HEART HEALTH:

Cardiovascular Guidelines for Community Health Centers

TRAINING PRESENTATION

Measuring Blood Pressure Accurately

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CHCANYS *Defining New Directions*
Community Health Care Association of New York State

Acknowledgements

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- The contents this training reference manual are solely the responsibility of the authors and do not necessarily represent the official views of CDC

About CHCANYS

- CHCANYS, a 37 year-old organization, is New York's Primary Care Association and the statewide association of community health centers
- CHCANYS works to ensure that all New Yorkers and particularly those living in underserved communities, have access to high quality community based health care services
- CHCANYS' mission is focused on retaining and expanding primary care capacity; investing in primary care health information technology (HIT); implementing primary care home standards; reforming the primary care payment system; and developing the primary care workforce

About Hudson River HealthCare, Inc.

- Hudson River HealthCare, Inc. is network of 16 Community Health Centers in 6 counties located in the Lower Hudson Valley and Long Island in New York State
- Hudson River HealthCare, Inc. is a Federally Qualified Health Center (FQHC) and is Joint Commission accredited for primary care and behavioral health
- Their mission is to increase access to comprehensive primary and preventive health care and to improve the health status of our community, especially for the underserved and vulnerable
- Their practice is based on Care Model (formerly Chronic Care Model)

Objectives

- State common errors noted in performing blood pressure (BP) measurements
- List factors or techniques required for accurate BP measurement
- Discuss organizational strategy that can be implemented for improving BP accuracy

Concern Over Blood Pressure

- BP readings aren't always trusted
  - Staff trained differently
  - Similar readings at last visit
  - Wrong size cuff connected
  - Use of defective cuffs
- Inaccurate BP measurement creates potential for harm
  - Under treatment
    - Cardiovascular co-morbidities
    - Advancing kidney disease
  - Overtreatment
    - Falls

Blood Pressure Categories

Blood Pressure Level (mmHg)			
Category	**Systolic**		**Diastolic**
Normal	<120	and	<80
Pre-hypertension	120-139	or	80-89
High Blood Pressure			
Stage 1 Hypertension	140-159	or	90-99
Stage 2 Hypertension	160 or <	or	100 or >

Weaknesses in Blood Pressure Procedures

- Errors happen due to a variety factors
- Factors ultimately affect BP readings because they are relational and interdependent
  - Most fallible factor is the ***observer***
- Observer accuracy taken for granted

Weaknesses in Blood Pressure Procedures (cont'd)

- Assumption that all staff has the same level of skill sets and accuracy
  - Creates the lack of continuity from observer to observer
- Role of the equipment underestimated in process
- BP cuff
- Sphygmomanometer
- Stethoscope

Strategies to Assure Accurate Blood Pressure Measurements

- Decision Support
  - Well developed organizational policies and procedures with adherence to policy
  - Organization-wide implementation
  - Administration support
    - Training costs
      - Staff educators' time
      - Proper equipment
    - Trainings
      - Address gaps in BP control

Strategies to Assure Accurate Blood Pressure Measurements (cont'd)

- Trainings emphasizing accurate BP measurement skills
  - Orientation process
- Reinforcement of training for employees
  - Mandatory and yearly
  - Updating trainings, as needed
- Provider awareness

Staff Training and Competency

- Orientation – starting the process
- Competency checklist
  - Correspond with theory and practice
- Tutorial
  - www.abdn.ac.uk/medical/bhs/index
  - Found to be extremely helpful
  - Key to listening
  - Same standard for all

Implementing the Training

Step 1: Equipment

- Emphasize the role of the equipment as well as staff members' knowledge
  - BP cuff
  - Sphygmomanometer
  - Stethoscopes
    - Double stethoscopes for evaluation by trainers/managers

Sphygmomanometer

- Defective sphygmomanometers
  - Encourage staff to report defective equipment to Nurse Managers
- Aneroid or digital sphygmomanometers
- Calibration *must* occur per manufacturer's recommendations
  - ***Regardless of the type***
  - Every 6 months

Cuff Size

- Purchase BP cuffs for different sized arms
  - Easy to determine incorrect sizing
  - Infection control issues
    - Easy to wipe clean
- Have available in all (most) exam rooms

Acceptable Bladder Dimension for Arms of Different Sizes

Cuff	Bladder Width (cm)	Bladder Length (cm)	Arm Circumference Range at Midpoint (cm)
Newborn	3	6	<6
Infant	5	15	6-15+
Child	8	21	16-21+
Small Adult	10	24	22-26
Adult	13	30	27-34
Large Adult	16	38	35-44
Adult Thigh	20	42	45-52

Implementing the Training (cont'd)

Step 2: The Staff

- Create a secure environment for learning
  - Account for privacy and confidentiality
- Train observers
  - Implement staff competency
- Understand norms
- Only an observer who is aware of the factors affecting BP should measure BP
  - How else can they correct errors?

Patient Preparation

- Cold exposure: **increase** 11/8 mmHg
- Full bladder/bowel: **increase** 27/22 mmHg
- Physical activity: **decrease** 5-11/4-8 mmHg
- Smoking: **increase** 10/8 mmHg
- Stimulants: **increase** 8-10/7-8 mmHg
  - Alcohol, smoking and caffeine
- Talking: **increase** 17/13 mmHg

Patient Position

- Waiting time before BP is measured
  - ~5 minutes
- Standardization of proper positioning
  - Room design
  - Chairs
    - Back supported, feet support and uncrossed
- If not in the chair…
  - Waiting time before BP is measured
  - About 5 minutes

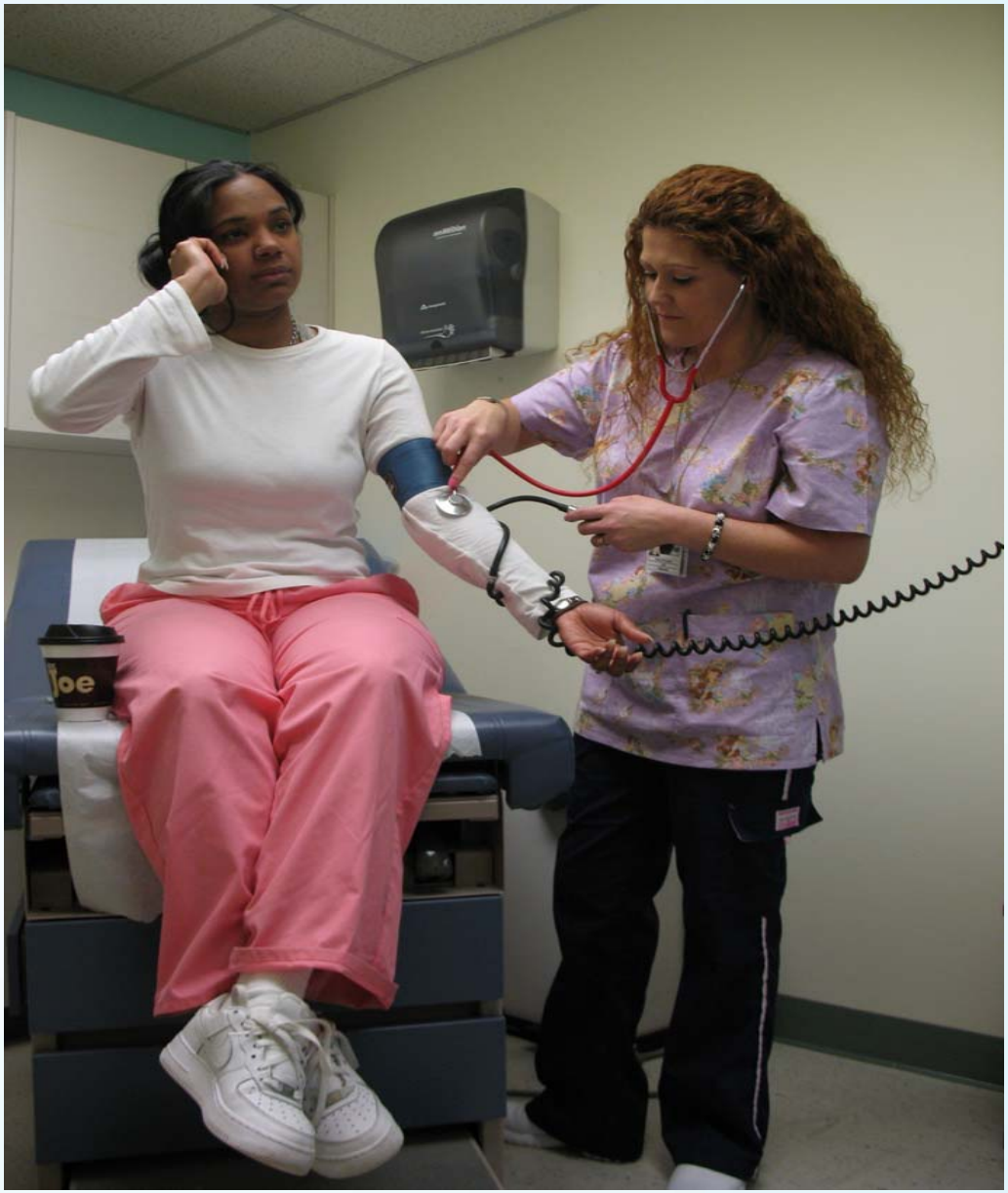
Limb Selection

- Organizational policy
  - Both arms at first visit unless contraindicated
  - Mastectomy, AV fistula or shunt, disease or injury
- Right or left arm preference or limitations
- Arm positioning
  - Supported, heart level, palm up
- Joint Commission states 2 readings 2 minutes apart

Cuff and Stethoscope Placement

- Placement of Cuff
  - Center of bladder ~1 inch above brachial artery
- Clothing
  - Removed or not constricting
  - “Bare arms” preferred
- Placement of stethoscope over brachial artery
- Deflate at 2 mmHg/second

What do you notice in this picture?



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How High Do You Pump the Blood Pressure Cuff?

- Discourage universal pumping to 180 or 200 mmHg to start off…
- Two methodologies accepted
  1. Review last BP and add 30 mmHg
  2. Determine palpatory systolic pressure
     - Encourage learning palpatory systolic in class
     - Palpate brachial; pump 30 mmHg above when no longer feel pulse, release valve @ 2-3 mmHg/sec, record when feel pulse again = palpatory systolic

Oops!!! I didn't hear it!

- Listening skills need reinforcement
- Do not pump up in middle of reading
  - Deflate and start over at least 30 seconds
  - Preferably 1-2 minutes later

Observer/Staff Issues

- Prejudice
  - Not wanting high reading for patients
- Digit preference
  - 0 or 5
- Observer haste
  - Interruptions
- Which Korotkoff sound?
  - Hudson River HealthCare, Inc. uses 5th

Observer/Staff Issues (cont'd)

- Hearing
  - Tutorial extremely helpful to teach this
  - BP measurement relies on accurate transmission of the Korotkoff sound that can vary from/with different stethoscopes
    - Stethoscopes purchased
    - Bell or diaphragm
  - Staff ability to hear
    - Audiology referral

Staff Training and Competency

- Not just teaching and training…but developing and educating
- Multiple methodologies to increase knowledge
  - Theory
  - Tutorial session
  - Training arm for simulated BP measurements
  - Return demonstrations
    - Dual stethoscope

Staff Training and Competency (cont'd)

- Competency
  - Objective standards of practice
  - Met or not met
- Remediation
- Job performance
  - Documentation
  - HR policy

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