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*CENTERS FOR MEDICARE & MEDICAID SERVICES*

**Great Plains**



Quality Innovation Network

# **Blood Pressure Protocol Training**

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ND



# Hypertension Education

Accuracy in BP Measurement  
2018

BlueAlliance



# Objectives

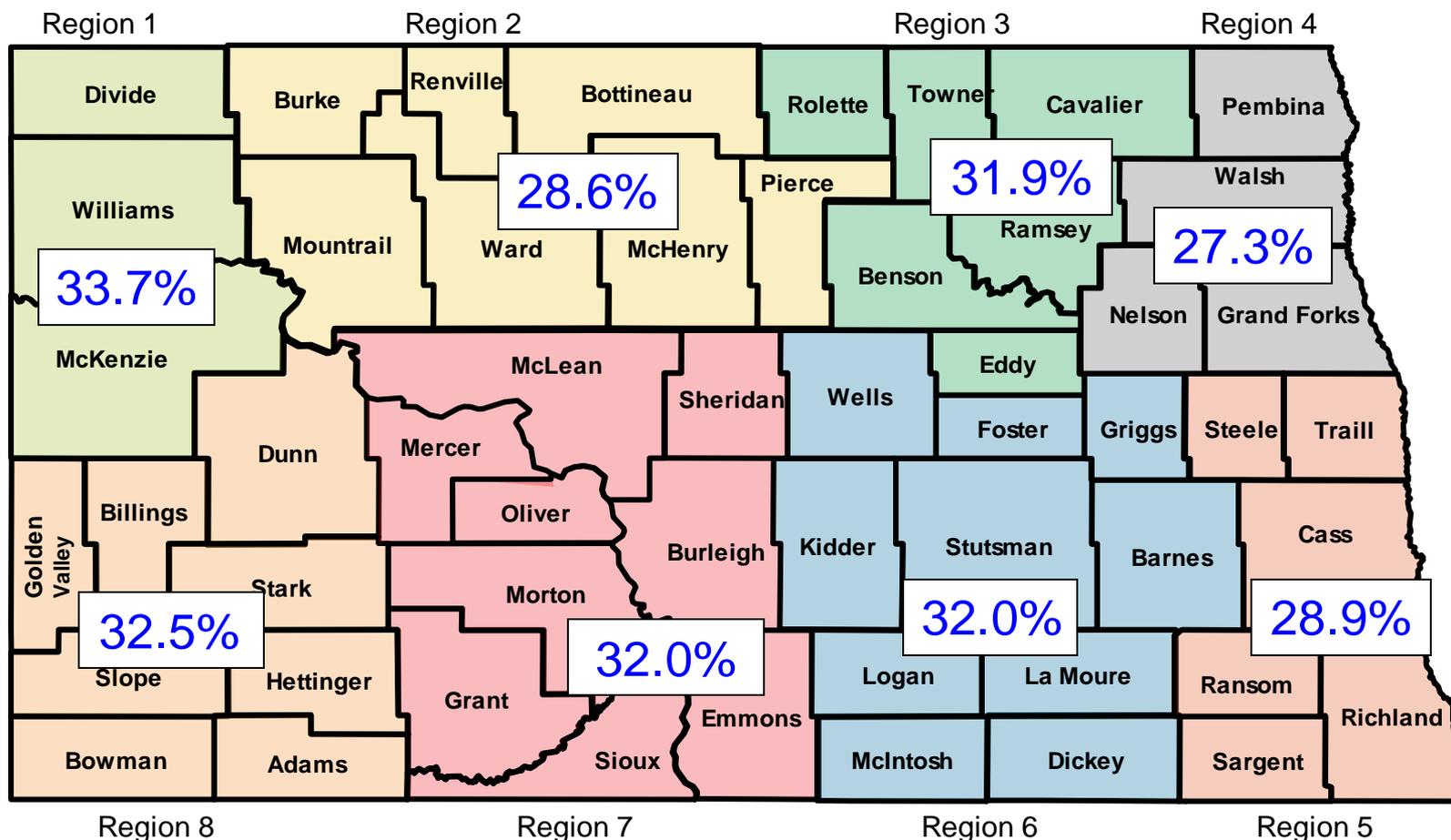


- Explain why accuracy in BP measurement is critical in management of hypertension
- Identify the prevalence of HTN in North Dakota
- Identify basic lifestyle recommendations to lower blood pressure
- Recommend tools for education, workflow and an approved protocol for use to improve identification and management of people with elevated blood pressure
- Demonstrate proper sizing of a BP cuff and how to take a blood pressure
- Discuss alternate blood pressure measurement sites

- Hypertension is the most common chronic condition in primary care settings
- One of the most modifiable conditions through proper treatment and lifestyle management
- 46% of adults have hypertension with new guidelines.
- Only about 49.3%- 55% of those have their BP under control

- Accuracy in BP measurement is critical to effective diagnosis and treatment
- Underestimating true BP by 5mmHg could mislabel 20 million Americans who now may have hypertension stage 1 with the new guidelines.
- Overestimating true BP by 5mmHg could lead to over treatment of almost 30 million Americans

# Percentage of People Reporting High Blood Pressure in North Dakota



BRFSS 2013

## Factors affecting change in Systolic/Diastolic BP

- Talking or being talked to 10/10
- Distended bladder of patient 15/10
- Cuff over clothing 5/50
- Cuff too small 10/2-8
- Smoking within 30 minutes 6-20/unknown
- Paralyzed arm 2-5/unknown
- Back Unsupported 6-10/unknown
- Arm unsupported, sitting 1-7/5-11
- Arm unsupported, standing 6-8/unknown
- Legs crossed 2-8mm HG elevated systolic/unknown

*Source: The Permanente Journal 2*

# Lifestyle Modification



ND

					
Weight Reduction	Reduction in Dietary Sodium	DASH Diet	Physical Activity	Alcohol	Other
<ul style="list-style-type: none"> <li>Lowering weight by 5% can reduce BP 5-20 mmHG</li> </ul>	<ul style="list-style-type: none"> <li>Lowering sodium to 1500-2400 mg daily can reduce BP by 2-8 mmHG</li> </ul>	<ul style="list-style-type: none"> <li>Increasing fruits and vegetables and reducing saturated fats can reduce BP by 8-14 mmHG</li> </ul>	<ul style="list-style-type: none"> <li>Regular aerobic activity for 30 minutes per day can reduce BP by 4-9 mmHG</li> <li>Can be broken down to 10 minute intervals</li> </ul>	<ul style="list-style-type: none"> <li>Limit alcohol use to 2 drinks per day for men and 1 drink for women</li> </ul>	<ul style="list-style-type: none"> <li>Emotions, stress, caffeine intake, drug (both prescription and non prescription) and family history all contribute to BP</li> </ul>

– Blood Pressure  
Over Goal?



## Manual cuff

- Gold standard-mercury sphygmomanometers (less common due to toxic effects) are more accurate than aneroid sphygmomanometers
- Observer and Methodology errors
- Trained observer

## Automated cuff

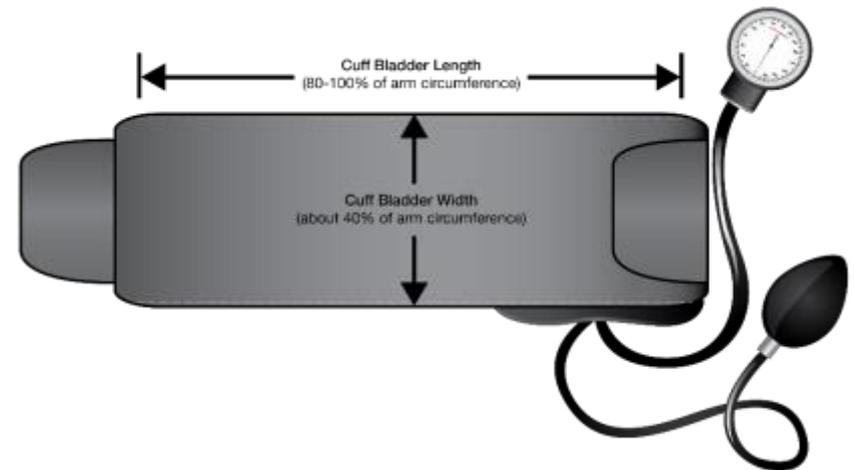
- More commonly used due to ease of use
- Methodology errors
- Removes observer errors
- Improves patients ability for home BP readings

# Blood Pressure Cuff Sizing

The most frequent error in measuring BP is miscuffing. Undercuffing large arms accounts for approximately 84% of miscuffings.

Recommendations for proper cuff size for accuracy

- BP bladder cuff should encircle 80% of the patient's arm circumference
- The width of the cuff should be 40% of the width of the arm



## Upper arm

- For over 100 years upper arm has been considered the gold standard
- Most common site
- Recommended by American Heart Association and the European Society of Hypertension

## Forearm

- May be used if unable to get accurate upper arm reading
- Suitable for patients with obese conical shaped arms

## Thigh

- Typically used when upper arms are contradicted
- When taken accurately, normally the systolic BP in legs run approximately 10-20% higher than upper arm

## Wrist

- Has become popular devices for home self BP monitoring
- Extremely sensitive to body positioning for accuracy
- Usually are higher readings than upper arm readings

## Finger

- Never the recommended site at this time due to inaccuracies

# Preparing The Patient

- Make sure patient has been sitting down for 5 minutes
- Any exercise, smoking, caffeine 30 minutes prior to BP check?
- Have patient seated, back supported, at level of heart
- No talking by patient or practitioner
- Is the patient's bladder empty?



# Measuring Blood Pressure



1. Place BP cuff 1 ½ inches above antecubital space
2. Center over brachial artery
3. Check pulse – if irregular use manual BP cuff only
4. Keep thumb off of the bell of stethoscope
5. Inflate to 20- 30 mmHg above where pulse is no longer palpable

1. Slowly deflate at a steady rate, 2-3 mmHg per heartbeat
2. Listen for first of two or more beats (Kortkoff sounds) **SYSTOLIC BP**
3. Last muffled beat (Kortkoff sound) is **DIASTOLIC BP**
4. If BP is above goal for patient, repeat after 1-2 minutes
5. Report to provider for follow up if continued elevated BP

*Source: Medscape Institute for Clinical Systems Improvement*

- New HTN Guideline released for 2017.
- 4 new BP categories based on average of 2 or more “ In office readings”
- No more “ pre-hypertension”
- Definition of hypertension now considered to be 130/80 or higher.

# References



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- Hypertension treatment in adults: Fourteenth edition Institute for clinical systems improvement.
- How accurate are wrist blood pressure monitors? Sheldon G. Sheps, MD Mayo Clinic
- Managing hypertension: Kristine Ann Scordo, PhD, RN, ACNP-BC, FAANP and Kim Anne Pickett, MS, APRN, CDE Article in Nursing 2015.
- Measuring Blood Pressure in legs: Erica Brownfield, Medscape. March, 2004.
- Non-Invasive Blood pressure monitoring: American Association of Critical care Nurses, issue June 2006.
- The importance of accurate blood pressure measurement.  
[http://xnet.kp.org/permanentejournal/sum09/blood\\_pressure.html](http://xnet.kp.org/permanentejournal/sum09/blood_pressure.html).
- 2017 High Blood Pressure Clinical Practice Guideline: Paul Whelton, MB, MD, MSc FAHA Chair.

# Thank you for attending!

## Continuing education credit is available for today's event.

1. Please follow the link provided at the end of this webinar:  
<https://heartstroke.health.nd.gov/events/bpprotocol>
2. Select one of the two options for completing the pre/post test and evaluation:
  - a. Print, complete, scan and email the form to Tiffany Knauf, [tknauf@nd.gov](mailto:tknauf@nd.gov). **Please make sure to write your name at the top of the evaluation.**
  - OR**
  - b. Complete the online evaluation.

Additionally, because there may be multiple individuals participating in the same room from a facility, each attendee who signed into the webinar will receive the same link via email in 2-3 days which may be shared with other individuals from your organization who attended today's webinar.