

# Starting the Conversation on Hypertension Self-Management in Primary Care to Improve Cardiovascular Outcomes

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Special thank you to my DNP Committee at Duke University – Marva M. Price, DrPH, APRN, FAAN, FAANP, Debra J. Barksdale, PhD, FNP, eNE, FAANP, Katrina E. Donahue, MD, MPH and Elizabeth Walker Boozer, MSN, FNP-BC

## DNP PROJECT ABSTRACT

- Purpose** of this nurse practitioner led quality improvement (QI) project was to improve the clinical performance in the management of hypertension (HTN) with a focus on self-management support (SMS) among adult patients (18-75 years) at a rural primary care clinic with an exceptionally high rate of cardiovascular disease. The six-month QI initiative was designed with a goal to have 80% or more of the adult patients with a diagnosis of HTN actively setting goals in collaboration with their providers for CVD risk reduction.
- The study design** was a six month long quality improvement study. Data included a retrospective baseline of meaningful use population data (N = 1210) generated six months prior to the QI study start date and an analysis of the data during the six-month QI study (N = 1409). Interventions included provider and staff QI training along with patient education and lifestyle goal setting for self-management support (SMS) of HTN. All adult patients with a diagnosis of HTN or an elevated BP reading at their office visit were offered the brochures *Starting the Conversation on Blood Pressure* by the NC Prevention Partners(2011) and *Start with Your Heart Prescription for Better Health* from the NC Department of Health and Human Services(2011) in English or Spanish. Questions were answered on HTN and risk reduction by all health care providers throughout the office visit. Community focused, "Living Healthy" group support classes were offered to all.
- Specific, Measurable, Attainable, Realistic and Time specific (SMART) goal** setting and action plans were encouraged and a written self-management plan was given at the end of each office visit. Electronic medical record data was used to compile population statistics for blood pressure (BP), LDL cholesterol, tobacco use, body mass index, and self-management goals monthly throughout the QI study.
- Results**  
Pre and post results of the QI six month period were compared. The primary objective, > 80% of adults aged 18 to 75 years would have documented self-management goals, was achieved and significantly improved from baseline. **SMART** goals discussed included following the recommendations for the Dietary Approaches to Stop Hypertension (DASH) diet, aerobic physical activity, weight loss for healthy body mass index, tobacco cessation, moderate alcohol consumption, stress reduction, medication adherence, home BP monitoring, and, as applicable, blood sugar control. A secondary objective was to see significant improvement in controlled HTN (BP < 140/90) for this population, but this did not occur. A limitation of this QI study was the short length (six months) of observation time.

## BACKGROUND AND SIGNIFICANCE

- Cardiovascular disease (CVD) – heart disease and strokes - caused one in three deaths in the USA with an estimated cost to the national health care system of \$316 billion per year (AHA, 2017). The American Heart Association (AHA, 2017) states more than 40% of African Americans have hypertension. In 2012 the U.S. Department of Health and Human Services (HHS) launched the Million Hearts initiative, (<http://millionhearts.hhs.gov/>) "to prevent 1 million heart attacks and strokes in 5 years" (2012-17):

**One in three American adults have cardiovascular disease, killing an average of one American every thirty-seven seconds.**

The US Department of Health and Human Services (HHS) launched a national initiative September 13, 2011 called a **Million Hearts** to "prevent 1 million heart attacks and strokes in 5 years" with strategies directed at the leading modifiable risks for CVD...

**High blood pressure (BP) is the single most significant modifiable risk factor for heart disease and stroke.**

**BP baseline = 46%**  
**Goal by 2017 = 65%**

<http://www.startwithyourheart.com/>

- Strategies were directed at the leading modifiable risks for CVD to support improved outcomes in the "ABCS" - Aspirin for those at risk, Blood pressure control, Cholesterol control, Smoking cessation and Sodium reduction in the diet. The focus of this campaign was to empower Americans to make healthy lifestyle choices to reduce CVD risks and for healthcare providers to support their patients in these healthy lifestyles.
- Hypertension (HTN) is the single most independent and modifiable risk factor for cardiovascular disease (CVD), stroke, congestive heart failure, and chronic renal disease (CRD) (Chobanian et al., 2003).
- The Million Hearts campaign set a clinical quality measure for blood pressure control goal at 70% in the clinical population with a diagnosis of hypertension; the measurement was defined as the "percentage of patients 18 to 85 years of age with a diagnosis of hypertension (HTN) and whose blood pressure (BP) was adequately controlled (<140/90) during the measurement year". In the Southeast Region of the United States, it is currently reported by the Department of Health and Human Services (2016) that only 53% of the of the clinical population has achieved the clinical control blood pressure (BP < 140/90) - a large gap from the 70% goal (<http://millionhearts.hhs.gov/data-reports/cqm.html>, 2016).

## OBJECTIVES – FOCUSED ON MODIFIABLE RISK FACTORS

The objectives of the DNP project were to assist patients with self-management support around modifiable risk factors for HTN in alignment with the Centers for Disease Control and Prevention (CDC, 2013) Hypertension Control Action Steps for Clinicians recommendations as follows:

- Provide patients who have hypertension with a written self-management plan at the end of each office visit and encourage goal setting.
- Encourage or provide patient support groups.
- Use all staff interactions with patients as opportunities to assist in self-management goal-setting and practices.
- Print visit summaries and follow-up guidance for patients.

**Objectives of 6 month QI Initiative**  
September through March

- To have **80% or more** patients actively **setting goals** in collaboration with their providers, as demonstrated by chart review.
- To **increase** the percentage of adults with the diagnosis of primary HTN whose BP was **under control** (BP < 140/90).

**Factors Affecting High Blood Pressure**

Social-cultural Determinants of Health: Health Literacy, Physical Environment

Age, Heredity, Diet, Exercise, Over Weight, Stress, Medication, (Too much) Alcohol, Smoking

Hypertension: High Blood Pressure

Ethnicity, Access to healthcare, Health Disparities

## METHODS: QUALITY IMPROVEMENT USING EVIDENCE BASED GUIDELINES

**JNC 7 & Hypertension Guidelines**  
Antihypertensive medication regimen should be simple, using a step-wise approach and close follow up for adherence and side-effects until target BP is reached.

**JNC 7 (2003) recommends supporting patients in self-management of life style modifications** with studies supporting a **SBP** reduction of:

- 5-20mmHg with a **ten kilogram weight loss**.
- 8-14mmHg reduction following the DASH- Dietary Approaches to Stop Hypertension eating plan that includes sodium restriction.
- 4-9mmHg reduction with aerobic **physical activity** for 30 minutes most days of the week
- 2-4mm Hg **limiting alcohol** consumption.

**JNC 8 - Lifestyle Guidelines**

**Focuses on:**

- Lifestyle
- Risk Assessment
- Blood pressure (140/90)\*
- Cholesterol
- Obesity

**Integrates CVD risk-reduction guidelines:**

- High blood pressure (JNC 7)
- High cholesterol (ATP 3)
- Obesity (Overweight & Obesity)

\* JNC 8 BP for over 60 years old = 150/90

**QI Implementation... Collaborative Team-work Staff interventions**

**Correct Blood Pressure Measurement**

**Tools for Success...**

- Health Literacy
- Culturally sensitive
- Motivational interviewing
- Wellness Coaching
- Setting SMART Goals
- Group Supported

**GOAL SETTING**

SPECIFIC  
MEASURABLE  
ATTAINABLE  
RELEVANT  
TIME-BOUND

**Patient Centered-care Key Steps in Self-management Support**  
Partner with patient and family:

1. Assess patient understanding (health literacy) and skills
2. Determine readiness
3. Collaboratively set achievable goals (confidence level scales 1-10)
4. Fix to see if achieved
5. Problem solve around barriers and
6. Revise goals as needed
7. Document goals and plans

**Starting the Conversation**

Are you ready to take steps to lower your blood pressure?

**Informatics: Document Self-management Goals...**

**Life's Simple 7: seven steps you can take to improve your health.**

**Life's simple 7 steps...**

1. Get active (goal 30 minutes most days)
2. Eat heart healthy diet (DASH, Low Na+)
3. If overweight, lose it
4. Manage your blood pressure
5. Quit tobacco use/ moderate alcohol
6. Control your cholesterol (LDL < 100)
7. Control blood sugar (fasting < 100mg/dl)

**Physical Activity**  
4-9mmHg SBP Reduction with Aerobic Physical Activity for 30 minutes Most Days of the Week

**ADA recommendations:**

- 150 minutes (2 1/2 hours) per week or more of moderate-intensity aerobic physical activity (50% - 70% of maximum heart rate)
- AND/OR 90 minutes per week or more of vigorous aerobic exercise (≥ 70% of maximum heart rate)
- Physical activity should be distributed over at least three days per week, with no more than two consecutive days without physical activity
- Resistance training three days per week

**The DASH Diet Eating Plan**  
8-14mm Hg SBP Reduction Following the DASH- Dietary Approaches to Stop Hypertension (DASH) is a balanced eating plan that has been shown to lower high blood pressure, cholesterol, good for diabetes, and weight loss.

**The DASH eating plan:**

- Is low in saturated fat, and total fat
- Focuses on fruits, vegetables, fat-free or low-fat milk and milk products
- Is rich in whole grains, fish, poultry, beans, seeds, and nuts
- Contains fewer sweets, added sugars.
- Is lower in sodium (salt) < 2.4 gm/day

**Evidence Based Recommendations on Implementing Physical Activity, and Dietary Interventions**

Artinian et al (2010) reviewed 74 interventional studies on adults. Outcomes assessed included change in diet, physical activity, weight, BP, cholesterol, glucose and/or Hemoglobin A1C.

**Graded findings for the American Heart Association:**

**Class I (evidence A):** focus on changing how an individual thinks about themselves, using goal setting, self-monitoring, frequent and prolonged contact, feedback and reinforcement, and self-efficacy enhancement.

**Class II (evidence B):** included incentives, modeling and problem solving. Relapse prevention and motivational interviewing were suggested throughout the AHA statement.

**Group based interventions = opportunities for social interaction and support, resulted in better outcomes than individual-based interventions.** (Brown, et al., 2010)

**Tobacco Use 1 800-QUIT NOW**  
Five A's of counseling patients to stop using tobacco: Ask, Assess, Advise, Assist, & Arrange

**HEALTHY PERSONS**  
Collaborative Team-work And Community Resources

## RESULTS

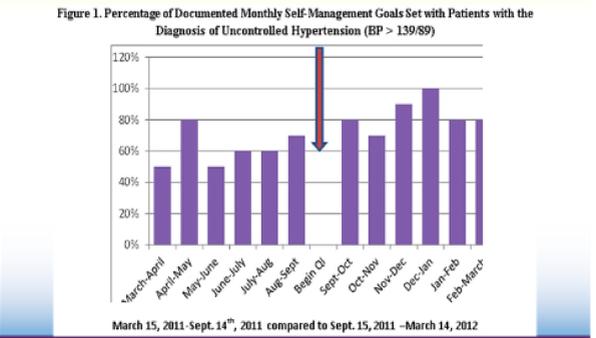
- Data included a retrospective baseline of meaningful use population data (N = 1210) generated six months prior to the QI study start date and an analysis of the data during the six-month QI study (N = 1409)

**Data Collected after IRB Approval:**  
Pre-post 6 months QI intervention Design  
Dx of essential HTN (401)  
18 - 75 years old and not pregnant

- **Self-management Goals set** (yes, no, not documented)
  - **Systolic and Diastolic blood pressures**  
Meaningful use: **blood pressure less than 140/90**
  - **Body Mass Index**  
Meaningful use: **weight screening and follow up. If BMI outside parameter, follow up plan is documented.**
  - **Tobacco use**  
Meaningful use: **Smoking and Tobacco use cessation; (Advised smokers and current tobacco users to quit)**

## RESULTS

**The primary objective, > 80% of adults aged 18 to 75 years would have documented self-management goals, was achieved and significantly improved from baseline. P = .0079**



**The secondary objective, improvement in controlled HTN (BP < 140/90), did not occur. Controlled BP was 57%. A limitation of this QI study was the short length (six months) of observation time.**

**Table 1**  
Meaningful Use Hypertension Z-test results for Six Months Baseline before Quality Improvement Compared to Six Months during Quality Improvement

Patients seen (ages 18-75 years old)	With ICD9 Dx 401 Essential HTN*	March 15, 2011 - Sept. 14, 2011 Baseline	Sept 15, 2011 - March 14, 2012 Quality Improve %	Z-value	Two-tailed p-value
BP > 20/10	N = 1210	N = 1409			
BP < 130/80	28.93	28.67	.14	.88	
Last entry blood pressure (BP) mmHg systolic and diastolic					
BP < 140/90	58.76	57.20	8062	4201	
BP < 160/100	87.36	87.58	-0.1696	8653	
BP > 159/99	2.31	1.99	5645	5724	

**Body Mass Index: 65 % Classified Obese (BMI > 29.9)**

Body mass index (BMI) Kg/m <sup>2</sup>	Last entry > 1	N = 1096	N = 1290	Z-value	p-value
Under weight < 18.5	64	.47	5605	.5751	
Normal < 25	11.41	11.63	1677	8668	
Over weight > 24.9 < 30	24.18	23.72	2624	.793	
Obese > 29.9	64.96	65.27	-0.1583	0.8742	

**26% Smokers; 82% Advised to Quit During QI**

Smoking not blank	N = 1186	N = 1353	Z-value	p-value
Documented smoking				
Yes smokes	26.14	25.57	.3274	.7434
Current yes	N=310	N=346		
Advised to quit	77.74	82.08	1.3881	.1651

## CONCLUSIONS

- Self Management Goal Setting > 80% was achieved and improved significantly from baseline.
- With short 6 month intervention – significant improvement in controlled BP < 140/90 was not achieved in the patient population with dx of HTN (n = 1409).
- In this population there were high rates of tobacco use (26%) with 82% advised to quit. Also high rates of obesity > 65% for the patients with a Dx of HTN.

**QI Results Compared to the U.S. Baseline and Million Hearts Campaign Goals for 2017**

ABCs prevention measures	United States baseline- population (CDC, 2011)	Quality improvement results (September 2011-March 2012)	Million Hearts 5-year population/clinical target goal 2017
Aspirin for high risk	47%	49%	65 / 70%
Blood pressure < 140/90mmHg	46%	57%	65 / 70%
Management LDL-C <sup>a</sup>	33%	57% LDL-C < 100mg/dL	65 / 70%
Smoking prevalence	20 %	26% yes smoke	17%--
Cessation counseling or meds	23%	82% advise/assist	
Overweight BMI > 24.9 kg/m <sup>2</sup>	69%	89% = 24% overweight 65% obese	

**Implications for Practice**  
Health care providers have an important role in meeting the current demand for CVD and HTN management and supporting patients in their self-management to help prevent heart attacks and strokes! More focus needs to be on physical activity and diet to decrease the 65% obesity in this population.

In the US, the prevalence of obesity among adults, estimated using NHANES data, increased from 1999 to 2000 through 2013 to 2014 from 30.5 percent to 37.7 percent.