Using Remote Patient Monitoring to Improve the Management of High Blood Pressure

PILOT STUDY EVALUATION PLAN

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BACKGROUND

Problem: Rapid cycling is strongly associated with 60-day control of high blood pressure— at Intermountain, 63.9% of rapid-cycled patients reach control within 60 days compared to 26.3% of patients that are not rapid cycled. However, less than 20% of patients with newly-diagnosed high blood pressure (HBP) are rapid cycled.

Background: HBP is the most common health condition seen by primary care providers. There is strong evidence that treating HBP to target goals of 130/90 mm Hg or 140/90 mm Hg reduces stroke, heart failure, coronary artery disease, and overall mortality. Numerous medications are effective at lowering blood pressure to target levels. Rapid cycling aims to accelerate the time to control by quickly evaluating response to pharmacologic treatment and adjusting therapy, if necessary. Numerous factors are thought to limit the utilization of rapid cycling. First, rapid cycling requires patients to return to the office every two to three weeks for further evaluation until HBP is controlled. There are also competing demands on time and attention as providers attempt to address other patient concerns. Since 2013, there has been little change in both the rapid cycling rate among newly-diagnosed HBP patients and the 60-day control rate among rapid cycled patients at Intermountain Healthcare.

Mission: Improve the effectiveness and efficiency of blood pressure management.

Aim: Use remote patient monitoring (RPM) to increase the % of rapid cycled patients that achieve control within 60 days (63.9%) to (71.6%) in a 6-month period.

Rationale: RPM will make rapid cycling more convenient for both patients and providers.

IMPLEMENTATION PROCESS

Intervention: We will deploy RPM kits for patients presenting in primary care clinics with out of control high blood pressure with the intent to support the HBP care process model (CPM). The kits will be paid for and provided by Intermountain Healthcare for a period of 60 days. Patients will be trained in the use of the device and instructed to check their blood pressure at least once a day. The device will automatically connect to the internet to transmit readings to Intermountain Healthcare. A pharmacist case manager will review the blood pressure readings and consult with the provider to recommend a follow up visit to verify control or titrate medication.

Pilot Study Plan:

- The RPM device will be tested with 3 providers from 2 clinics.
- Each provider will have access to approximately 10 RPM kits.
- All clinic patients who meet the CPM definition of having high blood pressure will be included in the analysis.
- Deployment of RPM kits will be pseudo-random, based on availability:
  - Intervention group: rapid cycled patients presenting in clinic when an RPM kit is available.
  - Control group: rapid cycled patients presenting in clinic when no RPM kits are available.
- Start date: July 11, 2017.
- Study duration: 6-12 months.

Next Steps:

- Test a BYOD (bring your own device) RPM kit.
- System-wide implementation with CPM integration.

EVALUATION PLAN

Analysis: The data will be analyzed using linear regression analysis and/or structural equation modeling in Stata.

Control variables: Age, systolic BP – systolic target, previous anti-HBP medication use, clinic, SelectHealth insurance

Key Outcome Measures:

- Time to HBP control (defined as having an in-clinic BP measurement within the CPM target range)
- 60-day control rate
- Actual and project patient/system costs
- Patient satisfaction and user experience (survey)

REFERENCES


CONCLUSION

HBP is associated with an increased risk of stroke, heart failure, coronary artery disease, and overall mortality. Numerous medications are effective at lowering BP, but uncontrolled BP is common. Rapid cycling aims to accelerate time to control by quickly treating patients with medication and titrating as necessary until the target BP has been reached. However, this strategy is resource intensive and requires multiple, potentially unnecessary patient visits in a short period of time. Through the use of technology, RPM offers a more efficient and effective approach to rapid cycling. With RPM, patients can provide daily BP measures and visit the clinic less frequently. This study will demonstrate the potential impact of RPM on the rapid cycling process at Intermountain Healthcare. The results will help determine whether RPM is a strategy worth implementing at Intermountain Healthcare.

No conflicts of interest to disclose.