt_use_unders~3	byte	%8.0g	Y_N	6M Proper Use Pt Confirms Understanding	104	1.0	-	1.0	1.0	-	.	.
626	pt_controlled3	byte	%22.0g	Likert6	6M BP Well Controlled	113	4.2	0.9	2.0	6.0	0.8	0.463	2.892
627	pt_participate3	byte	%22.0g	Likert6	6M Actively Participate BP Mgmt	113	4.6	0.8	3.0	6.0	0.7	0.544	2.126
628	pt_u_meds3	byte	%22.0g	Likert6	6M Understand Meds Influence BP	111	4.6	0.8	3.0	6.0	0.7	0.555	2.071
629	pt_u_dose3	byte	%22.0g	Likert6	6M Understand Dose Influence BP	114	4.6	0.8	3.0	6.0	0.6	0.610	2.199
630	pt_meds_work3	byte	%22.0g	Likert6	6M Believe Meds Working	112	4.5	0.8	3.0	6.0	0.7	0.538	2.328
631	pt_u_diet3	byte	%22.0g	Likert6	6M Understand Diet Influence BP	114	4.8	0.8	4.0	6.0	0.7	0.305	1.471
632	pt_u_exer3	byte	%22.0g	Likert6	6M Understand Phys Activity Influence BP	113	4.9	0.9	4.0	6.0	0.8	0.226	1.329
633	pt_knows_goal3	byte	%22.0g	Likert6	6M Know BP Goal	113	4.7	0.9	3.0	6.0	0.8	0.558	1.719
634	fpf_pg1_1	byte	%22.0g	Likert6	Final Syst Helped Pt Improve BP	104	4.9	0.9	3.0	6.0	0.8	(0.038)	1.637
635	fpf_pg1_2	byte	%22.0g	Likert6	Final Syst Helped Pt Actively Participate	104	5.0	0.9	3.0	6.0	0.7	(0.183)	1.593
636	fpf_pg1_3	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Meds	104	4.8	0.9	3.0	6.0	0.7	0.197	1.899
637	fpf_pg1_4	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Dose	104	4.7	0.9	3.0	6.0	0.8	0.397	1.870
638	fpf_pg1_5	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Med Control	103	4.8	0.9	3.0	6.0	0.8	0.243	1.744
639	fpf_pg1_6	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Diet	103	5.0	0.9	3.0	6.0	0.8	(0.089)	1.603
640	fpf_pg1_7	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Phys Activity	101	4.8	0.9	3.0	6.0	0.7	0.276	1.802
641	fpf_pg1_8	byte	%22.0g	Likert6	Final Syst Helped Pt Understand Goal	102	4.8	0.9	3.0	6.0	0.9	0.108	1.597
642	fpf_pg1_9	byte	%22.0g	Likert6	Final Syst Helped Pt Indentify BP Changes	103	4.8	0.9	3.0	6.0	0.8	0.223	1.711
643	fpf_pg1_10	byte	%22.0g	Likert6	Final Syst Helped Pt Communicate w MD	102	4.9	0.9	3.0	6.0	0.7	0.133	1.573
644	fpf_pg1_11	byte	%22.0g	Likert6	Final Syst Helped Pt Identify Problems	100	4.7	0.9	3.0	6.0	0.8	0.080	2.055
645	fpf_pg1_12	byte	%22.0g	Likert6	Final Pt Prefers Home Monitoring	100	5.2	0.9	3.0	6.0	0.8	(0.628)	2.087
646	call_sessions	int	%8.0g			118	36.9	25.7	-	122.0	661.8	0.702	3.413
647	complete_calls	int	%8.0g			118	33.3	24.0	-	118.0	577.0	0.821	3.789
648	valid_calls	int	%8.0g			118	31.8	23.7	-	115.0	560.8	0.876	3.882

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
649	valid_calls_25	byte	%8.0g			118	0.6	0.5	-	1.0	0.2	(0.239)	1.057
650	valid_calls_10	byte	%8.0g			118	0.8	0.4	-	1.0	0.2	(1.610)	3.593
651	valid_calls_6	byte	%8.0g			118	0.9	0.3	-	1.0	0.1	(2.490)	7.201
652	ave_pills_per~y	float	%8.0g			114	2.8	1.5	0.2	7.4	2.2	0.771	3.408
653	ave_exercise_~y	float	%8.0g			114	2.1	0.5	1.0	3.0	0.3	0.017	2.555
654	call_q1_yes	int	%8.0g			1	140.0	.	140.0	140.0	.	.	.
655	call_q2_yes	byte	%8.0g			0					-	-	2.982
656	call_q3_yes	byte	%8.0g			0					-	2.982	4.291
657	call_q4_yes	byte	%8.0g			113	1.0	1.7	-	14.0	3.0	4.291	30.350
658	call_q5_yes	byte	%8.0g			51	1.1	2.6	-	18.0	6.9	5.496	35.550
659	call_q6_yes	byte	%8.0g			51	0.5	3.1	-	22.0	9.5	6.830	48.096
660	call_q7_yes	byte	%8.0g			49	0.9	1.9	-	12.0	3.7	4.302	24.407
661	call_q8_yes	byte	%8.0g			46	0.5	1.0	-	5.0	1.0	2.553	10.766
662	call_q9_yes	byte	%8.0g			0					-	0.938	3.225
663	call_q24_yes	byte	%8.0g			114	0.4	1.0	-	6.0	0.9	3.225	15.637
664	call_q25_yes	byte	%8.0g			30	0.4	1.0	-	5.0	1.0	3.507	16.028
665	call_q26_yes	byte	%8.0g			29	0.2	0.4	-	1.0	0.1	1.734	4.008
666	call_q27_yes	byte	%8.0g			28	0.3	0.5	-	1.0	0.2	0.949	1.900
667	call_q28_yes	byte	%8.0g			28	0.2	0.4	-	1.0	0.2	1.679	3.817
668	call_q30_yes	byte	%8.0g			28	0.8	1.3	-	6.0	1.6	2.714	11.594
669	call_q34_yes	byte	%8.0g			114	2.2	3.4	-	23.0	11.5	3.477	18.288
670	call_q37_yes	byte	%8.0g			114	0.6	1.1	-	6.0	1.2	2.772	11.521
671	call_q40_yes	byte	%8.0g			114	1.1	5.1	-	41.0	25.5	6.892	51.060
672	call_q42_yes	byte	%8.0g			114	0.5	1.1	-	7.0	1.1	3.819	20.691
673	call_q43_yes	byte	%8.0g			30	0.1	0.4	-	2.0	0.2	4.064	18.593
674	call_q44_yes	byte	%8.0g			30	0.8	1.1	-	4.0	1.2	1.840	6.155
675	call_q45_yes	byte	%8.0g			30	0.2	0.4	-	1.0	0.1	1.789	4.200
676	call_q46_yes	byte	%8.0g			30	0.4	0.6	-	2.0	0.3	1.154	3.331
677	call_q47_yes	byte	%8.0g			30	0.0	0.2	-	1.0	0.0	5.199	28.034
678	call_q48_yes	byte	%8.0g			30	0.3	0.5	-	2.0	0.3	1.336	3.817
679	call_q49_yes	byte	%8.0g			30	0.5	0.7	-	2.0	0.5	1.197	2.953
680	call_q54_yes	byte	%8.0g			0					-	0.193	3.212
681	call_q56_yes	byte	%8.0g			114	0.1	0.4	-	2.0	0.2	3.212	12.586
682	call_q58_yes	byte	%8.0g			114	0.3	0.7	-	3.0	0.4	2.433	8.271
683	call_q61_yes	byte	%8.0g			114	0.6	1.1	-	6.0	1.3	2.685	10.933
684	call_q62_yes	byte	%8.0g			114	0.8	1.5	-	10.0	2.2	3.624	19.999
685	sbp_call1	int	%8.0g			65	128.8	15.1	96.0	178.0	227.6	0.669	4.105
686	sbp_call2	int	%8.0g			78	129.9	18.7	89.0	207.0	348.9	1.130	6.003
687	sbp_call3	int	%8.0g			89	127.3	17.1	87.0	189.0	293.4	0.678	4.365
688	sbp_call4	int	%8.0g			96	127.9	17.4	85.0	184.0	303.5	0.463	4.261
689	sbp_call5	int	%8.0g			92	125.8	15.3	93.0	186.0	232.7	0.690	5.051
690	sbp_call6	int	%8.0g			95	126.8	14.7	99.0	165.0	216.6	0.321	2.590
691	sbp_call7	int	%8.0g			91	126.8	14.6	102.0	179.0	212.9	0.984	4.673
692	sbp_call8	int	%8.0g			91	124.9	14.0	91.0	165.0	196.5	0.123	3.108
693	sbp_call9	int	%8.0g			81	127.1	15.0	104.0	188.0	225.2	1.133	5.341
694	sbp_call10	int	%8.0g			93	126.5	17.0	79.0	186.0	287.9	0.594	4.781
695	sbp_call11	int	%8.0g			84	125.5	15.3	91.0	178.0	233.0	0.540	4.077
696	sbp_call12	int	%8.0g			84	124.4	16.3	98.0	205.0	265.3	1.393	8.386
697	sbp_call13	int	%8.0g			87	124.3	16.7	95.0	181.0	280.4	0.896	4.219
698	sbp_call14	int	%8.0g			79	124.6	11.7	91.0	152.0	136.0	(0.194)	2.810
699	sbp_call15	int	%8.0g			72	125.3	14.4	82.0	159.0	208.7	0.100	3.145
700	sbp_call16	int	%8.0g			77	126.4	14.4	92.0	173.0	206.4	0.609	3.629
701	sbp_call17	int	%8.0g			78	123.7	14.2	95.0	155.0	200.8	0.048	2.309
702	sbp_call18	int	%8.0g			73	122.7	14.2	93.0	160.0	200.7	0.596	3.136

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
703	sbp_call19	int	%8.0g			74	124.1	14.1	92.0	160.0	197.6	0.131	2.877
704	sbp_call20	int	%8.0g			75	124.8	12.2	96.0	150.0	148.4	(0.212)	2.856
705	sbp_call21	int	%8.0g			71	124.3	11.5	101.0	150.0	132.2	0.137	2.527
706	sbp_call22	int	%8.0g			72	124.4	12.2	104.0	158.0	148.4	0.672	3.292
707	sbp_call23	int	%8.0g			64	123.9	13.3	90.0	162.0	175.6	0.326	3.855
708	sbp_call24	int	%8.0g			62	122.9	11.3	101.0	155.0	127.6	0.584	3.398
709	sbp_call25	int	%8.0g			63	123.3	12.7	92.0	154.0	162.5	(0.037)	2.910
710	sbp_call26	int	%8.0g			62	123.9	13.2	90.0	160.0	173.4	(0.051)	3.234
711	sbp_call27	int	%8.0g			66	123.6	12.5	96.0	153.0	156.5	0.336	3.103
712	sbp_call28	int	%8.0g			60	123.2	13.3	98.0	169.0	177.1	0.901	4.259
713	sbp_call29	int	%8.0g			58	122.4	12.8	98.0	168.0	163.2	1.036	4.983
714	sbp_call30	int	%8.0g			59	124.7	13.0	101.0	158.0	169.4	0.233	2.374
715	sbp_call31	int	%8.0g			57	125.0	13.2	99.0	154.0	174.1	0.239	2.527
716	sbp_call32	int	%8.0g			61	124.5	14.3	98.0	161.0	204.2	0.376	2.851
717	sbp_call33	int	%8.0g			55	125.6	13.2	100.0	156.0	175.5	0.250	2.699
718	sbp_call34	int	%8.0g			53	123.8	12.3	85.0	151.0	151.7	(0.318)	3.546
719	sbp_call35	int	%8.0g			54	122.0	13.1	86.0	156.0	171.5	(0.315)	3.254
720	sbp_call36	int	%8.0g			50	122.4	11.8	85.0	145.0	139.3	(0.577)	3.874
721	sbp_call37	int	%8.0g			48	123.7	13.6	97.0	163.0	185.0	0.596	3.484
722	sbp_call38	int	%8.0g			49	123.9	12.5	100.0	153.0	156.2	0.240	2.600
723	sbp_call39	int	%8.0g			41	126.5	12.4	97.0	156.0	154.6	(0.044)	2.925
724	sbp_call40	int	%8.0g			40	123.6	14.8	101.0	191.0	217.8	2.236	11.993
725	sbp_call41	int	%8.0g			43	122.0	11.5	93.0	148.0	133.0	(0.081)	3.288
726	sbp_call42	int	%8.0g			41	126.3	11.0	103.0	156.0	120.7	0.440	3.563
727	sbp_call43	int	%8.0g			42	124.2	13.6	98.0	161.0	184.2	0.293	3.043
728	sbp_call44	int	%8.0g			40	122.9	12.7	100.0	161.0	160.3	0.821	4.105
729	sbp_call45	int	%8.0g			40	127.8	14.6	104.0	161.0	213.0	0.662	2.989
730	sbp_call46	int	%8.0g			38	121.9	9.8	104.0	157.0	95.9	1.215	5.720
731	sbp_call47	int	%8.0g			39	120.0	14.6	98.0	175.0	213.0	1.396	6.272
732	sbp_call48	int	%8.0g			33	123.5	17.3	92.0	190.0	297.8	1.400	7.973
733	sbp_call49	int	%8.0g			31	122.4	14.9	83.0	153.0	222.7	(0.138)	3.457
734	sbp_call50	int	%8.0g			32	123.1	10.7	100.0	144.0	115.1	(0.013)	2.473
735	sbp_call51	int	%8.0g			31	123.4	12.5	100.0	155.0	155.4	0.406	2.831
736	sbp_call52	int	%8.0g			31	123.3	12.3	106.0	157.0	151.4	0.910	3.420
737	sbp_call53	int	%8.0g			28	121.1	11.3	96.0	150.0	126.9	0.335	3.708
738	sbp_call54	int	%8.0g			27	124.8	12.1	89.0	149.0	146.0	(0.439)	4.685
739	sbp_call55	int	%8.0g			28	124.3	14.6	91.0	153.0	213.9	(0.351)	3.429
740	sbp_call56	int	%8.0g			27	121.0	12.0	93.0	149.0	143.5	0.127	3.148
741	sbp_call57	int	%8.0g			26	124.2	13.2	88.0	149.0	173.3	(0.873)	3.891
742	sbp_call58	int	%8.0g			22	124.1	13.8	103.0	155.0	190.7	0.429	2.814
743	sbp_call59	int	%8.0g			18	126.7	8.8	104.0	144.0	78.1	(0.396)	4.126
744	sbp_call60	int	%8.0g			19	125.4	13.4	98.0	150.0	180.7	(0.022)	2.945
745	sbp_call61	int	%8.0g			18	124.3	10.3	105.0	147.0	106.5	0.302	2.928
746	sbp_call62	int	%8.0g			15	125.9	13.9	107.0	158.0	194.5	0.564	2.910
747	sbp_call63	int	%8.0g			14	127.7	6.6	119.0	139.0	43.0	0.498	1.883
748	sbp_call64	int	%8.0g			15	124.3	12.2	107.0	152.0	148.8	0.708	2.837
749	sbp_call65	int	%8.0g			15	129.0	10.8	101.0	148.0	117.4	(0.865)	4.436
750	sbp_call66	int	%8.0g			13	127.3	13.1	98.0	145.0	171.9	(0.957)	3.341
751	sbp_call67	int	%8.0g			11	124.1	10.6	109.0	145.0	113.3	0.283	2.697
752	sbp_call68	int	%8.0g			11	129.2	10.5	116.0	150.0	110.6	0.887	2.653
753	sbp_call69	int	%8.0g			11	127.8	16.9	108.0	159.0	286.4	0.663	2.192
754	sbp_call70	int	%8.0g			10	124.0	10.7	101.0	138.0	115.1	(0.688)	3.240
755	sbp_call71	int	%8.0g			11	124.8	11.6	107.0	150.0	133.8	0.735	3.311
756	sbp_call72	int	%8.0g			11	123.1	9.8	108.0	142.0	95.5	0.495	2.820

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
757	sbp_call73	int	%8.0g			10	131.8	13.3	109.0	153.0	175.7	(0.089)	2.231
758	sbp_call74	int	%8.0g			8	129.4	9.0	110.0	137.0	81.7	(1.326)	3.635
759	sbp_call75	int	%8.0g			8	125.3	13.6	104.0	142.0	183.9	(0.212)	1.781
760	sbp_call76	int	%8.0g			9	125.1	13.2	105.0	144.0	175.1	(0.333)	2.094
761	sbp_call77	int	%8.0g			8	126.3	10.0	111.0	139.0	99.6	(0.168)	1.744
762	sbp_call78	int	%8.0g			8	127.9	13.6	101.0	146.0	184.7	(0.674)	3.164
763	sbp_call79	int	%8.0g			6	128.0	6.0	119.0	136.0	36.4	(0.210)	2.026
764	sbp_call80	int	%8.0g			5	121.6	14.8	97.0	137.0	218.8	(0.959)	2.761
765	sbp_call81	int	%8.0g			4	129.8	15.4	112.0	148.0	236.3	0.047	1.689
766	sbp_call82	int	%8.0g			5	129.0	14.6	112.0	147.0	213.5	0.166	1.481
767	sbp_call83	int	%8.0g			4	128.3	12.7	113.0	144.0	160.9	0.068	1.985
768	sbp_call84	int	%8.0g			4	137.3	21.1	118.0	156.0	444.9	(0.003)	1.007
769	sbp_call85	int	%8.0g			3	133.3	11.4	124.0	146.0	129.3	0.492	1.500
770	sbp_call86	int	%8.0g			4	131.8	14.4	113.0	144.0	206.9	(0.482)	1.633
771	sbp_call87	int	%8.0g			4	132.5	16.6	112.0	147.0	276.3	(0.326)	1.438
772	sbp_call88	int	%8.0g			4	123.5	10.1	112.0	136.0	102.3	0.151	1.786
773	sbp_call89	int	%8.0g			3	133.0	15.7	115.0	144.0	247.0	(0.656)	1.500
774	sbp_call90	int	%8.0g			3	132.3	17.6	116.0	151.0	310.3	0.239	1.500
775	sbp_call91	int	%8.0g			3	132.7	22.4	107.0	148.0	500.3	(0.668)	1.500
776	sbp_call92	int	%8.0g			3	142.0	22.5	116.0	156.0	508.0	(0.701)	1.500
777	sbp_call93	int	%8.0g			2	140.5	13.4	131.0	150.0	180.5	-	1.000
778	sbp_call94	int	%8.0g			3	133.7	23.2	107.0	149.0	537.3	(0.683)	1.500
779	sbp_call95	int	%8.0g			3	130.0	21.5	108.0	151.0	463.0	(0.085)	1.500
780	sbp_call96	int	%8.0g			3	126.0	13.9	110.0	135.0	193.0	(0.691)	1.500
781	sbp_call97	int	%8.0g			3	132.0	20.4	116.0	155.0	417.0	0.556	1.500
782	sbp_call98	int	%8.0g			3	130.3	13.0	117.0	143.0	169.3	(0.094)	1.500
783	sbp_call99	int	%8.0g			3	133.3	13.4	118.0	143.0	180.3	(0.637)	1.500
784	sbp_call101	int	%8.0g			2	130.5	17.7	118.0	143.0	312.5	-	1.000
785	sbp_call102	int	%8.0g			2	121.5	29.0	101.0	142.0	840.5	-	1.000
786	sbp_call103	int	%8.0g			2	124.5	29.0	104.0	145.0	840.5	-	1.000
787	sbp_call104	int	%8.0g			2	123.5	27.6	104.0	143.0	760.5	-	1.000
788	sbp_call105	int	%8.0g			2	127.0	25.5	109.0	145.0	648.0	-	1.000
789	sbp_call106	int	%8.0g			1	140.0	.	140.0	140.0	.	.	.
790	sbp_call107	int	%8.0g			2	112.5	21.9	97.0	128.0	480.5	-	1.000
791	sbp_call108	int	%8.0g			2	122.5	14.8	112.0	133.0	220.5	-	1.000
792	sbp_call109	int	%8.0g			2	131.0	11.3	123.0	139.0	128.0	-	1.000
793	sbp_call110	int	%8.0g			2	127.0	18.4	114.0	140.0	338.0	-	1.000
794	sbp_call111	int	%8.0g			2	124.5	23.3	108.0	141.0	544.5	-	1.000
795	sbp_call112	int	%8.0g			2	120.5	14.8	110.0	131.0	220.5	-	1.000
796	sbp_call113	int	%8.0g			1	113.0	.	113.0	113.0	.	.	.
797	sbp_call114	int	%8.0g			2	141.0	4.2	138.0	144.0	18.0	-	1.000
798	sbp_call115	int	%8.0g			2	129.0	4.2	126.0	132.0	18.0	-	1.000
799	sbp_call116	int	%8.0g			2	124.0	1.4	123.0	125.0	2.0	-	1.000
800	sbp_call117	int	%8.0g			2	118.5	9.2	112.0	125.0	84.5	-	1.000
801	sbp_call118	int	%8.0g			2	115.5	9.2	109.0	122.0	84.5	-	1.000
802	sbp_call119	int	%8.0g			1	128.0	.	128.0	128.0	.	.	.
803	sbp_call120	int	%8.0g			1	135.0	.	135.0	135.0	.	.	.
804	sbp_call121	int	%8.0g			1	131.0	.	131.0	131.0	.	.	.
805	sbp_call122	int	%8.0g			1	138.0	.	138.0	138.0	.	.	.
806	dbp_call1	int	%8.0g			65	84.3	10.7	67.0	111.0	114.0	0.491	2.523
807	dbp_call2	int	%8.0g			78	84.5	10.6	60.0	108.0	112.4	0.025	2.542
808	dbp_call3	int	%8.0g			89	83.0	9.8	62.0	109.0	96.6	0.227	3.182
809	dbp_call4	int	%8.0g			96	82.9	11.2	55.0	110.0	124.9	0.020	2.783
810	dbp_call5	int	%8.0g			92	81.6	10.5	50.0	104.0	111.0	(0.059)	2.840

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
811	dbp_call6	int	%8.0g			95	82.7	11.1	61.0	114.0	123.9	0.423	3.015
812	dbp_call7	int	%8.0g			91	81.6	9.1	61.0	98.0	83.5	(0.338)	2.293
813	dbp_call8	int	%8.0g			91	80.6	8.2	64.0	97.0	67.9	(0.059)	2.487
814	dbp_call9	int	%8.0g			81	81.4	7.8	62.0	109.0	61.5	0.841	4.974
815	dbp_call10	int	%8.0g			93	80.3	10.2	53.0	102.0	104.5	(0.114)	2.663
816	dbp_call11	int	%8.0g			84	79.5	10.4	57.0	98.0	107.9	(0.297)	2.210
817	dbp_call12	int	%8.0g			84	79.7	10.4	54.0	116.0	108.3	0.535	3.840
818	dbp_call13	int	%8.0g			87	79.6	10.0	55.0	101.0	100.3	(0.023)	2.685
819	dbp_call14	int	%8.0g			79	80.3	9.2	59.0	101.0	85.5	0.063	2.871
820	dbp_call15	int	%8.0g			72	79.4	9.7	58.0	100.0	94.4	0.246	2.659
821	dbp_call16	int	%8.0g			77	81.7	8.9	62.0	101.0	79.4	0.053	2.660
822	dbp_call17	int	%8.0g			78	79.2	9.1	50.0	107.0	82.4	(0.317)	4.115
823	dbp_call18	int	%8.0g			73	79.2	8.4	59.0	101.0	70.9	(0.152)	3.489
824	dbp_call19	int	%8.0g			74	79.5	8.6	64.0	102.0	73.5	0.032	2.508
825	dbp_call20	byte	%8.0g			75	79.9	7.7	56.0	100.0	59.7	(0.507)	4.156
826	dbp_call21	byte	%8.0g			71	79.2	8.8	58.0	94.0	77.2	(0.357)	2.469
827	dbp_call22	int	%8.0g			72	80.4	8.6	58.0	99.0	74.8	(0.248)	2.673
828	dbp_call23	int	%8.0g			64	79.8	7.9	58.0	99.0	61.9	(0.039)	3.069
829	dbp_call24	byte	%8.0g			62	79.7	8.0	63.0	96.0	63.3	(0.133)	2.354
830	dbp_call25	byte	%8.0g			63	78.7	9.8	55.0	97.0	96.1	(0.408)	2.673
831	dbp_call26	byte	%8.0g			62	79.8	9.0	63.0	99.0	80.3	(0.057)	2.064
832	dbp_call27	int	%8.0g			66	79.4	8.8	64.0	111.0	76.9	0.589	4.260
833	dbp_call28	int	%8.0g			60	78.5	8.8	63.0	113.0	77.4	1.055	5.643
834	dbp_call29	byte	%8.0g			58	78.9	7.6	65.0	95.0	57.2	0.222	2.277
835	dbp_call30	byte	%8.0g			59	79.2	8.7	61.0	100.0	75.4	0.441	2.569
836	dbp_call31	byte	%8.0g			57	79.1	9.3	63.0	99.0	85.9	0.168	2.190
837	dbp_call32	int	%8.0g			61	80.1	10.0	62.0	115.0	99.8	0.666	4.005
838	dbp_call33	int	%8.0g			55	80.3	8.7	64.0	102.0	75.5	0.519	2.977
839	dbp_call34	byte	%8.0g			53	77.8	8.5	60.0	96.0	71.7	(0.049)	2.530
840	dbp_call35	int	%8.0g			54	78.3	9.6	59.0	105.0	91.2	0.089	3.366
841	dbp_call36	byte	%8.0g			50	78.7	8.3	55.0	94.0	69.2	(0.811)	3.723
842	dbp_call37	int	%8.0g			48	77.8	9.9	63.0	109.0	97.3	0.826	3.897
843	dbp_call38	int	%8.0g			49	79.6	10.2	59.0	110.0	104.3	0.497	3.579
844	dbp_call39	byte	%8.0g			41	79.0	8.0	59.0	98.0	64.5	(0.175)	3.330
845	dbp_call40	byte	%8.0g			40	79.0	8.5	58.0	99.0	73.0	0.104	2.771
846	dbp_call41	int	%8.0g			43	78.4	9.0	61.0	116.0	81.0	1.440	8.535
847	dbp_call42	int	%8.0g			41	80.5	9.8	61.0	113.0	95.5	0.779	5.165
848	dbp_call43	int	%8.0g			42	79.2	10.5	60.0	116.0	109.8	0.715	5.017
849	dbp_call44	int	%8.0g			40	77.3	10.0	47.0	108.0	99.4	(0.076)	5.363
850	dbp_call45	int	%8.0g			40	81.1	8.7	60.0	104.0	76.0	0.328	3.678
851	dbp_call46	byte	%8.0g			38	77.6	7.8	56.0	88.0	61.6	(0.745)	2.855
852	dbp_call47	int	%8.0g			39	77.7	9.0	59.0	103.0	80.3	0.281	3.299
853	dbp_call48	int	%8.0g			33	77.8	10.4	56.0	104.0	109.1	(0.160)	3.520
854	dbp_call49	byte	%8.0g			31	77.0	8.6	59.0	91.0	74.5	(0.400)	2.623
855	dbp_call50	byte	%8.0g			32	77.4	8.8	61.0	98.0	78.0	(0.010)	2.603
856	dbp_call51	byte	%8.0g			31	78.4	8.1	62.0	98.0	65.5	0.080	2.833
857	dbp_call52	byte	%8.0g			31	76.6	5.6	64.0	90.0	30.9	(0.111)	3.203
858	dbp_call53	byte	%8.0g			28	76.5	8.5	53.0	97.0	72.2	(0.327)	4.289
859	dbp_call54	byte	%8.0g			27	78.2	7.5	56.0	88.0	56.5	(1.095)	4.135
860	dbp_call55	int	%8.0g			28	79.4	8.9	58.0	102.0	79.4	(0.026)	3.606
861	dbp_call56	byte	%8.0g			27	77.1	8.8	59.0	92.0	77.1	(0.390)	2.055
862	dbp_call57	byte	%8.0g			26	76.2	8.0	60.0	88.0	64.7	(0.595)	2.434
863	dbp_call58	byte	%8.0g			22	77.1	6.9	64.0	90.0	47.5	(0.165)	2.591
864	dbp_call59	byte	%8.0g			18	77.0	8.8	64.0	89.0	77.3	(0.150)	1.592

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
865	dbp_call60	byte	%8.0g			19	78.4	9.5	63.0	99.0	90.8	0.204	2.525
866	dbp_call61	byte	%8.0g			18	77.2	5.9	67.0	88.0	35.0	(0.106)	2.094
867	dbp_call62	byte	%8.0g			15	77.1	6.8	62.0	89.0	46.6	(0.304)	3.168
868	dbp_call63	byte	%8.0g			14	79.6	5.0	67.0	86.0	25.3	(0.973)	3.885
869	dbp_call64	byte	%8.0g			15	77.8	8.6	58.0	89.0	74.6	(0.560)	2.859
870	dbp_call65	byte	%8.0g			15	80.7	8.0	70.0	98.0	63.5	0.327	2.657
871	dbp_call66	byte	%8.0g			13	77.0	6.6	65.0	87.0	43.2	(0.077)	2.046
872	dbp_call67	byte	%8.0g			11	78.5	6.2	67.0	88.0	37.9	(0.306)	2.328
873	dbp_call68	byte	%8.0g			11	81.3	5.4	73.0	87.0	29.0	(0.310)	1.473
874	dbp_call69	byte	%8.0g			11	76.8	8.5	54.0	84.0	73.0	(1.851)	5.774
875	dbp_call70	byte	%8.0g			10	75.9	5.6	66.0	86.0	31.4	(0.032)	2.721
876	dbp_call71	byte	%8.0g			11	75.3	6.0	63.0	82.0	35.6	(0.948)	2.609
877	dbp_call72	byte	%8.0g			11	76.4	5.8	67.0	83.0	33.3	(0.528)	1.831
878	dbp_call73	byte	%8.0g			10	77.9	8.6	66.0	92.0	73.4	0.238	1.815
879	dbp_call74	byte	%8.0g			8	75.5	7.1	65.0	84.0	50.9	0.009	1.662
880	dbp_call75	byte	%8.0g			8	76.9	7.2	64.0	86.0	52.1	(0.442)	2.336
881	dbp_call76	byte	%8.0g			9	76.3	5.9	67.0	86.0	35.3	0.264	2.297
882	dbp_call77	byte	%8.0g			8	78.1	6.9	67.0	86.0	47.6	(0.237)	1.816
883	dbp_call78	byte	%8.0g			8	78.8	8.1	66.0	89.0	66.2	(0.322)	1.793
884	dbp_call79	byte	%8.0g			6	75.2	5.6	67.0	82.0	31.0	(0.189)	1.829
885	dbp_call80	byte	%8.0g			5	74.8	13.0	60.0	90.0	169.7	(0.074)	1.388
886	dbp_call81	byte	%8.0g			4	77.5	10.3	69.0	90.0	107.0	0.284	1.369
887	dbp_call82	byte	%8.0g			5	77.6	2.9	75.0	82.0	8.3	0.727	1.984
888	dbp_call83	byte	%8.0g			4	77.3	9.5	66.0	89.0	90.9	0.085	1.888
889	dbp_call84	byte	%8.0g			4	80.5	10.8	69.0	92.0	116.3	-	1.266
890	dbp_call85	byte	%8.0g			3	76.7	6.7	71.0	84.0	44.3	0.431	1.500
891	dbp_call86	byte	%8.0g			4	80.3	8.1	71.0	88.0	65.6	(0.154)	1.276
892	dbp_call87	byte	%8.0g			4	78.3	9.0	69.0	89.0	80.9	0.190	1.468
893	dbp_call88	byte	%8.0g			4	74.0	11.2	60.0	84.0	125.3	(0.356)	1.493
894	dbp_call89	byte	%8.0g			3	79.0	5.6	73.0	84.0	31.0	(0.319)	1.500
895	dbp_call90	byte	%8.0g			3	70.7	2.1	69.0	73.0	4.3	0.528	1.500
896	dbp_call91	byte	%8.0g			3	75.0	10.6	67.0	87.0	112.0	0.595	1.500
897	dbp_call92	byte	%8.0g			3	84.0	14.2	73.0	100.0	201.0	0.567	1.500
898	dbp_call93	byte	%8.0g			2	81.5	9.2	75.0	88.0	84.5	-	1.000
899	dbp_call94	byte	%8.0g			3	77.7	11.5	71.0	91.0	133.3	0.707	1.500
900	dbp_call95	byte	%8.0g			3	76.0	7.0	71.0	84.0	49.0	0.643	1.500
901	dbp_call96	byte	%8.0g			3	74.3	3.2	72.0	78.0	10.3	0.631	1.500
902	dbp_call97	byte	%8.0g			3	77.7	14.6	62.0	91.0	214.3	(0.285)	1.500
903	dbp_call98	byte	%8.0g			3	72.7	12.1	59.0	82.0	146.3	(0.574)	1.500
904	dbp_call99	byte	%8.0g			3	76.3	3.5	73.0	80.0	12.3	0.173	1.500
905	dbp_call101	byte	%8.0g			2	82.0	9.9	75.0	89.0	98.0	-	1.000
906	dbp_call102	byte	%8.0g			2	78.5	6.4	74.0	83.0	40.5	-	1.000
907	dbp_call103	byte	%8.0g			2	72.0	18.4	59.0	85.0	338.0	-	1.000
908	dbp_call104	byte	%8.0g			2	80.0	9.9	73.0	87.0	98.0	-	1.000
909	dbp_call105	byte	%8.0g			2	81.0	11.3	73.0	89.0	128.0	-	1.000
910	dbp_call106	byte	%8.0g			1	88.0	.	88.0	88.0	.	.	.
911	dbp_call107	byte	%8.0g			2	70.0	11.3	62.0	78.0	128.0	-	1.000
912	dbp_call108	byte	%8.0g			2	78.0	9.9	71.0	85.0	98.0	-	1.000
913	dbp_call109	byte	%8.0g			2	78.5	6.4	74.0	83.0	40.5	-	1.000
914	dbp_call110	byte	%8.0g			2	78.0	5.7	74.0	82.0	32.0	-	1.000
915	dbp_call111	byte	%8.0g			2	79.0	14.1	69.0	89.0	200.0	-	1.000
916	dbp_call112	byte	%8.0g			2	79.5	4.9	76.0	83.0	24.5	-	1.000
917	dbp_call113	byte	%8.0g			1	73.0	.	73.0	73.0	.	.	.
918	dbp_call114	byte	%8.0g			2	85.5	4.9	82.0	89.0	24.5	-	1.000

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
919	dbp_call115	byte	%8.0g			2	78.0	2.8	76.0	80.0	8.0	-	1.000
920	dbp_call116	byte	%8.0g			2	75.0	5.7	71.0	79.0	32.0	-	1.000
921	dbp_call117	byte	%8.0g			2	80.5	6.4	76.0	85.0	40.5	-	1.000
922	dbp_call118	byte	%8.0g			2	73.5	0.7	73.0	74.0	0.5	-	1.000
923	dbp_call119	byte	%8.0g			1	81.0	.	81.0	81.0	.	.	.
924	dbp_call120	byte	%8.0g			1	83.0	.	83.0	83.0	.	.	.
925	dbp_call121	byte	%8.0g			1	79.0	.	79.0	79.0	.	.	.
926	dbp_call122	byte	%8.0g			1	78.0	.	78.0	78.0	.	.	.
927	m_call_n	int	%8.0g		6m_call_n	114	33.0	22.5	1.0	111.0	506.1	0.660	3.156
928	m_valid_calls	int	%8.0g		6m_valid_calls	114	28.6	20.8	-	102.0	432.2	0.740	3.344
929	m_call_span	int	%8.0g		6m_call_span	114	150.4	48.3	-	181.0	2,337.7	(2.022)	5.957
930	avg_between_c~s	float	%8.0g			110	9.2	14.1	1.0	89.5	199.8	4.229	21.573
931	sbp_callz1	int	%8.0g			65	128.8	15.1	96.0	178.0	227.6	0.669	4.105
932	sbp_callz2	int	%8.0g			78	129.9	18.7	89.0	207.0	348.9	1.130	6.003
933	sbp_callz3	int	%8.0g			89	127.3	17.1	87.0	189.0	293.4	0.678	4.365
934	sbp_callz4	int	%8.0g			94	127.9	17.6	85.0	184.0	309.0	0.470	4.205
935	sbp_callz5	int	%8.0g			90	125.9	15.3	93.0	186.0	234.0	0.694	5.074
936	sbp_callz6	int	%8.0g			91	126.9	14.9	99.0	165.0	222.8	0.303	2.538
937	sbp_callz7	int	%8.0g			88	126.6	14.8	102.0	179.0	218.0	1.006	4.646
938	sbp_callz8	int	%8.0g			86	124.5	14.1	91.0	165.0	197.8	0.164	3.158
939	sbp_callz9	int	%8.0g			75	126.1	13.6	104.0	166.0	185.5	0.630	3.131
940	sbp_callz10	int	%8.0g			88	126.0	17.2	79.0	186.0	295.8	0.661	4.832
941	sbp_callz11	int	%8.0g			80	124.8	14.8	91.0	178.0	217.7	0.503	4.405
942	sbp_callz12	int	%8.0g			79	124.3	16.3	98.0	205.0	265.6	1.477	8.871
943	sbp_callz13	int	%8.0g			83	124.7	17.0	95.0	181.0	290.1	0.837	4.055
944	sbp_callz14	int	%8.0g			78	124.7	11.7	91.0	152.0	136.5	(0.220)	2.826
945	sbp_callz15	int	%8.0g			70	125.2	14.2	82.0	159.0	202.8	0.084	3.295
946	sbp_callz16	int	%8.0g			74	126.7	14.6	92.0	173.0	212.8	0.551	3.510
947	sbp_callz17	int	%8.0g			73	124.0	14.2	95.0	155.0	200.4	0.047	2.372
948	sbp_callz18	int	%8.0g			66	123.8	14.2	93.0	160.0	201.2	0.578	2.997
949	sbp_callz19	int	%8.0g			69	124.6	13.5	95.0	160.0	182.7	0.295	2.919
950	sbp_callz20	int	%8.0g			69	124.8	12.0	96.0	150.0	144.9	(0.265)	2.950
951	sbp_callz21	int	%8.0g			62	123.8	12.1	101.0	150.0	147.6	0.231	2.344
952	sbp_callz22	int	%8.0g			67	124.3	12.3	104.0	158.0	150.7	0.752	3.379
953	sbp_callz23	int	%8.0g			57	123.5	13.5	90.0	162.0	182.2	0.323	3.844
954	sbp_callz24	int	%8.0g			54	123.1	11.8	101.0	155.0	138.9	0.578	3.201
955	sbp_callz25	int	%8.0g			57	123.1	13.3	92.0	154.0	176.1	(0.011)	2.736
956	sbp_callz26	int	%8.0g			57	123.1	13.1	90.0	160.0	172.3	(0.023)	3.206
957	sbp_callz27	int	%8.0g			58	122.9	12.9	96.0	153.0	166.2	0.408	3.082
958	sbp_callz28	int	%8.0g			53	123.5	13.3	102.0	169.0	176.8	1.068	4.442
959	sbp_callz29	int	%8.0g			50	122.4	12.8	98.0	168.0	163.5	1.105	5.500
960	sbp_callz30	int	%8.0g			52	124.8	13.5	101.0	158.0	181.7	0.238	2.291
961	sbp_callz31	int	%8.0g			51	124.4	13.5	99.0	154.0	182.8	0.345	2.568
962	sbp_callz32	int	%8.0g			53	125.4	14.6	98.0	161.0	213.5	0.309	2.801
963	sbp_callz33	int	%8.0g			48	126.9	13.2	100.0	156.0	175.1	0.179	2.731
964	sbp_callz34	int	%8.0g			48	125.0	11.2	103.0	151.0	124.8	0.172	2.397
965	sbp_callz35	int	%8.0g			50	123.0	12.4	97.0	156.0	154.9	(0.118)	2.836
966	sbp_callz36	int	%8.0g			45	123.0	12.1	85.0	145.0	145.6	(0.691)	3.989
967	sbp_callz37	int	%8.0g			43	125.2	13.2	101.0	163.0	175.5	0.641	3.492
968	sbp_callz38	int	%8.0g			41	124.0	12.5	100.0	153.0	157.1	0.102	2.582
969	sbp_callz39	int	%8.0g			34	125.4	10.8	97.0	143.0	117.1	(0.338)	2.904
970	sbp_callz40	int	%8.0g			35	124.4	15.1	101.0	191.0	227.3	2.334	12.029
971	sbp_callz41	int	%8.0g			36	121.3	10.6	93.0	147.0	112.5	(0.342)	3.920
972	sbp_callz42	int	%8.0g			37	125.0	10.4	103.0	156.0	108.1	0.502	4.137

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
973	sbp_callz43	int	%8.0g			35	123.4	11.6	103.0	148.0	133.8	0.110	2.582
974	sbp_callz44	int	%8.0g			34	122.6	11.3	100.0	151.0	127.0	0.505	3.290
975	sbp_callz45	int	%8.0g			35	127.6	13.5	104.0	161.0	182.2	0.816	3.676
976	sbp_callz46	int	%8.0g			33	122.9	9.6	109.0	157.0	92.2	1.432	6.015
977	sbp_callz47	int	%8.0g			34	119.3	15.0	98.0	175.0	223.5	1.560	6.744
978	sbp_callz48	int	%8.0g			26	124.5	18.3	92.0	190.0	334.3	1.391	7.732
979	sbp_callz49	int	%8.0g			26	123.8	15.8	83.0	153.0	248.6	(0.359)	3.388
980	sbp_callz50	int	%8.0g			27	124.5	10.8	100.0	144.0	116.6	(0.253)	2.728
981	sbp_callz51	int	%8.0g			22	124.3	10.9	107.0	144.0	118.4	0.129	1.965
982	sbp_callz52	int	%8.0g			22	122.6	11.7	106.0	150.0	137.5	0.610	2.581
983	sbp_callz53	int	%8.0g			18	121.1	7.9	106.0	137.0	62.8	(0.222)	2.673
984	sbp_callz54	int	%8.0g			15	127.2	8.7	110.0	149.0	75.3	0.555	4.413
985	sbp_callz55	int	%8.0g			15	126.1	11.2	102.0	147.0	126.4	(0.020)	2.928
986	sbp_callz56	int	%8.0g			15	119.0	12.7	93.0	139.0	161.0	(0.118)	2.480
987	sbp_callz57	int	%8.0g			13	129.3	10.9	104.0	149.0	118.1	(0.514)	3.809
988	sbp_callz58	int	%8.0g			11	121.5	11.2	104.0	143.0	125.3	0.092	2.657
989	sbp_callz59	int	%8.0g			12	126.5	6.9	118.0	144.0	47.2	1.232	4.674
990	sbp_callz60	int	%8.0g			11	128.8	14.3	103.0	150.0	203.2	(0.102)	2.473
991	sbp_callz61	int	%8.0g			11	126.9	8.2	117.0	147.0	66.7	1.298	4.403
992	sbp_callz62	int	%8.0g			10	125.1	10.6	107.0	138.0	112.8	(0.452)	2.135
993	sbp_callz63	int	%8.0g			11	128.2	5.7	122.0	139.0	33.0	0.650	2.065
994	sbp_callz64	int	%8.0g			12	123.8	13.4	107.0	152.0	179.6	0.768	2.607
995	sbp_callz65	int	%8.0g			11	126.8	11.7	101.0	148.0	137.8	(0.529)	3.820
996	sbp_callz66	int	%8.0g			10	123.4	12.3	98.0	139.0	151.2	(1.044)	3.123
997	sbp_callz67	int	%8.0g			9	123.9	11.9	109.0	145.0	141.1	0.311	2.243
998	sbp_callz68	int	%8.0g			9	128.9	9.2	120.0	150.0	85.1	1.480	4.115
999	sbp_callz69	int	%8.0g			8	126.1	14.5	111.0	152.0	210.1	0.783	2.275
1000	sbp_callz70	int	%8.0g			7	120.6	10.1	101.0	133.0	101.6	(0.909)	3.271
1001	sbp_callz71	int	%8.0g			8	125.3	13.4	107.0	150.0	179.9	0.594	2.612
1002	sbp_callz72	int	%8.0g			7	122.3	10.9	108.0	142.0	118.2	0.516	2.837
1003	sbp_callz73	int	%8.0g			6	129.2	16.9	109.0	153.0	284.6	0.395	1.724
1004	sbp_callz74	int	%8.0g			4	132.3	5.9	124.0	137.0	34.9	(0.749)	1.946
1005	sbp_callz75	int	%8.0g			4	116.5	10.4	104.0	126.0	107.7	(0.264)	1.385
1006	sbp_callz76	int	%8.0g			2	124.5	27.6	105.0	144.0	760.5	-	1.000
1007	sbp_callz77	int	%8.0g			3	127.0	14.0	111.0	137.0	196.0	(0.643)	1.500
1008	sbp_callz78	int	%8.0g			3	129.3	24.7	101.0	146.0	608.3	(0.675)	1.500
1009	sbp_callz79	int	%8.0g			3	128.3	8.6	119.0	136.0	74.3	(0.342)	1.500
1010	sbp_callz80	int	%8.0g			3	120.0	20.7	97.0	137.0	427.0	(0.488)	1.500
1011	sbp_callz81	int	%8.0g			3	131.7	18.2	112.0	148.0	332.3	(0.325)	1.500
1012	sbp_callz82	int	%8.0g			3	133.3	18.7	112.0	147.0	350.3	(0.626)	1.500
1013	sbp_callz83	int	%8.0g			2	120.0	9.9	113.0	127.0	98.0	-	1.000
1014	sbp_callz84	int	%8.0g			2	137.0	26.9	118.0	156.0	722.0	-	1.000
1015	sbp_callz85	int	%8.0g			1	124.0	.	124.0	124.0	.	.	.
1016	sbp_callz86	int	%8.0g			2	128.5	21.9	113.0	144.0	480.5	-	1.000
1017	sbp_callz87	int	%8.0g			2	129.5	24.7	112.0	147.0	612.5	-	1.000
1018	sbp_callz88	int	%8.0g			2	124.0	17.0	112.0	136.0	288.0	-	1.000
1019	sbp_callz89	int	%8.0g			1	115.0	.	115.0	115.0	.	.	.
1020	sbp_callz90	int	%8.0g			1	116.0	.	116.0	116.0	.	.	.
1021	sbp_callz91	int	%8.0g			1	107.0	.	107.0	107.0	.	.	.
1022	sbp_callz92	int	%8.0g			1	116.0	.	116.0	116.0	.	.	.
1023	sbp_callz93	byte	%8.0g			0						-	.
1024	sbp_callz94	int	%8.0g			1	107.0	.	107.0	107.0	.	.	.
1025	sbp_callz95	int	%8.0g			1	108.0	.	108.0	108.0	.	.	.
1026	sbp_callz96	int	%8.0g			1	110.0	.	110.0	110.0	.	.	.

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1027	sbp_callz97	int	%8.0g			1	116.0	.	116.0	116.0	.	.	.
1028	sbp_callz98	int	%8.0g			1	117.0	.	117.0	117.0	.	.	.
1029	sbp_callz99	int	%8.0g			1	118.0	.	118.0	118.0	.	.	.
1030	sbp_callz101	int	%8.0g			1	118.0	.	118.0	118.0	.	.	.
1031	sbp_callz102	int	%8.0g			1	101.0	.	101.0	101.0	.	.	.
1032	sbp_callz103	int	%8.0g			1	104.0	.	104.0	104.0	.	.	.
1033	sbp_callz104	int	%8.0g			1	104.0	.	104.0	104.0	.	.	.
1034	sbp_callz105	int	%8.0g			1	109.0	.	109.0	109.0	.	.	.
1035	sbp_callz106	byte	%8.0g			0					-	.	.
1036	sbp_callz107	byte	%8.0g			1	97.0	.	97.0	97.0	.	.	.
1037	sbp_callz108	int	%8.0g			1	112.0	.	112.0	112.0	.	.	.
1038	sbp_callz109	int	%8.0g			1	123.0	.	123.0	123.0	.	.	.
1039	sbp_callz110	int	%8.0g			1	114.0	.	114.0	114.0	.	.	.
1040	sbp_callz111	int	%8.0g			1	108.0	.	108.0	108.0	.	.	.
1041	dbp_callz1	int	%8.0g			65	84.3	10.7	67.0	111.0	114.0	0.491	2.523
1042	dbp_callz2	int	%8.0g			78	84.5	10.6	60.0	108.0	112.4	0.025	2.542
1043	dbp_callz3	int	%8.0g			89	83.0	9.8	62.0	109.0	96.6	0.227	3.182
1044	dbp_callz4	int	%8.0g			94	82.8	11.3	55.0	110.0	126.9	0.049	2.755
1045	dbp_callz5	int	%8.0g			90	81.7	10.6	50.0	104.0	112.6	(0.093)	2.822
1046	dbp_callz6	int	%8.0g			91	82.7	11.3	61.0	114.0	128.2	0.422	2.936
1047	dbp_callz7	int	%8.0g			88	81.5	9.2	61.0	98.0	85.0	(0.292)	2.252
1048	dbp_callz8	int	%8.0g			86	80.0	8.0	64.0	97.0	64.1	(0.062)	2.505
1049	dbp_callz9	int	%8.0g			75	80.7	7.3	62.0	107.0	52.8	0.611	4.505
1050	dbp_callz10	int	%8.0g			88	79.7	10.2	53.0	102.0	103.4	(0.054)	2.704
1051	dbp_callz11	int	%8.0g			80	79.5	10.2	57.0	98.0	104.2	(0.308)	2.181
1052	dbp_callz12	int	%8.0g			79	79.3	10.4	54.0	116.0	107.5	0.552	3.967
1053	dbp_callz13	int	%8.0g			83	79.8	10.1	55.0	101.0	102.5	(0.045)	2.647
1054	dbp_callz14	int	%8.0g			78	80.3	9.3	59.0	101.0	86.1	0.083	2.863
1055	dbp_callz15	int	%8.0g			70	79.2	9.6	58.0	100.0	91.4	0.214	2.681
1056	dbp_callz16	int	%8.0g			74	81.9	8.8	62.0	101.0	77.5	0.092	2.666
1057	dbp_callz17	int	%8.0g			73	79.0	8.6	50.0	94.0	74.3	(0.776)	3.757
1058	dbp_callz18	int	%8.0g			66	79.2	8.6	59.0	101.0	74.1	(0.150)	3.466
1059	dbp_callz19	int	%8.0g			69	79.4	8.6	64.0	102.0	74.0	(0.017)	2.490
1060	dbp_callz20	byte	%8.0g			69	80.1	7.9	56.0	100.0	63.2	(0.561)	4.075
1061	dbp_callz21	byte	%8.0g			62	78.3	8.6	58.0	94.0	73.9	(0.364)	2.460
1062	dbp_callz22	int	%8.0g			67	80.4	8.7	58.0	99.0	76.0	(0.275)	2.705
1063	dbp_callz23	int	%8.0g			57	79.3	7.6	58.0	99.0	58.0	(0.102)	3.327
1064	dbp_callz24	byte	%8.0g			54	79.4	8.1	63.0	96.0	65.0	(0.083)	2.391
1065	dbp_callz25	byte	%8.0g			57	78.0	9.9	55.0	97.0	98.6	(0.319)	2.590
1066	dbp_callz26	byte	%8.0g			57	79.1	8.7	63.0	95.0	76.4	(0.090)	1.917
1067	dbp_callz27	int	%8.0g			58	78.8	9.1	64.0	111.0	82.0	0.745	4.372
1068	dbp_callz28	int	%8.0g			53	78.7	8.8	64.0	113.0	78.0	1.188	5.917
1069	dbp_callz29	byte	%8.0g			50	78.8	7.7	65.0	95.0	59.6	0.284	2.305
1070	dbp_callz30	byte	%8.0g			52	78.9	8.9	61.0	100.0	79.3	0.546	2.597
1071	dbp_callz31	byte	%8.0g			51	78.4	9.2	63.0	99.0	83.8	0.263	2.354
1072	dbp_callz32	int	%8.0g			53	80.7	10.0	62.0	115.0	99.8	0.731	4.185
1073	dbp_callz33	int	%8.0g			48	81.0	8.6	64.0	102.0	74.5	0.468	3.092
1074	dbp_callz34	byte	%8.0g			48	78.0	8.3	62.0	96.0	68.3	0.047	2.553
1075	dbp_callz35	int	%8.0g			50	78.7	9.4	59.0	105.0	88.3	0.140	3.464
1076	dbp_callz36	byte	%8.0g			45	78.6	8.6	55.0	94.0	74.0	(0.794)	3.567
1077	dbp_callz37	int	%8.0g			43	78.5	9.9	63.0	109.0	97.6	0.821	3.937
1078	dbp_callz38	byte	%8.0g			41	78.4	9.6	59.0	100.0	92.7	0.153	2.677
1079	dbp_callz39	byte	%8.0g			34	77.6	7.2	59.0	91.0	51.2	(0.666)	3.337
1080	dbp_callz40	byte	%8.0g			35	78.5	8.2	58.0	93.0	66.6	(0.095)	2.636

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1081	dbp_callz41	byte	%8.0g			36	76.7	6.8	61.0	90.0	45.6	(0.413)	2.892
1082	dbp_callz42	int	%8.0g			37	79.5	8.3	61.0	104.0	69.6	0.070	4.067
1083	dbp_callz43	byte	%8.0g			35	77.7	8.8	60.0	94.0	77.7	(0.316)	2.308
1084	dbp_callz44	byte	%8.0g			34	75.9	9.1	47.0	93.0	83.2	(0.843)	4.396
1085	dbp_callz45	byte	%8.0g			35	80.2	8.2	60.0	99.0	67.2	0.045	3.410
1086	dbp_callz46	byte	%8.0g			33	77.2	8.2	56.0	88.0	67.2	(0.665)	2.600
1087	dbp_callz47	int	%8.0g			34	77.0	9.1	59.0	103.0	82.1	0.361	3.389
1088	dbp_callz48	int	%8.0g			26	76.5	11.1	56.0	104.0	122.3	0.050	3.348
1089	dbp_callz49	byte	%8.0g			26	76.9	9.4	59.0	91.0	88.3	(0.329)	2.232
1090	dbp_callz50	byte	%8.0g			27	76.9	9.2	61.0	98.0	83.7	0.109	2.622
1091	dbp_callz51	byte	%8.0g			22	77.6	7.5	62.0	91.0	56.3	(0.250)	2.339
1092	dbp_callz52	byte	%8.0g			22	75.5	5.9	64.0	90.0	34.5	0.206	3.262
1093	dbp_callz53	byte	%8.0g			18	76.3	8.9	53.0	97.0	78.9	(0.274)	4.947
1094	dbp_callz54	byte	%8.0g			15	78.2	8.6	56.0	88.0	74.0	(1.367)	4.236
1095	dbp_callz55	byte	%8.0g			15	79.5	6.0	68.0	89.0	36.1	(0.404)	2.542
1096	dbp_callz56	byte	%8.0g			15	75.7	9.5	59.0	87.0	90.1	(0.380)	1.713
1097	dbp_callz57	byte	%8.0g			13	78.5	7.0	61.0	88.0	49.4	(1.044)	4.089
1098	dbp_callz58	byte	%8.0g			11	74.3	6.1	64.0	81.0	36.8	(0.425)	1.716
1099	dbp_callz59	byte	%8.0g			12	77.8	9.3	65.0	89.0	86.2	(0.178)	1.476
1100	dbp_callz60	byte	%8.0g			11	80.8	10.0	63.0	99.0	99.8	(0.044)	2.665
1101	dbp_callz61	byte	%8.0g			11	79.1	6.1	69.0	88.0	37.5	(0.545)	2.282
1102	dbp_callz62	byte	%8.0g			10	77.2	5.8	68.0	89.0	33.5	0.537	3.042
1103	dbp_callz63	byte	%8.0g			11	79.8	5.7	67.0	86.0	32.2	(0.980)	3.314
1104	dbp_callz64	byte	%8.0g			12	77.3	9.1	58.0	89.0	82.9	(0.501)	2.727
1105	dbp_callz65	byte	%8.0g			11	78.6	6.0	70.0	86.0	36.3	(0.437)	1.648
1106	dbp_callz66	byte	%8.0g			10	76.8	7.0	65.0	87.0	49.3	(0.069)	1.979
1107	dbp_callz67	byte	%8.0g			9	77.1	5.8	67.0	85.0	33.1	(0.332)	2.123
1108	dbp_callz68	byte	%8.0g			9	81.9	5.8	73.0	87.0	33.9	(0.618)	1.567
1109	dbp_callz69	byte	%8.0g			8	79.9	4.3	71.0	84.0	18.7	(1.020)	3.225
1110	dbp_callz70	byte	%8.0g			7	76.4	5.2	70.0	86.0	27.3	0.760	2.726
1111	dbp_callz71	byte	%8.0g			8	76.1	5.1	68.0	82.0	26.1	(0.688)	2.021
1112	dbp_callz72	byte	%8.0g			7	76.9	5.6	68.0	82.0	31.8	(0.714)	1.896
1113	dbp_callz73	byte	%8.0g			7	77.9	7.3	70.0	87.0	52.8	0.097	1.375
1114	dbp_callz74	byte	%8.0g			4	76.8	9.1	65.0	84.0	83.6	(0.444)	1.568
1115	dbp_callz75	byte	%8.0g			4	76.5	9.0	64.0	84.0	81.0	(0.721)	1.930
1116	dbp_callz76	byte	%8.0g			2	71.0	5.7	67.0	75.0	32.0	-	1.000
1117	dbp_callz77	byte	%8.0g			3	75.7	9.0	67.0	85.0	81.3	0.135	1.500
1118	dbp_callz78	byte	%8.0g			3	73.7	10.0	66.0	85.0	100.3	0.582	1.500
1119	dbp_callz79	byte	%8.0g			3	74.0	7.5	67.0	82.0	57.0	0.239	1.500
1120	dbp_callz80	byte	%8.0g			3	71.0	16.5	60.0	90.0	273.0	0.681	1.500
1121	dbp_callz81	byte	%8.0g			3	76.0	12.1	69.0	90.0	147.0	0.707	1.500
1122	dbp_callz82	byte	%8.0g			3	77.0	1.7	76.0	79.0	3.0	0.707	1.500
1123	dbp_callz83	byte	%8.0g			2	77.0	2.8	75.0	79.0	8.0	-	1.000
1124	dbp_callz84	byte	%8.0g			2	80.5	16.3	69.0	92.0	264.5	-	1.000
1125	dbp_callz85	byte	%8.0g			1	75.0	.	75.0	75.0	.	.	.
1126	dbp_callz86	byte	%8.0g			2	82.0	8.5	76.0	88.0	72.0	-	1.000
1127	dbp_callz87	byte	%8.0g			2	81.0	11.3	73.0	89.0	128.0	-	1.000
1128	dbp_callz88	byte	%8.0g			2	76.0	8.5	70.0	82.0	72.0	-	1.000
1129	dbp_callz89	byte	%8.0g			1	80.0	.	80.0	80.0	.	.	.
1130	dbp_callz90	byte	%8.0g			1	69.0	.	69.0	69.0	.	.	.
1131	dbp_callz91	byte	%8.0g			1	67.0	.	67.0	67.0	.	.	.
1132	dbp_callz92	byte	%8.0g			1	79.0	.	79.0	79.0	.	.	.
1133	dbp_callz93	byte	%8.0g			0					-	.	.
1134	dbp_callz94	byte	%8.0g			1	71.0	.	71.0	71.0	.	.	.

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1135	dbp_callz95	byte	%8.0g			1	71.0	.	71.0	71.0	.	.	.
1136	dbp_callz96	byte	%8.0g			1	73.0	.	73.0	73.0	.	.	.
1137	dbp_callz97	byte	%8.0g			1	80.0	.	80.0	80.0	.	.	.
1138	dbp_callz98	byte	%8.0g			1	77.0	.	77.0	77.0	.	.	.
1139	dbp_callz99	byte	%8.0g			1	76.0	.	76.0	76.0	.	.	.
1140	dbp_callz101	byte	%8.0g			1	75.0	.	75.0	75.0	.	.	.
1141	dbp_callz102	byte	%8.0g			1	74.0	.	74.0	74.0	.	.	.
1142	dbp_callz103	byte	%8.0g			1	59.0	.	59.0	59.0	.	.	.
1143	dbp_callz104	byte	%8.0g			1	73.0	.	73.0	73.0	.	.	.
1144	dbp_callz105	byte	%8.0g			1	73.0	.	73.0	73.0	.	.	.
1145	dbp_callz106	byte	%8.0g			0						-	.	.
1146	dbp_callz107	byte	%8.0g			1	62.0	.	62.0	62.0	.	.	.
1147	dbp_callz108	byte	%8.0g			1	71.0	.	71.0	71.0	.	.	.
1148	dbp_callz109	byte	%8.0g			1	74.0	.	74.0	74.0	.	.	.
1149	dbp_callz110	byte	%8.0g			1	74.0	.	74.0	74.0	.	.	.
1150	dbp_callz111	byte	%8.0g			1	69.0	.	69.0	69.0	.	.	.
1151	birth_date	float	%d		Birth_Date	118	(2,409.2)	3,681.8	(11,184.0)	8,409.0	13,600,000.0	0.360	3.376
1152	en_date	float	%d		Enrollment_Date	118	18,578.7	234.8	18,205.0	19,002.0	55,134.3	0.176	1.896
1153	ecg_issues	float	%9.0g		Abnormal ECG Characteristics 0-9	32	0.5	0.9	-	3.0	0.8	1.574	4.282
1154	abnormal_ecg	float	%9.0g		Abnormal ECG Y/N	32	0.3	0.5	-	1.0	0.2	0.809	1.655
1155	ch3_l_contr	float	%9.0g		3M Change HTN Uncontrolled	118	(0.2)	0.6	(1.0)	1.0	0.4	0.152	2.385
1156	ch6_3_contr	float	%9.0g		3M-6M Change HTN Uncontrolled	118	(0.1)	0.6	(1.0)	1.0	0.3	0.010	2.879
1157	ch6_l_contr	float	%9.0g		6M Change HTN Uncontrolled	118	(0.3)	0.6	(1.0)	1.0	0.3	0.034	2.514
1158	ch3_sbp	float	%9.0g		Seated SBP Change BL-vs-3M	118	(7.8)	22.0	(67.0)	50.0	482.9	0.008	3.229
1159	ch6_sbp	float	%9.0g		Seated SBP Change BL-vs-6M	118	(9.2)	20.7	(69.0)	64.0	426.9	0.107	4.322
1160	ch3_dbp	float	%9.0g		Seated DBP Change BL-vs-3M	118	(5.8)	13.4	(47.0)	26.0	178.3	(0.265)	3.663
1161	ch6_dbp	float	%9.0g		Seated DBP Change BL-vs-6M	118	(6.9)	13.8	(54.0)	47.0	190.2	(0.126)	5.161
1162	ch3_map	float	%9.0g		Mean Arterial Pressure Change BL-vs-3M	118	(6.5)	15.3	(51.0)	26.3	233.5	(0.237)	3.156
1163	ch6_map	float	%9.0g		Mean Arterial Pressure Change BL-vs-6M	118	(7.7)	15.2	(59.0)	52.7	230.1	(0.034)	5.266
1164	ch3_pulse	float	%9.0g		Pulse Change BL-vs-3M	116	1.3	12.3	(40.0)	49.0	152.2	0.209	5.132
1165	ch6_pulse	float	%9.0g		Pulse Change BL-vs-6M	115	0.8	10.6	(40.0)	21.0	112.4	(0.541)	3.818
1166	ch3_pp	float	%9.0g		Pulse Pressure Change BL-vs-3M	118	(1.9)	14.4	(48.0)	45.0	208.7	0.318	3.871
1167	ch6_pp	float	%9.0g		Pulse Pressure Change BL-vs-6M	118	(2.3)	13.3	(50.0)	35.0	175.7	(0.008)	4.309
1168	ch3_stand_sbp	float	%9.0g		Standing SBP Change BL-vs-3M	116	(6.4)	24.5	(68.0)	56.0	597.9	(0.004)	2.782
1169	ch6_stand_sbp	float	%9.0g		Standing SBP Change BL-vs-6M	116	(7.7)	22.8	(77.0)	54.0	517.8	(0.130)	3.672
1170	ch3_stand_dbp	float	%9.0g		Standing DBP Change BL-vs-3M	115	(3.4)	12.6	(36.5)	26.5	157.8	(0.227)	2.851
1171	ch6_stand_dbp	float	%9.0g		Standing DBP Change BL-vs-6M	116	(3.4)	13.4	(33.0)	61.0	179.4	1.066	6.872
1172	ch3_st_pulse	float	%9.0g		Standing Pulse Change BL-vs-3M	110	2.6	17.0	(57.0)	69.0	288.7	(0.205)	7.186
1173	ch6_st_pulse	float	%9.0g		Standing Pulse Change BL-vs-6M	109	1.2	12.9	(55.0)	34.0	166.4	(0.629)	5.956
1174	over_sbp1	float	%9.0g		BL Amount Over SBP Goal (mmHg)	118	2.9	21.0	(50.0)	70.0	442.6	0.179	3.337
1175	over_dbp1	float	%9.0g		BL Amount Over DBP Goal (mmHg)	118	0.4	14.1	(32.0)	64.0	200.1	0.894	5.582
1176	over_sbp2	float	%9.0g		3M Amount Over SBP Goal (mmHg)	118	(4.9)	16.8	(38.0)	48.0	283.6	0.532	3.634
1177	over_dbp2	float	%9.0g		3M Amount Over DBP Goal (mmHg)	118	(5.4)	11.9	(30.0)	28.0	140.5	0.359	3.045
1178	over_sbp3	float	%9.0g		6M Amount Over SBP Goal (mmHg)	118	(6.3)	18.0	(43.0)	68.0	325.1	0.946	4.725
1179	over_dbp3	float	%9.0g		6M Amount Over DBP Goal (mmHg)	118	(6.5)	12.4	(30.0)	30.0	152.9	0.641	3.303
1180	ch6_hb_a	float	%9.0g		6M Change Severity Activity Interference	114	(0.1)	1.0	(3.0)	2.0	1.0	(0.313)	3.261
1181	ch6_hb_b	float	%9.0g		6M Change Severity Get Worrisome Illnesses	110	0.0	0.9	(2.0)	2.0	0.7	(0.107)	3.724
1182	ch6_hb_c	float	%9.0g		6M Change Susceptibility Mild Cold	112	(0.3)	1.1	(3.0)	3.0	1.3	(0.097)	3.383
1183	ch6_hb_d	float	%9.0g		6M Change Susceptibility Cavity	110	0.1	1.1	(2.0)	3.0	1.1	0.396	2.886
1184	ch6_hb_e	float	%9.0g		6M Change Susceptibility Seasonal Flu	113	(0.1)	1.0	(2.0)	2.0	0.9	0.352	2.709
1185	ch6_hb_f	float	%9.0g		6M Change Susceptibility Heart Attack	104	(0.0)	0.8	(2.0)	2.0	0.6	0.215	3.615
1186	ch6_hb_g	float	%9.0g		6M Change Susceptibility 3Days in Bed	111	0.0	0.9	(2.0)	3.0	0.7	0.673	3.829
1187	ch6_hb_h	float	%9.0g		6M Change Susceptibility Ease of Illness	115	(0.0)	0.7	(2.0)	2.0	0.5	(0.151)	4.750
1188	ch6_hb_i	float	%9.0g		6M Change Severity Mild Cold	108	(0.2)	0.9	(3.0)	3.0	0.8	(0.065)	5.452

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1189	ch6_hb_j	float	%9.0g		6M Change Severity Heart Attack	103	0.6	1.4	(3.0)	3.0	2.1	(0.007)	3.173
1190	ch6_hb_k	float	%9.0g		6M Change Severity Cavity	110	(0.0)	1.5	(3.0)	3.0	2.2	(0.054)	3.186
1191	ch6_hb_l	float	%9.0g		6M Change Severity 3Days in Bed	113	(0.2)	1.2	(3.0)	3.0	1.5	(0.093)	4.013
1192	ch6_hb_m	float	%9.0g		6M Change Severity Get Serious Illnesses	112	(0.0)	0.9	(2.0)	2.0	0.7	(0.331)	3.827
1193	ch6_hb_n	float	%9.0g		6M Change Health Status Compared to Other	111	0.0	0.6	(1.0)	2.0	0.4	0.222	3.373
1194	ch6_hb_o	float	%9.0g		6M Change Health Status Describe Your Health	113	(0.0)	0.7	(2.0)	1.0	0.4	(0.158)	2.845
1195	ch6_hb_p	float	%9.0g		6M Change Barriers Too Much Effort	113	0.1	0.9	(2.0)	2.0	0.8	0.236	3.191
1196	ch6_hb_q	float	%9.0g		6M Change Locus of Control Avoidance	114	0.0	0.3	(1.0)	2.0	0.1	1.901	18.682
1197	ch6_hb_r	float	%9.0g		6M Change Locus of Control Personal Care	111	0.1	0.7	(2.0)	2.0	0.5	0.089	5.647
1198	ch6_hb_s	float	%9.0g		6M Change Trust in MD Doctors Help Most	114	(0.0)	0.6	(2.0)	2.0	0.3	(0.007)	7.125
1199	ch6_hb_t	float	%9.0g		6M Change Trust in MD Home Remedies	111	(0.1)	0.7	(2.0)	1.0	0.5	(0.618)	3.664
1200	ch6_hb_u	float	%9.0g		6M Change Trust in MD Doctors Can't Help	112	(0.0)	0.6	(2.0)	2.0	0.4	0.006	6.421
1201	ch6_hb_v	float	%9.0g		6M Change Barriers Med_Costs	113	(0.1)	1.1	(3.0)	3.0	1.2	(0.063)	4.118
1202	ch6_hb_w	float	%9.0g		6M Change Barriers Felt_Worse	109	0.2	1.3	(3.0)	3.0	1.6	(0.177)	3.285
1203	ch6_hb_x	float	%9.0g		6M Change Barriers Inconvenient	110	-	0.9	(3.0)	3.0	0.8	0.369	4.644
1204	ch6_hb_y	float	%9.0g		6M Change Barriers Heard Meds Dangerous	109	0.1	1.1	(3.0)	3.0	1.2	0.302	4.021
1205	ch6_hb_z	float	%9.0g		6M Change Trust in MD Doctors Prevent Illness	113	0.0	0.5	(1.0)	2.0	0.3	1.372	8.161
1206	ch6_hb_aa	float	%9.0g		6M Change Health Concern How Concerned	115	(0.0)	0.6	(2.0)	2.0	0.3	(0.006)	9.595
1207	ch6_hb_ab	float	%9.0g		6M Change Health Concern Current Self-Care	113	(0.2)	0.7	(2.0)	1.0	0.5	(0.408)	3.113
1208	ch6_hb_ac	float	%9.0g		6M Change Health Concern Improved Self-Care	113	(0.0)	0.6	(3.0)	3.0	0.4	0.012	10.987
1209	ch6_hb_ad	float	%9.0g		6M Change Health Concern More Important Things	112	(0.1)	0.9	(2.0)	2.0	0.8	0.105	3.931
1210	ch6_forget	float	%9.0g		6M Change in MA Forgets	113	(0.2)	0.6	(1.0)	1.0	0.3	(0.036)	2.850
1211	ch6_careless	float	%9.0g		6M Change in MA Careless	113	(0.1)	0.5	(1.0)	1.0	0.2	(0.205)	3.958
1212	ch6_better	float	%9.0g		6M Change in MA Feeling Better	112	(0.1)	0.6	(1.0)	1.0	0.3	(0.034)	3.004
1213	ch6_worse	float	%9.0g		6M Change in MA Feeling Worse	111	(0.1)	0.5	(1.0)	1.0	0.2	(0.317)	3.945
1214	ch6_ma_score	float	%9.0g		6M Change in MA Score	95	(0.6)	1.2	(4.0)	3.0	1.4	0.384	4.383
1215	ch6_under_med	float	%9.0g		6M Change - Understand Meds	109	(0.1)	0.7	(2.0)	1.0	0.5	(0.394)	3.410
1216	ch6_likely_med	float	%9.0g		6M Change - Likely to Take Meds	112	0.0	0.8	(3.0)	3.0	0.6	(0.260)	6.954
1217	ch6_under_diet	float	%9.0g		6M Change - Understand Diet	112	0.0	0.8	(3.0)	2.0	0.6	(0.620)	4.703
1218	ch6_likely_diet	float	%9.0g		6M Change - Likely to Diet	113	0.1	0.7	(1.0)	2.0	0.4	0.087	2.688
1219	ch6_under_exer	float	%9.0g		6M Change - Understand Exercise	115	0.1	0.6	(1.0)	2.0	0.4	0.139	3.006
1220	ch6_likely_exer	float	%9.0g		6M Change - Likely to Exercise	115	0.1	0.7	(2.0)	3.0	0.5	0.329	4.887
1221	ch6_lim_phy	float	%9.0g		6M Change - Days Limited - Physical	106	(1.0)	5.8	(30.0)	13.0	33.6	(2.158)	12.233
1222	ch6_lim_ment	float	%9.0g		6M Change - Days Limited - Mental	109	(0.6)	4.6	(25.0)	20.0	21.5	(1.046)	14.304
1223	ch6_lim_all	float	%9.0g		6M Change - Days Limited - All Causes	108	(1.4)	6.2	(30.0)	14.0	38.7	(2.272)	10.935
1224	ch3_controlled	float	%9.0g		3M Change Well Controlled	88	0.4	1.0	(2.0)	3.0	1.0	0.253	3.544
1225	ch3_participate	float	%9.0g		3M Change Actively Participate BP Mgmt	88	0.2	0.9	(2.0)	2.0	0.8	0.568	3.285
1226	ch3_u_meds	float	%9.0g		3M Change Understand Meds Influence BP	88	0.1	0.8	(2.0)	2.0	0.7	0.105	3.895
1227	ch3_u_dose	float	%9.0g		3M Change Understand Dose Influence BP	92	0.1	0.9	(2.0)	2.0	0.7	0.279	3.746
1228	ch3_meds_work	float	%9.0g		3M Change Believe Meds Working	91	0.2	0.9	(2.0)	2.0	0.8	0.315	2.895
1229	ch3_u_diet	float	%9.0g		3M Change Understand Diet Influence BP	92	0.2	0.8	(2.0)	2.0	0.7	(0.198)	3.516
1230	ch3_u_exer	float	%9.0g		3M Change Understand Phys Activity Influence BP	90	0.3	0.9	(2.0)	2.0	0.8	(0.048)	2.844
1231	ch3_knows_goal	float	%9.0g		3M Change Know BP Goal	87	0.1	1.0	(3.0)	2.0	1.1	(0.115)	3.377
1232	ch6_controlled	float	%9.0g		6M Change BP Well Controlled	88	0.3	0.8	(2.0)	2.0	0.7	(0.028)	2.857
1233	ch6_participate	float	%9.0g		6M Change Actively Participate BP Mgmt	88	0.3	0.8	(2.0)	2.0	0.7	0.222	3.163
1234	ch6_u_meds	float	%9.0g		6M Change Understand Meds Influence BP	87	0.3	0.9	(1.0)	3.0	0.8	0.974	4.074
1235	ch6_u_dose	float	%9.0g		6M Change Understand Dose Influence BP	89	0.3	0.9	(2.0)	3.0	0.7	0.425	3.614
1236	ch6_meds_work	float	%9.0g		6M Change Believe Meds Working	87	0.3	0.8	(1.0)	2.0	0.6	0.458	2.957
1237	ch6_u_diet	float	%9.0g		6M Change Understand Diet Influence BP	90	0.2	0.8	(2.0)	2.0	0.7	0.124	3.465
1238	ch6_u_exer	float	%9.0g		6M Change Understand Phys Activity Influence BP	89	0.3	0.8	(2.0)	2.0	0.6	(0.122)	4.216
1239	ch6_knows_goal	float	%9.0g		6M Change Know BP Goal	87	0.1	0.8	(2.0)	2.0	0.7	(0.215)	3.922
1240	ch3_weight_kg	float	%9.0g		3M Change Weight kg	117	0.1	5.7	(25.0)	44.0	31.9	3.223	35.651
1241	ch3_waist_cm	float	%9.0g		3M Change Waist cm	113	(0.9)	9.7	(65.2)	17.5	94.2	(4.472)	28.941
1242	ch3_bmi	float	%9.0g		3M Change BMI_calculated	114	0.0	2.0	(9.5)	14.4	4.1	2.091	27.356

List of Study Variable

#	variable name	storage type	display format	value label	variable label	Obs	Mean	Std. Dev.	Min	Max	Variance	Skewness	Kurtosis
1243	ch6_waist_cm	float	%9.0g		6M Change Waist cm	113	0.3	4.3	(12.0)	13.0	18.6	(0.088)	3.490
1244	ch6_weight_kg	float	%9.0g		6M Change Weight kg	116	0.3	4.3	(15.0)	14.0	18.2	(0.322)	4.729
1245	ch6_bmi	float	%9.0g		6M Change BMI calculated	112	0.1	1.7	(6.2)	4.8	2.7	(0.663)	5.264
1246	ch3_6_t_meds	float	%9.0g		Change - Pt Takes Meds Regularly	108	0.0	0.3	(1.0)	1.0	0.1	0.732	8.108
1247	ch3_6_med_c	float	%9.0g		Change - Pt Estimated Med Compliance %	63	4.1	22.4	(65.0)	90.0	503.1	1.144	7.634
1248	Pt_Med_Prob	float	%9.0g		Total Pt Problems w/ Meds	88	1.3	1.1	-	4.0	1.3	0.524	2.386
1249	ch3_6_diet_c	float	%9.0g		Change - Pt Estimated Diet Compliance	108	0.0	0.7	(2.0)	2.0	0.5	(0.052)	4.687
1250	ch3_6_exec_c	float	%9.0g		Change - Pt Estimated Exercise Compliance	108	(0.2)	0.8	(2.0)	1.0	0.6	(0.654)	3.351
1251	ch3_6_p_able	float	%9.0g		Change Ability to Perform Physical Activity	102	(0.1)	0.8	(2.0)	2.0	0.6	0.231	3.476
1252	ch3_6_ldays	float	%9.0g		Change Limited Days Physical Activity	61	(0.7)	4.4	(21.0)	10.0	19.4	(1.741)	9.935
1253	ch3_6_health	float	%9.0g		Change Pt Assess State of Health	107	(0.2)	0.6	(2.0)	1.0	0.3	(0.533)	4.082
1254	md_uses_total	float	%9.0g		MD Uses of System to Manage Pt 0-16	118	6.0	5.3	-	16.0	28.0	0.746	2.330
1255	md_used_ever	int	%8.0g		MD Used System to Manage Pt Y/N	118	0.9	0.3	-	1.0	0.1	(2.129)	5.532
1256	ch6_sbp_target	float	%9.0g		6M Change ... SBP vs Target SBP	118	(9.2)	20.7	(69.0)	64.0	426.9	0.107	4.322
1257	ch6_dbp_target	float	%9.0g		6M Change ... DBP vs Target DBP	118	(6.9)	13.8	(54.0)	47.0	190.2	(0.126)	5.161
1258	age_group	float	%9.0g	Age_G	Age Group [<=55] or [>55]	118	0.6	0.5	-	1.0	0.2	(0.452)	1.204
1259	m_bad_calls	float	%9.0g		6M Invalid Calls	114	4.4	3.6	-	25.0	13.0	2.104	11.373
1260	m_vcall_perc	float	%9.0g		6M %_of_Calls Valid	114	0.8	0.2	-	1.0	0.0	(2.747)	13.496
1261	pt_prefer	float	%9.0g		Scores for factor 1	95	0.0	1.0	(2.4)	1.6	1.0	0.104	2.033
1262	ben_cat	float	%13.0g	B_CAT	Results Group	118	1.1	0.9	-	2.0	0.8	(0.218)	1.270
1263	success	float	%9.0g	Y_N	Success = HTN Controlled and lower MAP	118	0.5	0.5	-	1.0	0.3	0.136	1.018
1264	best_worst	float	%9.0g	B_W	Subset 97of118 Best=1 Worst=0	97	0.6	0.5	-	1.0	0.2	(0.270)	1.073
1265	hb_fact1	float	%9.0g		Scores for factor 1	90	(0.0)	1.0	(3.5)	2.6	1.0	(0.722)	4.821
1266	hb_fact2	float	%9.0g		Scores for factor 2	90	0.0	1.0	(2.3)	1.7	1.0	(0.493)	2.476
1267	hb_fact3	float	%9.0g		Scores for factor 3	90	(0.0)	1.0	(1.5)	2.5	1.0	0.714	2.551
1268	hb_fact4	float	%9.0g		Scores for factor 4	90	0.0	1.0	(2.7)	2.4	1.0	(0.331)	2.983
1269	hb_fact5	float	%9.0g		Scores for factor 5	90	(0.0)	1.0	(1.4)	3.0	1.0	1.001	3.336
1270	hb_fact6	float	%9.0g		Scores for factor 6	90	0.0	1.0	(2.0)	2.7	1.0	0.193	2.454
1271	hb_fact7	float	%9.0g		Scores for factor 7	90	(0.0)	1.0	(2.0)	2.8	1.0	0.377	2.563
1272	hb_fact8	float	%9.0g		Scores for factor 8	90	(0.0)	1.0	(2.9)	2.2	1.0	(0.615)	3.554
1273	hb_fact9	float	%9.0g		Scores for factor 9	90	0.0	1.0	(1.3)	3.5	1.0	1.573	5.173
1274	hb_fact10	float	%9.0g		Scores for factor 10	90	0.0	1.0	(2.3)	4.2	1.0	0.945	6.934

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CURRICULUM VITAE

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DEMOGRAPHIC AND PERSONAL INFORMATION

Current Appointments (Assignments):

- Senior Administrator, University of Maryland Baltimore, School of Medicine, Department of Anesthesiology (Baltimore, Maryland)
- Voluntary Instructor in Medicine, Johns Hopkins University, School of Medicine, Department of Medicine, Division of Cardiology (Baltimore, Maryland)

Education and Training:

- 1989 Bachelor of Arts, Stetson University, Political Science
- 1993 Master of Business Administration, University of South Florida, Finance
- 2002 Master of Public Health, University of South Florida, Health Policy and Management
- 2014 (Expected) Doctor of Public Health, Johns Hopkins University, Health Policy and Management

Professional Experience:

- 1992-1994 Accountant, University of South Florida
- 1994-1995 Staff Accountant, H. Lee Moffitt Cancer Center & Research Institute
- 1995-1996 Senior Accountant, H. Lee Moffitt Cancer Center & Research Institute
- 1996–1999 Group Practice Analyst, H. Lee Moffitt Cancer Center & Research Institute
- 1999–2002 Director of Physician Business Services, H. Lee Moffitt Cancer Center & Research Institute
- 1999–2002 Associate Administrator Department of Interdisciplinary Oncology, University of South Florida
- 2002-2003 Cardiology Division Manager, Johns Hopkins University
- 2003-2006 Assistant Director, Department of Medicine, Johns Hopkins University
- 2006-2008 Administrative Director, Johns Hopkins Heart and Vascular Institute, Johns Hopkins University
- 2008-2010 Executive Director, JHU Cardiology Trinidad & Tobago Program, Johns Hopkins University

- 2010-2013 Cancer Institute Director, St. Joseph's-Baptist Health Care / BayCare Health System, Tampa, Florida
- 2013-Current Senior Administrator, Department of Anesthesiology, University of Maryland Baltimore

EDUCATIONAL ACTIVITIES

Workshops /seminars:

- October 19, 2006, "Johns Hopkins Physician Productivity: Using detailed clinical assignments, billing reports and MGMA benchmark data to demonstrate productivity", invited speaker, Heart Center 5 Best Practice Forum, Cleveland Clinic – Intercontinental Hotel and Suites
- May 22, 2009, "Strategic Planning – An Executive Overview", North Central Regional Health Authority Healthcare Management Lecture Series, invited speaker, Eric Williams Medical Science Complex, Trinidad
- June 08, 2009, "Process Improvement – An Executive Overview", North Central Regional Health Authority Healthcare Management Lecture Series, invited speaker, Eric Williams Medical Science Complex, Trinidad
- July 09, 2009, "Project Management – An Executive Overview", North Central Regional Health Authority Healthcare Management Lecture Series, invited speaker, Eric Williams Medical Science Complex, Trinidad

ORGANIZATIONAL ACTIVITIES

Professional Societies:

- 1996-Current, Medical Group Management Association
- 2002-2011, American Heart Association, Epidemiology and Prevention Scientific Council Member
- 2011-2013, American Cancer Society, Member - Board of Directors, Member – Cancer Control Committee

RECOGNITION

Awards, Honors:

- 1993, Davis Productivity Award, Commentated for developing customized computer program for the University of South Florida to consolidate and tabulate direct and indirect cost data in support of the NIH indirect cost rate negotiations, Florida Tax-Watch

Invited Talk / Panel:

- March 5, 2004, "What is the State of the Art in Cardiology Today", Wyndham Palace Resort and Spa in Orlando, Florida, The Alliance of Cardiovascular Professionals - Cardiovascular Management Conference.

- October 11, 2011, “Current Challenges in Today’s Healthcare Environment”, University of South Florida - College of Public Health, Tampa, Florida, Healthcare Management Student Association.
- July 23, 2012, “Meaningful Use of Data”, Trade Winds Island Grand Saint Petersburg Beach, Florida, Florida Cancer Registrars Association - 2012 Annual Conference.
- January 24, 2013, “Public Health Related Careers in Cancer Care”, University of South Florida - College of Public Health, Tampa, Florida, Healthcare Management Student Association.

OTHER PROFESSIONAL ACCOMPLISHMENTS

Academic Medicine Program Building / Leadership:

- 1999–2002 Development of the Department of Interdisciplinary Oncology at the University of South Florida - Served as the chief administrator, partnered with senior physician leadership, to develop strategic plans for the creation and development of the Department of Interdisciplinary Oncology, including the recruitment of 160 physicians and scientists representing multiple specialties including medical oncology, blood and marrow transplantation, radiation therapy, neurosurgery, gynecologic oncology, neurology, surgical oncology, anesthesiology, pathology, psychiatry, otolaryngology, pulmonology, infectious disease, immunology, molecular oncology, epidemiology, biostatistics, gene therapy and experimental therapeutics. In coordination with the senior physician leadership team, developed a sophisticated faculty compensation plan with variable clinical, educational and research compensation indicators and incentives.