



# Management of Hypertension – RPM and SMBP

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TIFFANY KNAUF, MAIS

JESSE RUE, PHARM.D, BCPS

HEIDI LUNDEEEN, RN

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## Disclosures

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None.


# Agenda

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- ❖ Overview of Hypertension
  - ❖ Why should patients self-monitor?
  - ❖ What is Remote Patient Monitoring?
  - ❖ Self-Measure BP Pilot at Trinity Health
  - ❖ Questions
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# Objectives

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- Understand the guidelines for the diagnosis and management of hypertension
  - Describe ways remote monitoring technology can assist healthcare providers deliver continuously-engaged healthcare over time.
  - Report the process and lessons learned from starting a self-measured blood pressure loaner cuff program.
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# Hypertension

**Diagnosis criteria:\***

Two or more elevated readings at 2 separate appointments/locations.

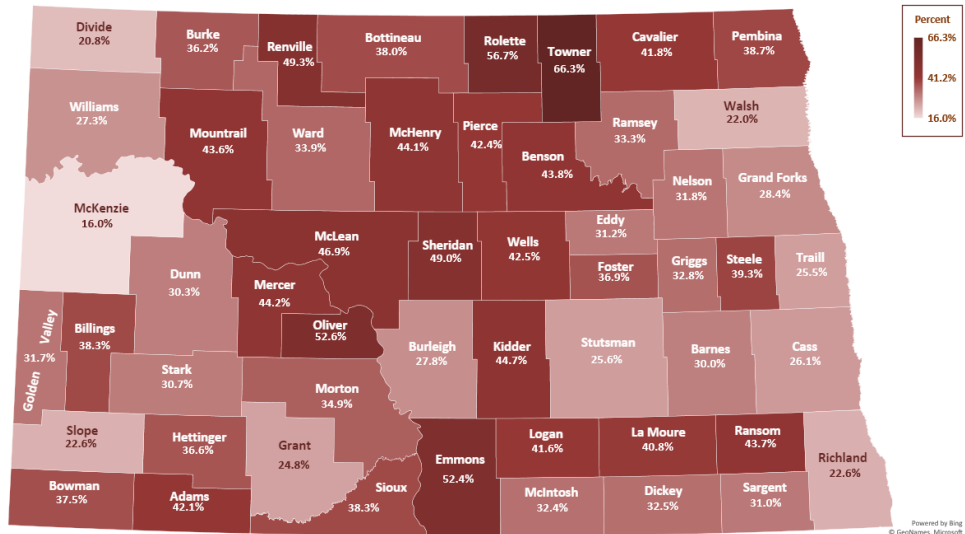
Category	Systolic		Diastolic
Normal	Less than 120	AND	Less than 80
Elevated	120-129	AND	Less than 80
Hypertension (1)	130-139	OR	80-89
Hypertension (2)	140 or higher	OR	90 or higher
Hypertension Crisis	Higher than 180	AND/OR	Higher than 120

\*Substantially higher prevalence of HBP under the new guideline (46% vs. 32% of adults)

**Prevalence:**

- 32.1% prevalence among US adults
  - 40.5% among adults 45-64
  - 65.9% among adults 65+
- 29.6% of ND adults reported ever being told by a doctor, nurse or other health professional that they have high blood pressure. (2017 ND BRFSS)


## Hypertension Prevalence in ND



Source: 2019 North Dakota Behavior Risk Factor Surveillance System (BRFSS)

# Hypertension


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- **Control criteria:**
    - The Systolic target <130 mm Hg and a Diastolic target of <80 mm Hg.
  - **Control rates:**
    - 22.7% of ND adults have UNCONTROLLED hypertension
    - Across the US only about half of people with hypertension have it under control (61% with old guidelines, and 47% with new guidelines)
  - **Why Hypertension Matters?**
    - **First heart attack:** About 7 of every 10 people having their first heart attack have high blood pressure.
    - **Heart failure:** About 7 of every 10 people with chronic heart failure have high blood pressure.
    - **First stroke:** About 8 of every 10 people having their first stroke have high blood pressure.
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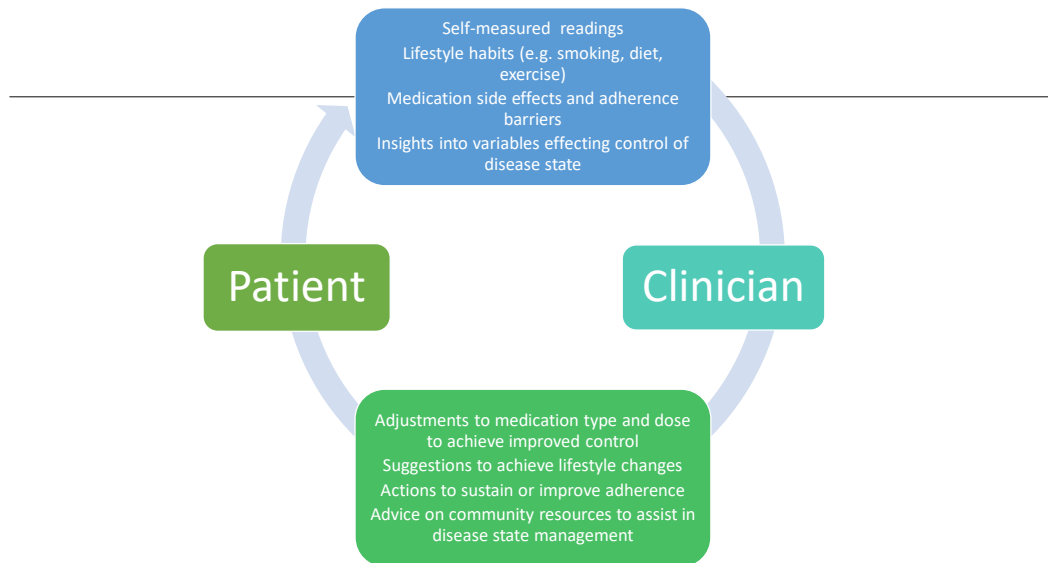
## Why should patients self-monitor?

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### Why Self-Measured Blood Pressure (SMBP)?

- Use self-measured blood pressure monitoring (SMBP) to diagnose and reassess HBP
  - Allows monitoring patients at home, to document BPs in relation to symptoms.
  - SMBP can be used to confirm the diagnosis of HBP based on elevated office readings and for titration of BP-lowering medication.
    - Provides multiple BPs over a longer period of time (more representative of patient's true BP)
  - SMBP can help differentiate between sustained, white coat, and masked hypertension.
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# Feedback Loop for RPM/SMBP



*A Joint Scientific Statement from the American Heart Association (AHA), American Society of Hypertension (ASH), and Preventive Cardiovascular Nurses Association (PCNA) encourages increased regular use of SMBP by clinicians for the majority of patients with known or suspected hypertension as a way to **increase patients' engagement** and ability to **self-manage their condition**, enabling the care team to assist in timely achievement and maintenance of control and preventing heart attacks and strokes.*

- CDC MILLION HEARTS ACTION GUIDE

*AHRQ found strong evidence that SMBP plus additional clinical support was more effective than usual care in lowering blood pressure and improving control among patients with hypertension.*

- AHRQ - EFFECTIVENESS OF SELF-MEASURED BLOOD PRESSURE MONITORING IN ADULTS WITH HYPERTENSION

## Remote Patient Monitoring (RPM)

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**RPM is a system that uses one or more devices to transmit patient-generated health data to healthcare professionals for review.**

Many choices in the in the market today.

Examples: Blood pressure, glucose, weight, spirometers, inhaler and insulin pen recording devices, activity trackers by many manufacturers.

This list above is simply hardware and doesn't touch on the multitude of service providers or software platforms to help run a program.

# Necessity for RPM in ND

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Covid-19 forced providers to deploy remote methods to monitor patient conditions and maintain engagement.

North Dakota—with a high percentage of rural citizens—has a particular need for creativity in delivering health care services.

Remote monitoring strategies are not in widespread use in North Dakota.



## Why RPM is an innovation

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**Rapid Cycle Improvement. Constant feedback.**

With RPM, we may be able to make several adjustments to therapy in the span of 1 return to clinic visit timeframe.

Having constant access to patient generated health data gives credibility.

RPM is an engagement machine. When patients know that staff is watching, it can be transformative.

# Why RPM is an innovation

Joint decision making is elevated.

For example, remote monitoring of blood pressure enables the care team to engage in extraordinarily robust joint-decision making with patients as they develop a more personalized care plan.

Feedback is an underappreciated portion of improving joint decision-making.

Sharing of data is emerging in healthcare, but the flood of patient generated data from RPM truly enables multi-disciplinary teams to flourish if they choose.

## A visual

Hypertension Flow Sheet MONDAY (Apr 26, 2021) < 📅

	Breakfast				Lunch				Supper				Night	
	PRE	HR	POST	HR	PRE	HR	POST	HR	PRE	HR	POST	HR	BEDTIME	HR
TUE (Apr 13)	140	85	59						134	75	72			
WED (Apr 14)									139	83	68			
THU (Apr 15)	141	74	66											
FRI (Apr 16)									140	77	64			
SAT (Apr 17)	143	87	64										139	87
SUN (Apr 18)	135	77	59										143	84
LAST WEEK														
MON (Apr 19)	141	88	64											
TUE (Apr 20)					174	88	63						148	85
WED (Apr 21)	139	81	66											64
THU (Apr 22)														
FRI (Apr 23)	155	89	59											57
SAT (Apr 24)	152	91	60											
SUN (Apr 25)	154	87	57											63
THIS WEEK														
MON (Apr 26)					148	93	64							
LOW	135	70	55		139	80	53		128	75	64		130	70
AVG	148	84	63		155	91	58		140	80	69		142	80
HIGH	165	94	71		174	96	64		159	87	73		158	87

📅 30 days ▾




# Case Studies

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Unexpected use cases have been manifold, suggesting that remote and digital interventions may have a broader base of patient applications than we first expected.

- Uncontrolled DM cases with rapid adjustment
- Insurance approval to transition to CGM
- Surgeon request prior to Whipple Procedure

Now beginning to get patients up on blood pressure monitoring through a coordinated program at the RHC.



## We say engage with pharmacy

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Frankly, engaging with pharmacy just makes a lot of sense when so much chronic disease care turns around medication use.

Pharmacy is witnessing a shift from dispensing focus to being responsible for monitoring and optimization.

Increased utilization of ambulatory care pharmacists (embedding in clinics).



## Implementing a Home Blood Pressure Monitoring Program in a Midwestern Tertiary Care Facility



Heidi Lundeen, RN, BSN, DNP-S

### Self-Monitoring Blood Pressure Program

- Home Blood Pressure Monitor
- Are they being used right?
- AHA & AMA recommended
- Monitoring program

• (Shimbo et al., 2020)



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# Introduction to the DNP Project

- Problem Statement
  - Hypertension
  - Out of office blood pressure readings



- PICO Question

Among primary care providers at a Midwest tertiary care facility, how does implementation of a home self-monitoring blood pressure program impact care for patients with hypertension as compared to the current practices?



(American Heart Association, 2016; Agarwal et al., 2010; Centers for Disease Control, 2020; Elliot et al., 2020; Rakotz, 2019; Sang-Ho et al., 2019)

# Introduction to the DNP Project

- Project Setting
  - Trinity Health
  - Internal medicine clinic & a rural health primary care clinic
- Organizational Needs Assessment
  - CMS core measures

(Trinity Health, 2018; Clinical Quality Measures, 2014)



# Literature Synthesis & Project Framework

- Literature search
- Synthesis
  - Overview of HBPM
  - HBPM recommendations
  - Positive aspects
  - Areas of improvement
  - Providers perspectives



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# Knowledge Translation & Outcome Planning

- Project Recommendations
  - Stakeholder education
  - Utilize the Target BP program
  - Standardized patient education
  - Standardized workflow
  - Utilizing HBPM to improve blood pressure control
    - (American Heart Association, 2016)



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**Daily Blood Pressure Tracking Sheet**

7 Day Recording Sheet - Self-Measured Blood Pressure Monitoring

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE	MORNING # 1 SYS DIA PULSE NOTE
2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE
EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE	EVENING L 1 SYS DIA PULSE NOTE
2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE	2 SYS DIA PULSE NOTE

PRACTICE ADDRESS: \_\_\_\_\_

PHONE: \_\_\_\_\_

EMail: \_\_\_\_\_

PATIENT PORTAL: \_\_\_\_\_

NEXT APPOINTMENT DATE & TIME: \_\_\_\_\_

Diagnostic SBP measure for 1 consecutive visit

Confirmed hypertension measure for 3 consecutive days prior to next office visit

Report Back Results By:

Phone

Patient portal

Bring back device or written log

Other

**If your blood pressure measurement is:**

MORE THAN	BETWEEN	LESS THAN
135/85	135/85 & 120/80	120/80

Your blood pressure is high. This is the desired range for your blood pressure. Please continue to monitor your blood pressure as you have been instructed by your care team.

Your blood pressure is low. Follow-up in 30 minutes. If it remains in this range, call your physician immediately.

**INSTRUCTIONS:** If at any time you/he/she/they have a headache, check your blood pressure and call if other symptoms.

## Knowledge Translation & Outcome Planning

### Outcome Measures

- Pre and Post BP readings
- Staff satisfaction post survey
- Patient satisfaction post survey



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## Implementation Status

- Initial plan:
  - Standardizing the workflow for patient enrollment
  - Staff education
  - Implementation of interventions



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## Initial Evaluation

- Non-compliance with program
- Withdrawing from program
- Unimpactful blood pressure readings and data
- Successfully created HBPM program
- Useful for Trinity Health



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## Conclusion

- Successfully developed a HBPM program
- Evidence-based intervention
- Standardized workflow



# A Simplified Case Study

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You choose to add lisinopril 20mg daily, SMBP, and return to clinic in 1 month.

Return visit BP is 138/94, creatinine increased from previous visit from 1.3 to 1.5 mg/dL. SMBP logs show averages of approx. 135/90 at home.

What may be proper moves?

- Discontinue lisinopril due to creatine increase
- Increase lisinopril dose
- Add additional agent
- Maintain current therapy

*Questions?*

THANK YOU!

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