PUBLIC HEALTH INFORMATICS INSTITUTE | THE TASK FORCE FOR GLOBAL HEALTH

Self-Measured Blood Pressure Monitoring Readiness Checklist

A Resource Guide to Support HL7 FHIR Standards Implementation

OVERVIEW

The Centers for Disease Control and Prevention (CDC) is committed to the widespread implementation of self-measured blood pressure (SMBP) monitoring and serves as co-champion of the CardX Hypertension Management Use Case, a part of the HL7® CodeX FHIR Accelerator. The goal of the use case is to use Fast Healthcare Interoperability Resources (FHIR) to standardize the exchange of cardiovascular data to support hypertension management.

The CardX community wrote the HL7 FHIR Hypertension Management Implementation Guide (IG), which aligns with and integrates existing efforts to develop vendor-neutral data exchange standards, facilitating interoperable and scalable hypertension management. The IG contains background information, a description of the technical exchange, FHIR profiles, client and server capability statements, and examples to support proper implementation. The three FHIR profiles defined in the IG enhance the hypertension management workflow by enabling the meaningful exchange of blood pressure (BP) data between devices, third-party patient-facing health management platforms and clinical electronic health records (EHRs) or patient portals.[1]

READINESS CHECKLIST

This checklist includes guidance and resources to simplify implementation or expansion of SMBP programs at health clinics. Although the topics are presented linearly, the process of establishing or enhancing an SMBP program is dynamic. You may need to reorder or revisit sections as the program evolves. This checklist serves as a starting point and offers flexibility in creating a program tailored to your clinic's needs, rather than prescribing a one-size-fits-all approach. While other resources are included, the checklist highlights the following resources:

HL7 FHIR Hypertension Management Implementation Guide

bit.ly/3zS5qYo

IG designed to facilitate the hypertension workflow through the meaningful exchange of patient-generated blood pressure data and metadata among BP devices, third-party applications and EHRs, or patient portals

The NACHC/ Million Hearts SMBP Implementation Toolkit

bit.ly/4f27Wvt

Four-part toolkit designed to help organizations efficiently implement a SMBP program

SMBP Telemonitoring How-to Guide

bit.ly/4cJdWaN

Comprehensive guide on establishing secure and reliably teletransmitted patient-generated BP measurements to healthcare teams

Used together, these resources can provide the basis for streamlined, interoperable SMBP programs.

[1] https://build.fhir.org/ig/HL7/CardX-HTN-MNG/index.html

READINESS CHECKLIST COMPONENTS

Make the case

Organize your team

Develop your program

Establish your telemonitoring protocol

Integrate your telemonitoring software

Engage and train patients

MAKE THE CASE

If your organization is in the process of initiating or would like to expand an existing SMBP program, it is important to understand and make the clinical and economic value case for the investment with executive and clinical leadership. Explore the following:

I. **Clinical value case** - SMBP is recommended for confirming and managing hypertension. Examine the evidence outlined in Whelton, et al. (2018), Tucker, et al. (2017) and Uhlig, et al. (2013).

II. **Economic value case** - Million Hearts® has resources to help your organization calculate the potential financial impact of a robust SMBP program.

III. **Support** – Securing financial, technical and/or in-kind support can bolster the program and team buy-in.

   A. **In-kind support** - Research opportunities for in-kind support from partners such as a health center-controlled network and your local and state health departments.

   B. **Technical and program support** - Consider joining partners such as the National Association of Community Health Centers (NACHC) and Million Hearts, who offer webinars, forums and other resources to enhance hypertension management programs. The HL7® community is also a great technical resource and the CardX website provides contact information related to the HL7 FHIR Hypertension Management IG.

   C. **Financial support** - Explore grant and cooperative agreement opportunities through federal agencies and other partners such as Health Resources and Services Administration (HRSA). As noted above, ensure your practice fully leverages Medicare, Medicaid and other insurance reimbursement for SMBP support services.

ORGANIZE YOUR TEAM

A dedicated multidisciplinary planning and implementation team can streamline the various activities that comprise the development and execution of an SMBP program. ***This team should be initiated early and engaged regularly in the process.*** The NACHC/Million Hearts SMBP Implementation Toolkit and SMBP Telemonitoring How-to Guide offer broad guidance on assigning key staff roles. Consider the following:

I. **Team buy-in** - Share the value case and ensure all team members understand their role(s) and responsibilities in the program. Suggested team members can include, but are not limited to, the ones listed below.

- **A.** SMBP/clinical champion
- **B.** Clinical lead
- **C.** Patient outreach coordinator(s)
- **D.** Patient and staff trainer(s)
- **E.** Data manager/analyst
- **F.** Device manager(s)
- **G.** Information technology (IT) lead
- **H.** Primary EHR vendor contact
- **I.** Patient navigator(s) and/or medical assistant(s)

II. **Short and long-term roles** - As the planning phase gives way to the implementation and maintenance phases, team members may need to drop off or be added, depending on the need. To avoid overburdening clinical staff, explore ways to bolster the SMBP team with volunteers and other non-clinical staff.

DEVELOP YOUR PROGRAM

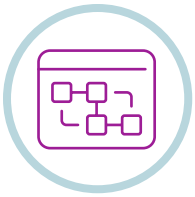
The NACHC/Million Hearts SMBP Implementation Toolkit and SMBP Telemonitoring How-to Guide provide guidance on how to develop a comprehensive, integrated SMBP workflow that leverages the latest advances in technology to streamline data collection and analysis. Consider the following program elements:

I. **Success indicators** - Monitor program successes and opportunities for improvement. Examples of indicators include program participation/registration rate and hypertension control rate. Plan for the collection and analysis of this data to track trends.

- **A.** Explore what data are currently available in your system to assess inclusion/exclusion criteria, hypertension control and other hypertension management measures of interest. This will help identify the gaps and opportunities for improvement in data quality, access and extraction capabilities. Develop a plan with the data analyst(s), IT lead and EHR vendor on ways to ensure necessary hypertension data are available and accessible.

II. **Clinical workflow** - The implementation team should delineate specific staff roles and responsibilities for treatment and follow-up. Million Hearts® Hypertension Control Change Package offers additional guidance and resources on program development quality improvement processes. Also explore the following:

- **A.** Map out the type of support provided for enrolled patients, such as pharmacological therapy and lifestyle recommendations.
- **B.** Design a standardized monitoring and check-in protocol for patients enrolled in the program. This protocol should be adaptable to patient needs, adjusting the check-in frequency as necessary. See below for more information on telemonitoring.
- **C.** Clarify who will be responsible for tasks such as: monitoring incoming data; engaging patients and managing participation; and analyzing and providing insights on data.



ESTABLISH YOUR TELEMONITORING PROTOCOL

The SMBP Telemonitoring How-to Guide details the process for setting up a telemonitoring protocol to fit your organization's needs. The included protocol design checklist is a great way to get started quickly. Consider the following:

I. **Hardware selection** - Refer to the US Blood Pressure Validated Device Listing for a catalog of validated blood pressure devices.

II. **Hardware storage and management** - Determine how patients will obtain hardware and how long the hardware will be kept. If you plan to loan devices to patients, create an inventory management and storage solution.

III. **Software selection** - Compare BP telemonitoring software across multiple categories to get the right fit for your organization.

INTEGRATE YOUR TELEMONITORING SOFTWARE

Several options for fully or partially integrating SMBP telemonitoring software into your EHR or patient portal are reviewed in the NACHC/Million Hearts SMBP Implementation Toolkit and SMBP Telemonitoring How-to Guide. The HL7 FHIR Hypertension Management IG can help facilitate integration across software through data standardization. Consider the following:

I. **Meet and coordinate with IT lead and EHR vendor** - While the technical aspects of integration are typically the domain of IT staff and the EHR vendor, the planning/implementation team should meet early and regularly with these contacts to discuss the current state of and any planned changes to the SMBP program and telemonitoring protocols to determine the ideal integration option(s). Resources, software and hardware capability and program goals will influence the final decision, but the team should align their plans with the standards set forth in the HL7 FHIR Hypertension Management IG to optimize interoperability. Other considerations:

   A. Planning and coordinating with IT and the EHR vendor will take time, so engage your contacts early and frequently throughout the process.

   B. Coordinate with your EHR and population health management system vendors on terminology and vocabulary to ensure necessary data are accessible and analyzable.

II. **Average BP coming to EHRs** - The United States Core Data for Interoperability (USCDI) sets the standard for data elements healthcare EHR systems must incorporate to facilitate healthcare information exchange. USCDI version 4 will require EHR vendors to include average BP as an available field in their systems in the near future. ***Leverage this impending requirement to encourage your EHR vendor to adopt the standard early.***

ENGAGE AND TRAIN PATIENTS

The patient experience is the single most important component of a successful SMBP program. Without patient buy-in and cooperation, SMBP programs are moot. Fortunately, several resources are available in the NACHC/Million Hearts SMBP Implementation Toolkit and SMBP Telemonitoring How-to Guide to assist with patient training. Consider the following as you develop your training and engagement protocol.

I. **Primary language(s) of patient population** - Whenever possible, seek out and/or procure training and educational content in the primary language(s) of the patient population. Buy-in and comprehension increase exponentially when resources and training are provided in patients' primary language.

II. **Patient digital health literacy and availability** - Take patients' digital health literacy and travel restrictions into account when personalizing their SMBP program. Consider the pros and cons of reducing the number of visits or in-person training based on patient needs and availability.

   A. Be sure to give patients guidelines on managing BP and when to seek care for problematic BP readings and/or symptoms.

III. **Training modalities** - Provide training and educational content in multiple modalities (e.g., written, spoken, in-person and/or virtual) to reinforce information and accommodate varying patient learning styles. Sample resources:

   A. Million Hearts® Self-Measured Blood Pressure web page offers a variety of patient training documents and videos to use as a part of a comprehensive training and educational program. It includes a number of resources from partners like NACHC and the American Medical Association.

RESOURCES IN THE CHECKLIST

HL7 FHIR Hypertension Management Implementation Guide

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Comprehensive guide on establishing secure and reliably teletransmitted patient-generated BP measurements to healthcare teams

CardX

bit.ly/3LrzE7i

The CardX community, a part of the HL7® CodeX FHIR Accelerator; developed the Hypertension Management Implementation Guide

Million Hearts® Hypertension Control Change Package

bit.ly/3LmW3Tg

List of process improvements that outpatient clinical settings can implement as they work towards optimal hypertension control

US Blood Pressure Validated Device Listing

bit.ly/3Y3ixQE

List of validated blood pressure devices available in the United States

Compare BP Telemonitoring Software

bit.ly/3VYBBwE

Quick reference guide for comparing blood pressure telemonitoring software

United States Core Data for Interoperability

bit.ly/3W5lEVF

Standardized set of health data classes and constituent data elements for nationwide, interoperable health information exchange

Million Hearts® Self-Measured Blood Pressure web page

bit.ly/3Y8Uobp

Web page offering information, tools and resources to support SMBP

Self-Measured Blood Pressure Monitoring in the Management of Hypertension: A Systematic Review and Meta-analysis

bit.ly/3ydxpBy

Uhlig, et al. (2013)

Self-monitoring of Blood Pressure in Hypertension: A Systematic Review and Individual Patient Data Meta-analysis

bit.ly/4fiXQXd

Tucker, et al. (2017)

Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults

bit.ly/3ycPxeR

Whelton, et al. (2018)