Hypertension Among the USET Tribes:

The Silent Killer

United South & Eastern Tribes
Tribal Epidemiology Center
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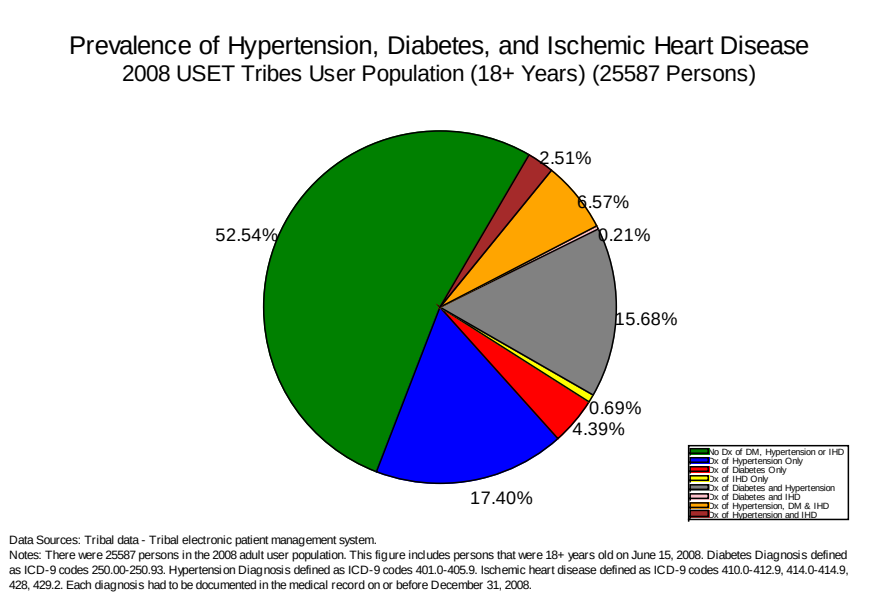
Report Summary

While high blood pressure is not commonly considered a major health threat, it can significantly impact the overall health of a population. It increases the risk of multiple chronic diseases and further complicates those diseases. Just under 50% of the USET Tribal population has a chronic illness. Just under 80% of the persons with high blood pressure were obese; however only 45% of those with normal blood pressures were obese. This analysis indicates that weight loss may be a significant factor in reducing high blood pressures within the USET Tribal population. Approximately one-quarter of the population is maintaining normal blood pressures. Thirty-five percent of the user population has a diagnosis of hypertension. Of the patients with hypertension alone, ~60% were able to maintain controlled blood pressure. Of those with hypertension and diabetes, only ~30% were able to maintain controlled blood pressure. Just over half of the patients with a diagnosis of hypertension were prescribed a hypertension medication but less than 40% of those on medication were maintaining blood pressure control.

Chronic illness is taking an ever-increasing toll on community health and well-being, while also increasing the economic impact on our health care system. Developing processes to increase community wellness and integrating these processes into the cultural, social, and family support structures may be the most effective means of prevention and intervention of hypertension and related chronic illnesses.

Chronic Illness Among the Adult Population

Figure 1



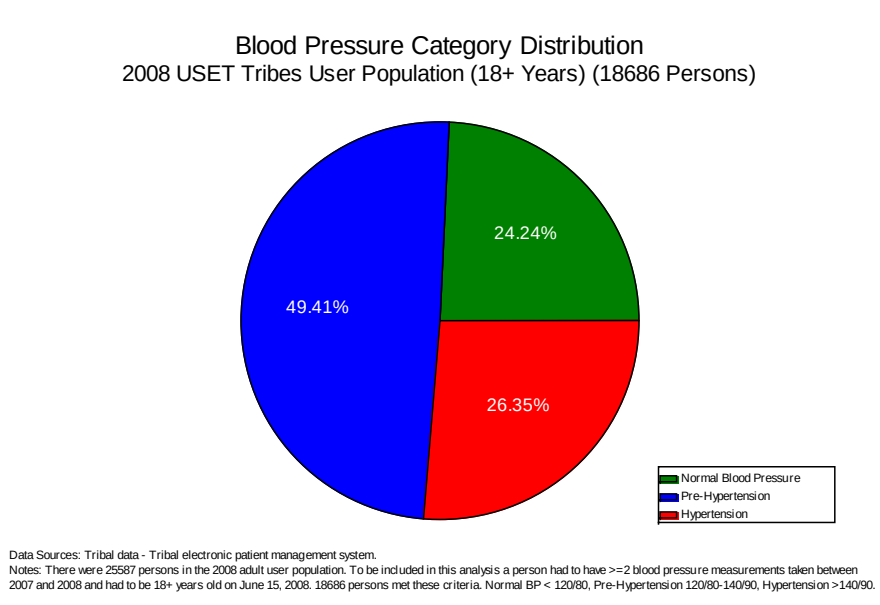
Diabetes, heart disease, obesity, high cholesterol, and high blood pressures have exponentially increased with our changing world. Across the United States in the last ten years, diabetes and obesity have doubled and hypertension has increased by approximately 18%. Just under 50% of the USET Tribal adult population has a chronic health condition (diabetes, hypertension, or heart disease) (Figure 1). Almost one of every four people in the user population has two or more co-morbid conditions (Figure 1).

Understanding the Impact of Hypertension on Health

Hypertension indicates elevated arterial pressure as blood is pumped from the heart throughout the body. This increases the risks of heart disease, atherosclerosis, stroke and renal disease while also complicating other diseases such as diabetes.[1] For individuals 40–70 years of age, each increment of 20 mmHg in systolic BP (SBP) or10 mmHg in diastolic BP (DBP) doubles the risk of CVD across the entire BP range from 115/75 to 185/115 mmHg.[2] This linear relationship between blood pressure and CVD, has resulted in increased attention to pre-hypertension as a precursor to hypertension.[2] This disease is most problematic because it takes its toll on the body with no feelings of ill-health. It is often perceived as a minor health concern, until it has caused significant damage to body systems or organs. Sadly, some of the hallmark behaviors in our modern society increase risk of hypertension development including obesity, poor diets, increased inactivity, alcohol, stress and smoking.[1]

High Blood Pressure Among the Adult User Population

Figure 2



Of the 25587 persons in the user population, 18686 (73%) had at least two blood pressures that could be used to calculate prevalence of hypertension. One of every four adults in the user population has high blood pressure (≥140/90 mmHg) and one of every two people are pre-hypertensive (120/80 mmHg-139/89 mmHg) (Figure 2).

Regardless of age, 45-50% of people have pre-hypertensive blood pressures (Figure 3). This is most troubling when seen in the younger age groups because blood pressure naturally increases with age. These young people with early age elevated pressures are already at greater risk for hypertension as they age. Because hypertension naturally increases with age, it is unsurprising to see a higher prevalence among the older age groups. However, USET Tribal elders (60-79 years old) were found to have a lower prevalence of high blood pressure than US elders. Four of every ten USET Tribal elders have high blood pressure. In comparison, six of every ten US elders (65+ years old) has high blood pressure .[3]

Figure 3

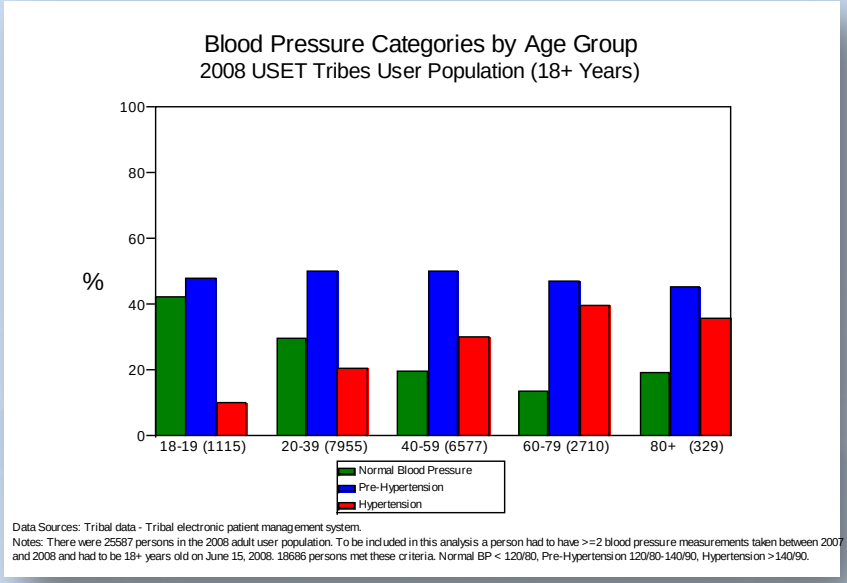
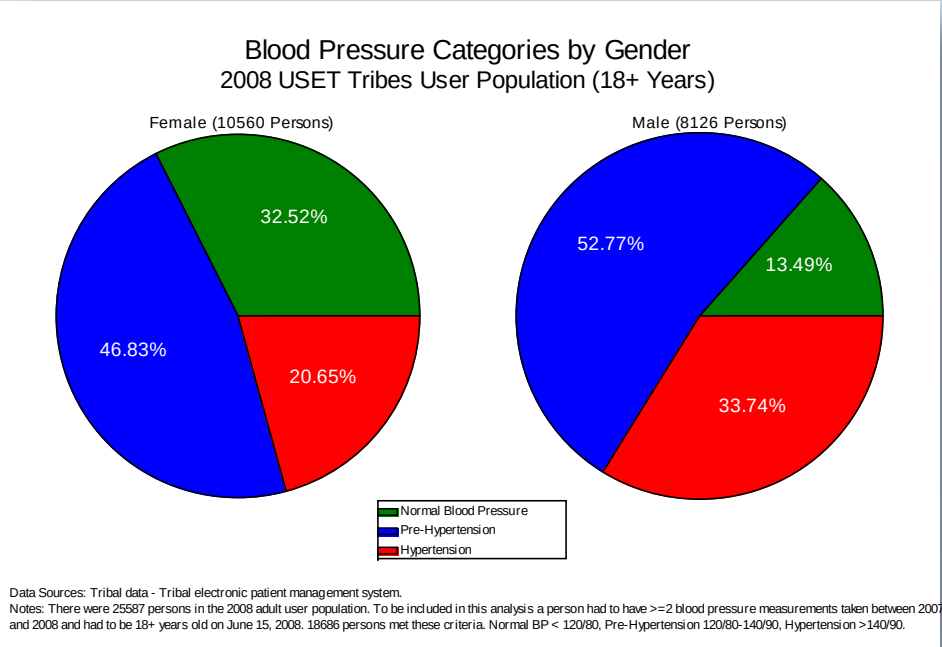


Figure 4

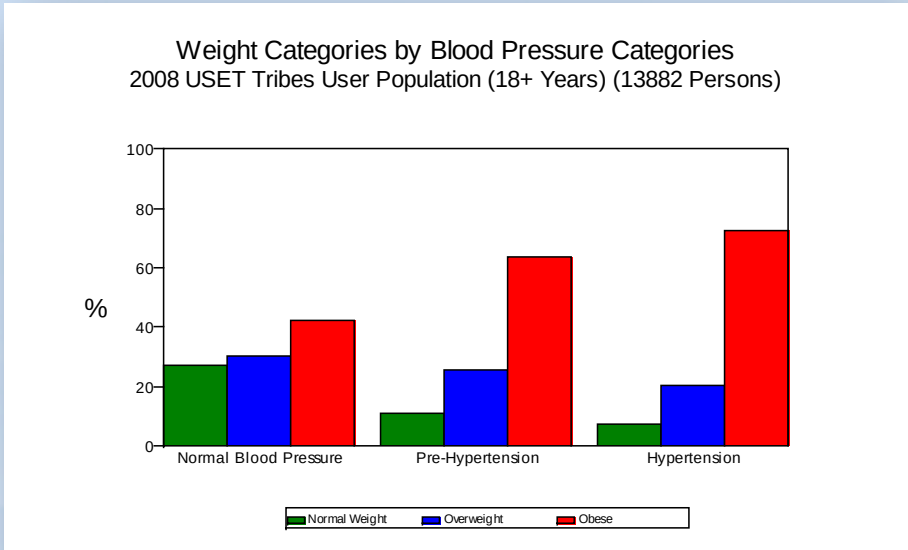


Data Sources: Tribal data - Tribal electronic patient management system.
Notes: There were 25587 persons in the 2008 adult user population. To be included in this analysis a person had to have >=2 blood pressure measurements taken between 2007 and 2008 and had to be 18+ years old on June 15, 2008. 18686 persons met these criteria. Normal BP < 120/80, Pre-Hypertension 120/80-140/90, Hypertension >140/90.

Approximately 20% of adult women and 34% of men had hypertensive blood pressures (Figure 4). This disparity parallels the disparity seen between US men and women before age 45, where men tend to overall have higher rates of hypertension.[1] More alarming , however, is that less than two of every ten men among the USET Tribes had normal blood pressure.

Of the 25587 persons in the user population, 13882 (54.3%) had heights, weights and blood pressures that could be used to evaluate blood pressure by weight. Just under 80% of those with hypertensive blood pressures were obese, whereas only 45% of those with normal blood pressures were obese. Weight and blood pressure are highly inter-connected; it is estimated that 65%-75% of hypertension is a result of obesity.[4] If the population's obesity rates decline, the proportion of the population with high blood pressures may also decline.

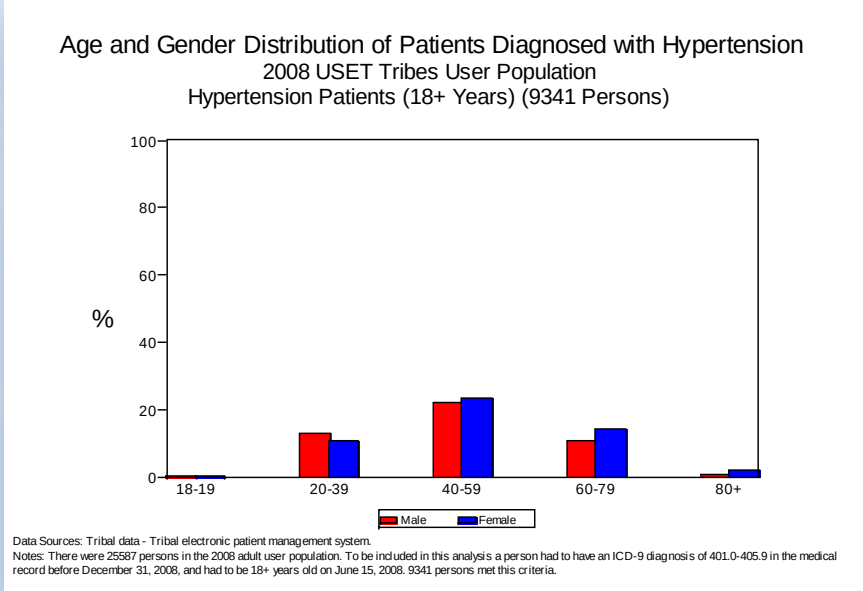
Figure 5



Data Sources: Tribal data - Tribal electronic patient management system.
Notes: There were 25587 persons in the 2008 adult user population. To be included in this analysis a person had to have >=2 blood pressure measurements taken between 2007 and 2008, had to be 18+ years old on June 15, 2008, and had height and weight measurements taken between 2004 and 2008. 13882 persons met these criteria. Normal BP < 120/80, Pre-Hypertension 120/80-140/90, Hypertension >140/90. Normal Weight=BMI<25.0, Overweight=BMI25.0-29.9, Obese=BMI>30.0.

Description of Hypertension in the Adult User Population

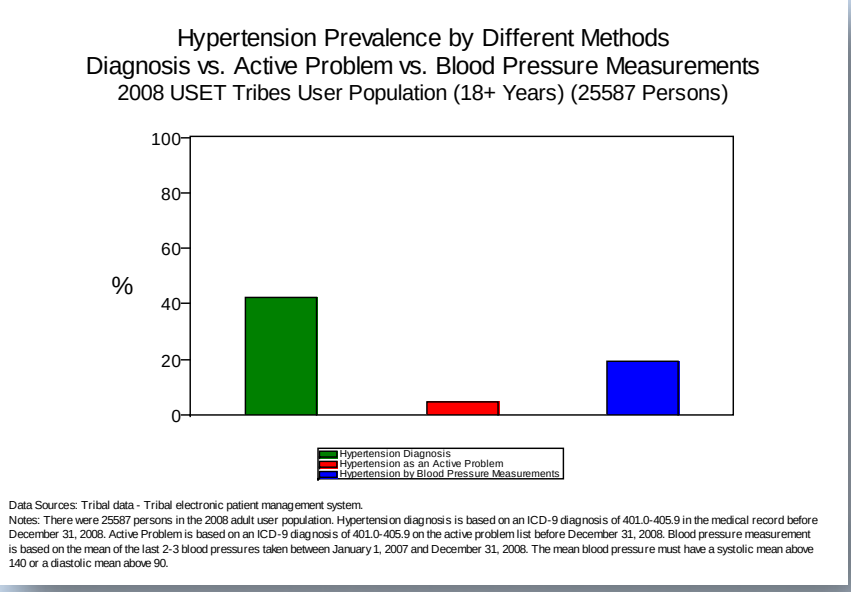
Figure 6



In 2008, there were 9341 adults in the user population diagnosed with hypertension. This equates to approximately 35% of the adult user population. Among these patients, the majority are between 40 and 59 years old (Figure 6). There are a larger number of young men (20-39 years old) with hypertension than young women although this trend flip-flops among the older age groups. These patterns follow national US trends.[1]

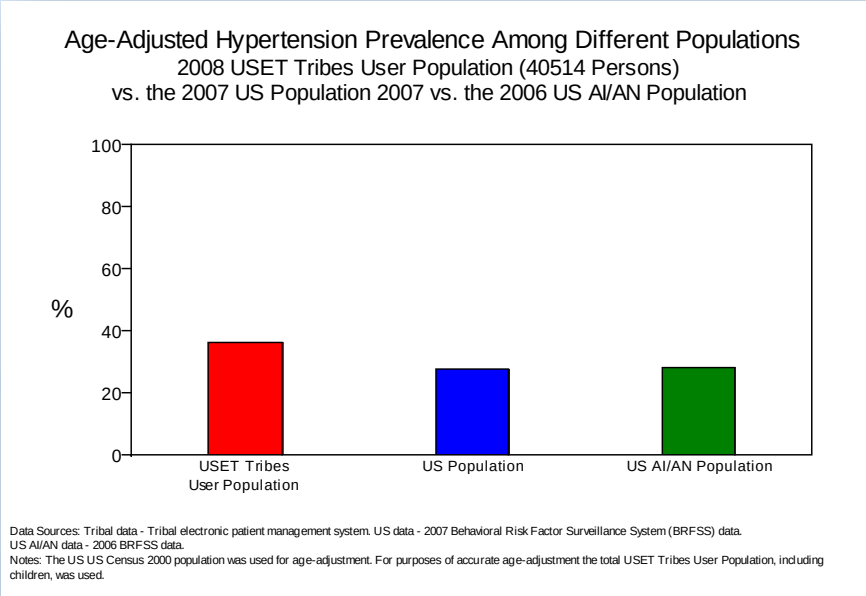
There are various ways to identify a person with hypertension in a Tribe's patient management system. A patient may have several blood pressure measurements that identify their blood pressure as hypertensive. A patient may have a diagnosis of hypertension or have hypertension identified on their active problem list. Figure 7 displays the difference in hypertension prevalence by these various definitions. If the active problem list is a tool used by providers, this figure may indicate that hypertension is not routinely annotated on the patient chart and may be providing inaccurate information during office visits.

Figure 7



Older age significantly increases the risk of hypertension so to compare the USET Tribes' hypertension rates to the rest of the country the age distribution must be the same as the rest of the country. If it is not, the older population may appear to have a higher prevalence of hypertension simply because it is an older population. Age-adjustment is a method of removing age bias so two populations can be compared appropriately. Figure 8 indicates that the USET Tribes have a higher prevalence of hypertension than the US population or the US AI/AN population.

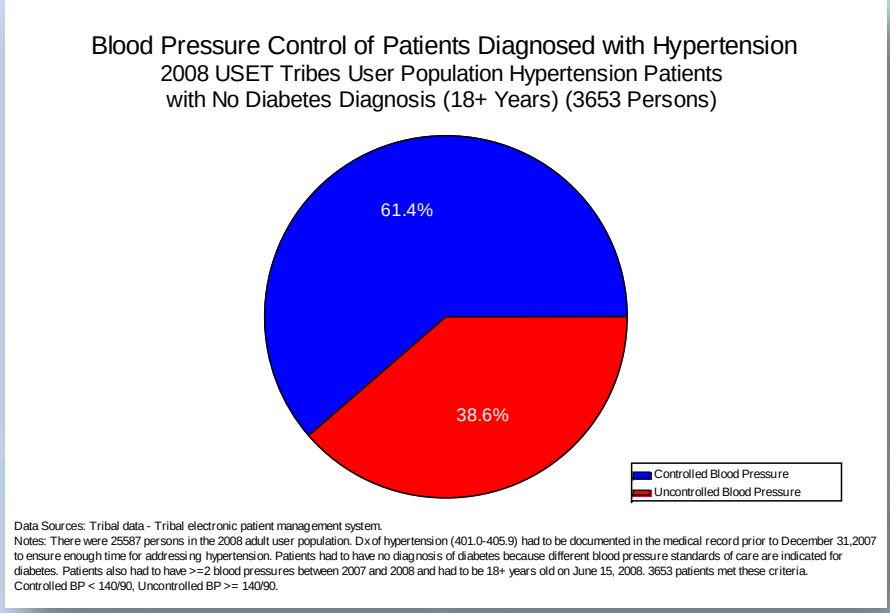
Figure 8



Health Status of Patients with a Diagnosis of Hypertension*

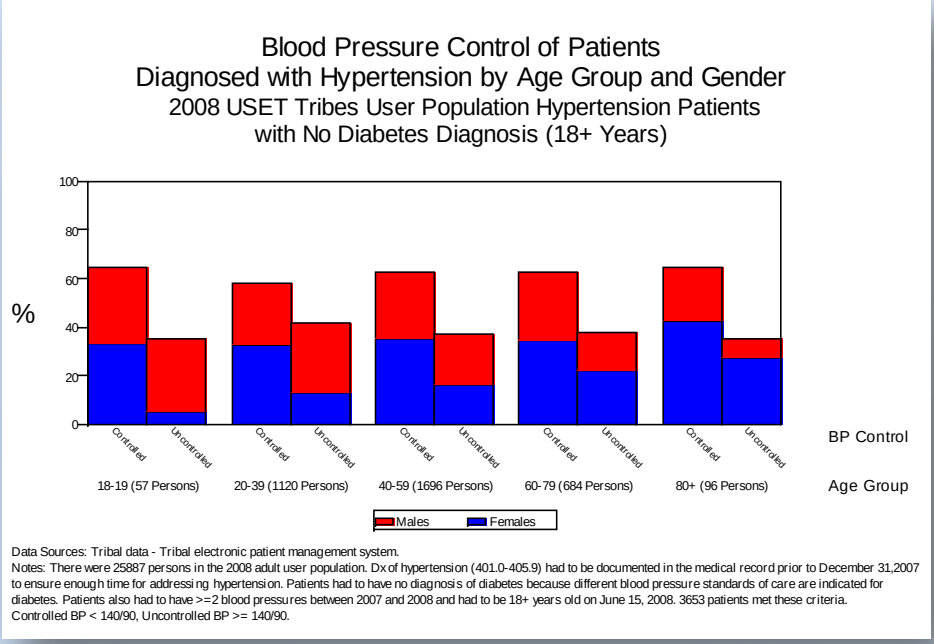
To evaluate the health status of the population with a hypertension diagnosis, patients that had hypertension before the end of 2007 were evaluated on several indicators in 2008. Setting this 2007 cutoff helps ensure newly diagnosed patients had some time to address their hypertension.

Figure 9



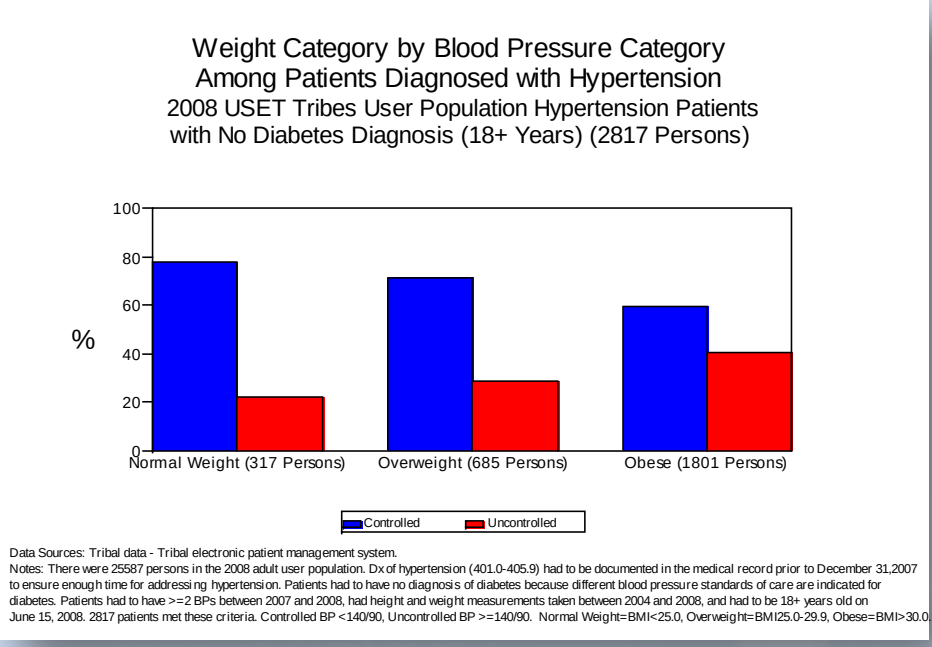
At the end of 2007, there were 9979 persons that had a diagnosis of hypertension among the adult user population. Of these, 4537 had hypertension without also having a diagnosis of diabetes. Of the 4537, 3653 had documented blood pressures. Among these patients 61.4% had controlled blood pressure (Figure 9).

Figure 10



Regardless of age or gender, most people maintained controlled blood pressures (Figure 10). It appears that young men were less likely than young women to maintain controlled blood pressure (Figure 10).

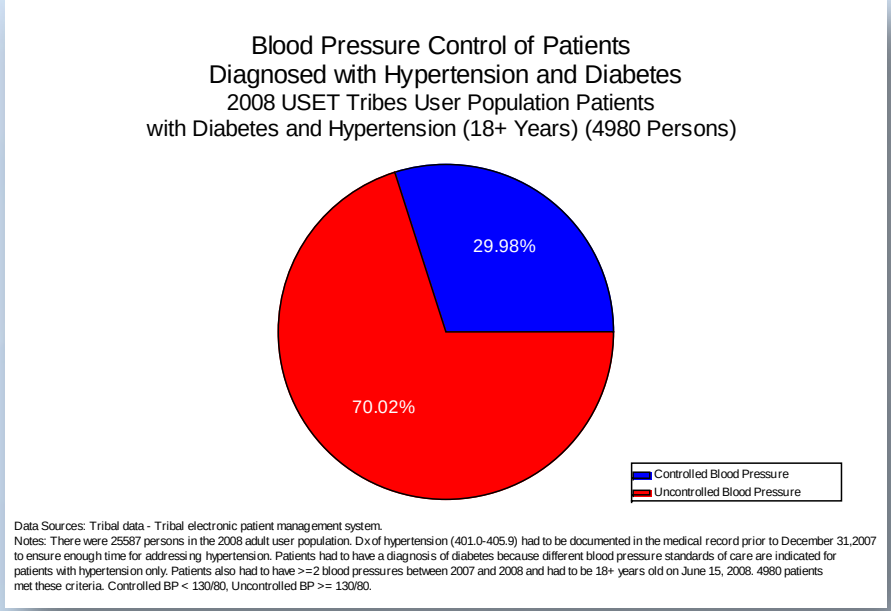
Figure 11



There was a higher percentage of patients maintaining good blood pressure control among those that were normal weight when compared to those that were overweight or obese (Figure 11).

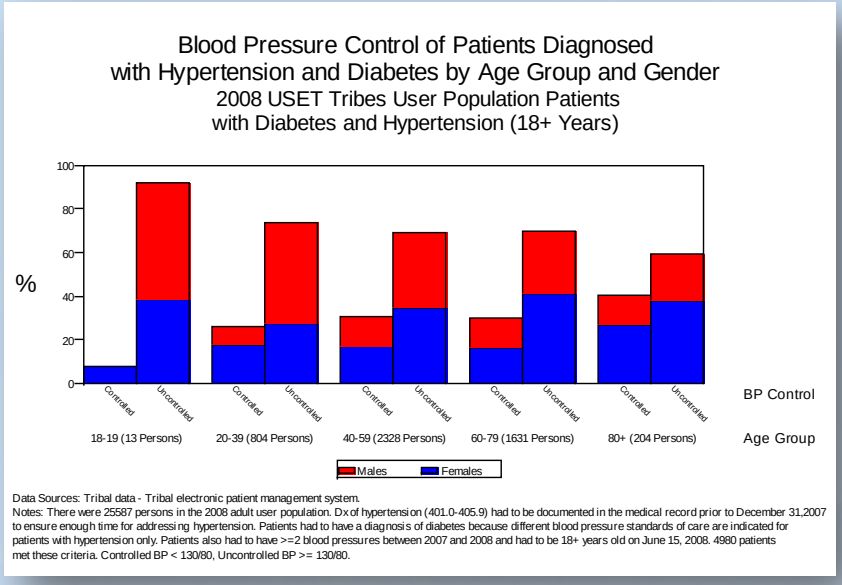
Health Status of Patients with a Diagnosis of Hypertension and Diabetes

Figure 12



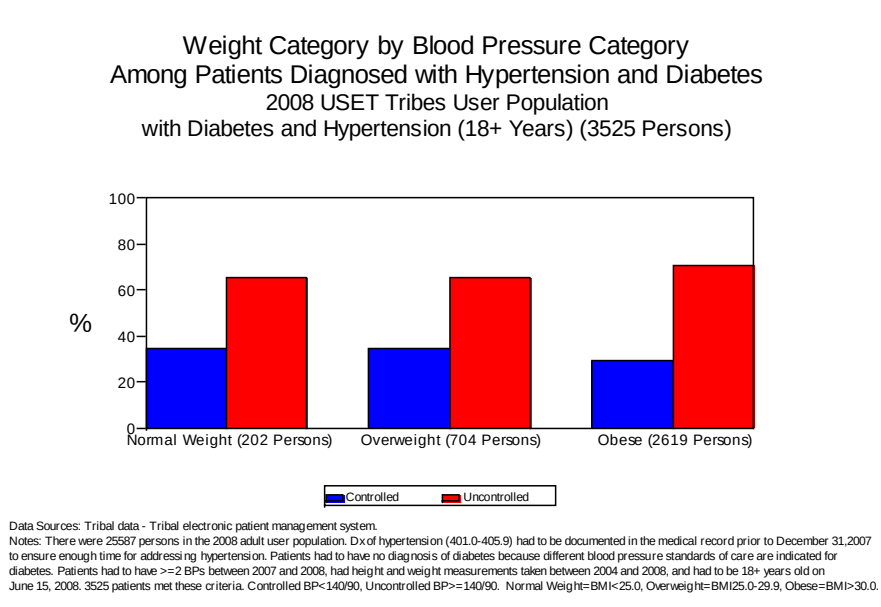
To evaluate the health status of the population with a hypertension and diabetes diagnosis, patients that had hypertension before the end of 2007 were evaluated on several indicators in 2008. Setting this 2007 cutoff helps ensure newly diagnosed patients had some time to address their hypertension. A controlled blood pressure for patients with a dual diagnosis of hypertension and diabetes is lower (<130/80) than a diagnosis of hypertension alone (<140/90).[2] Of the 4980 patients with a dual diagnosis only three of every ten maintained controlled blood pressure (Figure 12).

Figure 13



Regardless of age or gender, most patients with diabetes and hypertension had uncontrolled blood pressures (Figure13). It appears that young men were less likely than young women to maintain controlled blood pressure (Figure 13).

Figure 14

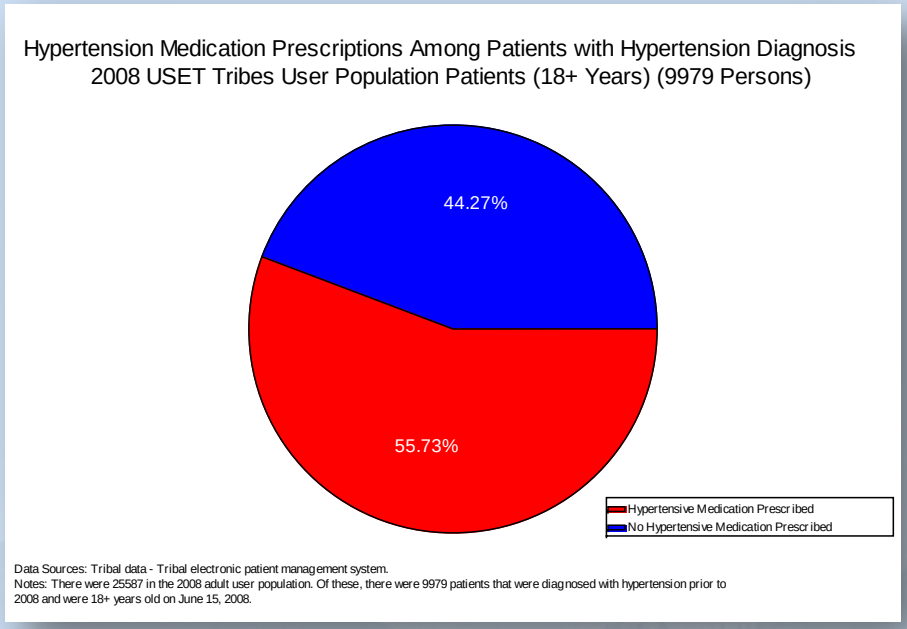


Of the 4980 patients with diabetes and hypertension, 3525 (70.8%) had valid height and weight measurements. Of these only 202 had a normal weight. The majority of dual-diagnosis patients were obese (74.3%). When comparing patients that were obese to those that were overweight, overweight patients were more likely to have controlled blood pressure (Figure 14).

Pharmacological Treatment Patterns for Patients with Hypertension

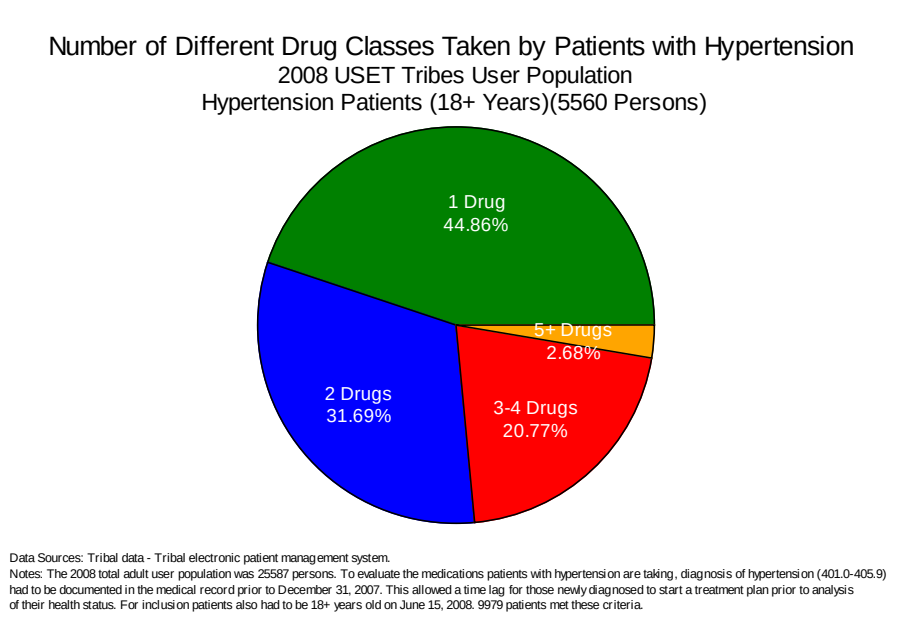
Figure 15

Pharmacological treatment is often used to manage hypertension. Of the 9979 persons that were diagnosed with hypertension prior to 2008, 55.7% were prescribed a hypertensive medication in 2008 (Figure 15).



Among patients taking medication, approximately 45% were prescribed one medication. There were very few patients (~3%) prescribed five or more medications.

Figure 16

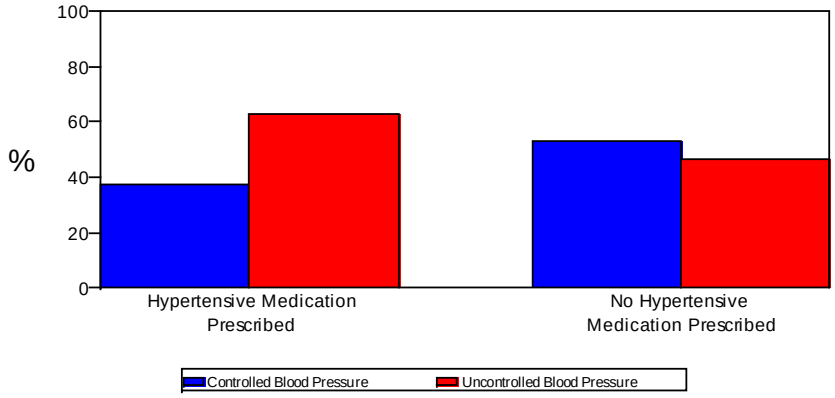


The most recent Joint National Committee Report on the Prevention, Detection, Evaluation, and Treatment of Hypertension indicates that thiazide diuretics, unless otherwise indicated should be used initially alone or in combination with another class of hypertension medication. [2] Among the patients using medications with no contraindication 40.0% were using thiazide diuretics (Table 1). ACEs and ARBs are highly recommended among patients that have hypertension and diabetes or chronic kidney disease; ACEs and ARBs are highly utilized among the USET Tribal patient population with these co-morbid conditions (Table 1).

Table 1

	Thiazide Diuretic	*Loop Diurectic*	*Potassium-Sparing Diuretic*	*ACE*	*ARB*	*Aldosterone Receptor Blocker*	*Beta-Blocker*	*Calcium Channel Blocker*	*Combine Alpha and Beta-Blockers*	*Alpha-1 Blockers*	*Central Alpha-2 agonists*	*Direct Vasodilators*
No Medical Contraindication	580	580	103	702	224	11	323	226	30	12	75	2
	40.0%	4.8%	7.1%	48.4%	15.4%	0.8%	22.3%	15.6%	2.1%	0.8%	5.2%	0.1%
Diabetes Mellitus	1074	658	162	2748	692	72	724	750	245	78	213	32
	29.3%	17.9%	4.4%	74.9%	18.9%	2.0%	19.7%	20.4%	6.7%	2.1%	5.8%	0.9%
Ischemic Heart Disease	437	470	62	955	365	61	480	377	166	63	109	25
	28.8%	31.0%	4.1%	63.0%	24.1%	4.0%	31.7%	24.9%	10.9%	4.2%	7.2%	1.6%
Chronic Kidney Disease	335	335	56	608	272	45	257	269	109	44	94	26
	34.7%	36.9%	5.8%	63.0%	28.2%	4.7%	26.6%	27.9%	11.3%	4.6%	9.7%	2.7%

Figure 17



Data Sources: Tribal data - Tribal electronic patient management system.
Notes: The 2008 total adult user population was 25587 persons. To evaluate the medications patients with hypertension are taking, diagnosis of hypertension (401.0-405.9) had to be documented in the medical record prior to December 31, 2007. This allowed a time lag for those newly diagnosed to start a treatment plan prior to analysis of their health status. For inclusion patients also had to be 18+ years old on June 15, 2008. 9979 patients met these criteria. For this analysis patients also had to have a valid blood pressure. 8633 met this criteria.

Of the 9979 patient with hypertension, 8633 had valid blood pressure measurements recorded in 2008. Of these, one of every two patients were prescribed a blood pressure control medication. Under 40% of patients prescribed medication were maintaining controlled blood pressure (Figure 17).

References

1. American Heart Association. 12 Nov 2009. King Pharmaceuticals, Inc., Omron Healthcare, Inc. and Schering-Plough HealthCare Products, Inc. 17 Nov 2009. <http://www.americanheart.org/presenter.jhtml?identifier=1200000>.
2. National Institute of Heart, Lung and Blood Institute. The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of Blood Pressure. December 2003.
3. National Center for Health Statistics. Health, United States, 2008 With Chartbook. Hyattsville, MD: 2009.
4. American Physiological Society. "Obesity And Hypertension: Two Epidemics Or One?" ScienceDaily. 11 June 2004. 18 November 2009 <http://www.sciencedaily.com-/releases/2004/06/040611081250.htm>.

Suggested Reference

United South and Eastern Tribes, Tribal Epidemiology Center. Hypertension Among the USET Tribes: The Silent Killer. February 2010.

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