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Health Management and Policy Capstone: A Case Study in Program Evaluation

Bradford Brewer

University of Kentucky, bradford.brewer@uky.edu

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REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's capstone including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Bradford Brewer, Student

Dr. Richard Ingram, Committee Chair

Dr. Richard Ingram, Director of Graduate Studies

Health Management and Policy Capstone: A Case Study in Program Evaluation

Bradford Brewer, MPH Candidate

Richard Ingram, Ph. D. Committee Chair

Rachel Hogg-Graham, Ph. D., & Sarah Wackerbarth, Ph. D., Committee Members

Background Part 1

A number of studies have reported the increasing prevalence rates of hypertension among adults in United States over the past 30 years. This increase in hypertension has also been marked by a significant increase in reported prevalence rates of cardiovascular diseases. In response, the Centers for Disease Control and Prevention (CDC) funded the Lexington-Fayette County Health Department (LFCHD) to deliver a hypertension self-management program for adults aged 35 and older with uncontrolled high blood pressure ($\geq 140/90$ mmHg). This evidence-based community intervention helps patients take responsibility for managing their hypertension with assistance from health care professionals, and support from families and the community.

The CDC was the lead agency for the development, implementation and evaluation of the hypertension self-management program. LFCHD implemented the program and was responsible for coordinating and communicating the program's goals and objectives with interested parties such as neighborhood groups and community health center physicians. To ensure a successful and collaborative process, the LFCHD convened multiple stakeholders from different levels – health care, community, and patient – to plan the implementation and evaluation of the self-management program

In the initial phases of the program planning, LFCHD identified and recruited stakeholders through health center flyers, cardiovascular health care newsletters, by word of mouth, and announcements at neighborhood group meetings.

LFCHD invested significant time meeting with stakeholders to appreciate their concerns about implementing the program. They relied on formal and informal communication to ensure all perspectives were understood.

After the program began, new stakeholders became involved, including a pharmaceutical company and representatives from payers. These stakeholders were concerned with health care costs associated with medications and hypertension screening. These interests were important to the project; therefore, CDC and LFCHD updated the program plan and focused the evaluation to include these views.

Task 1: Engage Stakeholders

- Identify the stakeholders for whom you will involve in a program evaluation. Consider individuals who would be involved in program operations, those who will be served or impacted by the program, and the primary users of evaluation results.

The stakeholders involved in program operations are:

- CDC Division for Heart Disease and Stroke Prevention
- Lexington-Fayette County Health Department (LFCHD) personnel
- Administrators at Fayette County Community Health Centers (CHCs): UK Healthcare, Bluegrass Community Health Center, & Health First Bluegrass
- Community Association Volunteers

Those who will be served or impacted by the program are:

- Patients with hypertension (HTN) in Fayette County
- Patients' families and caregivers
- CHC administrators
- Kentucky Pharmacists Association (KPhA) (<https://www.kphanet.org/>)
- Community Volunteers
- Community Physicians
- Murty Pharmaceuticals, Inc. (MPI) – a Lexington, KY-based pharmacy (<https://www.mpirx.com/>) *The pharmaceutical company that became involved following program implementation
- Medicaid, Medicare, & Private Insurance Companies

Primary users of Program Evaluation Results are:

- LFCHD
- CDC Division for Heart Disease and Stroke Prevention
- Centers for Medicare & Medicaid Services
- Community Physicians
- CHC Administrators
- KPhA and MPI

Identify who among your identified stakeholders will:

- Enhance credibility of the program
 - CDC Division for Heart Disease and Stroke Prevention
 - Centers for Medicare and Medicaid Services
 - LFHCD
 - CHCs
 - KPhA and MPI
- Implement the program changes:
 - CDC Division for Heart Disease and Stroke Prevention
 - LFCHD
 - CHCs
 - Community Physicians
 - Community Pharmacists
- Advocate for changes:
 - LFHCD
 - CHCs
 - Community Physicians
 - Community Associated Volunteers
- Fund, authorize, or expand the program:

- Million Hearts[®] 2027 (<https://millionhearts.hhs.gov/>) is an initiative co-led by the CDC Division for Heart Disease and Stroke Prevention and Centers for Medicare & Medicaid Services to prevent 1 million heart attacks and strokes in 5 years. The funding for the project will be provided through this initiative.
- MPI
- LFCHD

Describe how stakeholders will be engaged in the process. Make sure you highlight ways you will engage stakeholders from the various groups identified in Step 1. Describe the time commitment planned for stakeholders.

Stakeholders involved in program operations, such as CHC administrators, will be engaged:

- Through collaboration on the development of the program evaluation plan.
- By providing technical assistance to stakeholders in implementing the HTN SM model
- By presenting interim and final evaluation results to stakeholders
- Seeking stakeholder assistance with the communication of evaluation findings
- The time commitment planned to meet with these stakeholders is monthly in-person meetings. A Zoom link will be made available to those unable to attend in-person (CDC, 2013).

Stakeholders served or affected by the program will be engaged:

- Patients with HTN will be engaged through meetings at the beginning of the program to build rapport and add credibility.
 - The time commitment planned to meet with these stakeholders is via a semi-annual community outreach event (CDC, 2013).
- Community volunteers will be involved in implementing the HTN self-management (SM) model and recruiting program participants.
 - The time commitment for community volunteers is quarterly (refresher) trainings (CDC, 2013).

Stakeholders involved in the program as primary users of evaluation results, such as Community Physicians, will be engaged by:

- Assisting in the recruitment of patients and ensuring the credibility of the HTN SM intervention
- Providing technical assistance and updates on program implementation
- Presenting interim and final evaluation results to all stakeholders
- Seeking stakeholders' assistance with the communication of evaluation findings
- The time commitment for them will be monthly Zoom meetings (CDC, 2013).

Background Part 2

Statement of Need (Statement of the problem): Hypertension is a major risk for cardiovascular disease. Prevalence of hypertension ($\geq 140/90$ mmHg) was 39% among residents aged 35 and older. A high percentage of patients with hypertension were unaware of their condition, lacked access to proper and consistent treatment, and had uncontrolled hypertension.

Goal: Reduce the proportion of adults with high blood pressure.

Objective: After 5 years of implementation, demonstrate a 25% increase in the proportion of patients with diagnosed hypertension at participating community health centers with blood pressure under control.

Program Description: Through a participatory planning process, the group of stakeholders developed a long-term plan to successfully implement and evaluate the self-management intervention in Lexington, KY to achieve this broad goal and objective. Components of the intervention can be described at three levels: health care, individual/patient, and community. A comprehensive approach would address each of these three levels.

Health Care: Within the community health care system and among physicians, the self-management model promoted comprehensive systems to support patient self-management, which included physician telephone follow-up, linkages to home blood pressure monitoring, and pharmacists trained to provide self-management support and counseling. Additionally, community health centers may establish policies to increase patient adherence with treatment, including medication and lifestyle changes.

Individual/Patient: Another component of the intervention is self-management training of patients with hypertension. Patients were referred to the training by a staff member of a participating community health center in Lexington. Over a six-week period, there is a total of 12 hours of training (2-hours weekly). The primary objective of the training was to increase patients' confidence to control their blood pressure. This was achieved by participants' mastery of the essential skills for hypertension management including improved diet, increased exercise, smoking cessation, self-control and effective communication skills, awareness of community resources and treatment options, and improved medication adherence and blood pressure self-monitoring.

Community: Some of the intervention activities at the community level included establishing more collaborative partnerships and linkages between community health centers and other community resources; availability of community-based hypertension monitoring stations; conducting informational media campaigns; and making changes to the environment that encourage living a healthy lifestyle.

Task 2: Describing the Program

Hello Heart (<https://www.helloheart.com/>) is a mobile health (mHealth) technology. It is an HTN SM program that incorporates a USDA-cleared Bluetooth monitor paired with a smartphone app. The software incorporates medication adherence reminders and clinically based

digital coaching to motivate lifestyle changes (guideline-recommended non-pharmaceutical interventions for BP management) using algorithms based on user patterns to cater to each individual. This HTN SM program is designed to maximize user engagement by incorporating mobile health best practices including ease of usage, gamification, AI, straightforward comprehension, and clarity. The application organizes medical data in a centralized mobile platform and allows participants to remotely connect to their physician's electronic health record to automatically populate laboratory and pharmaceutical use data (From the Methods section of: Gazit, Gutman, & Beatty, 2021). It is the first BP SM program with a BP monitor coupled to a smartphone app with automated lifestyle coaching that can achieve BP control.

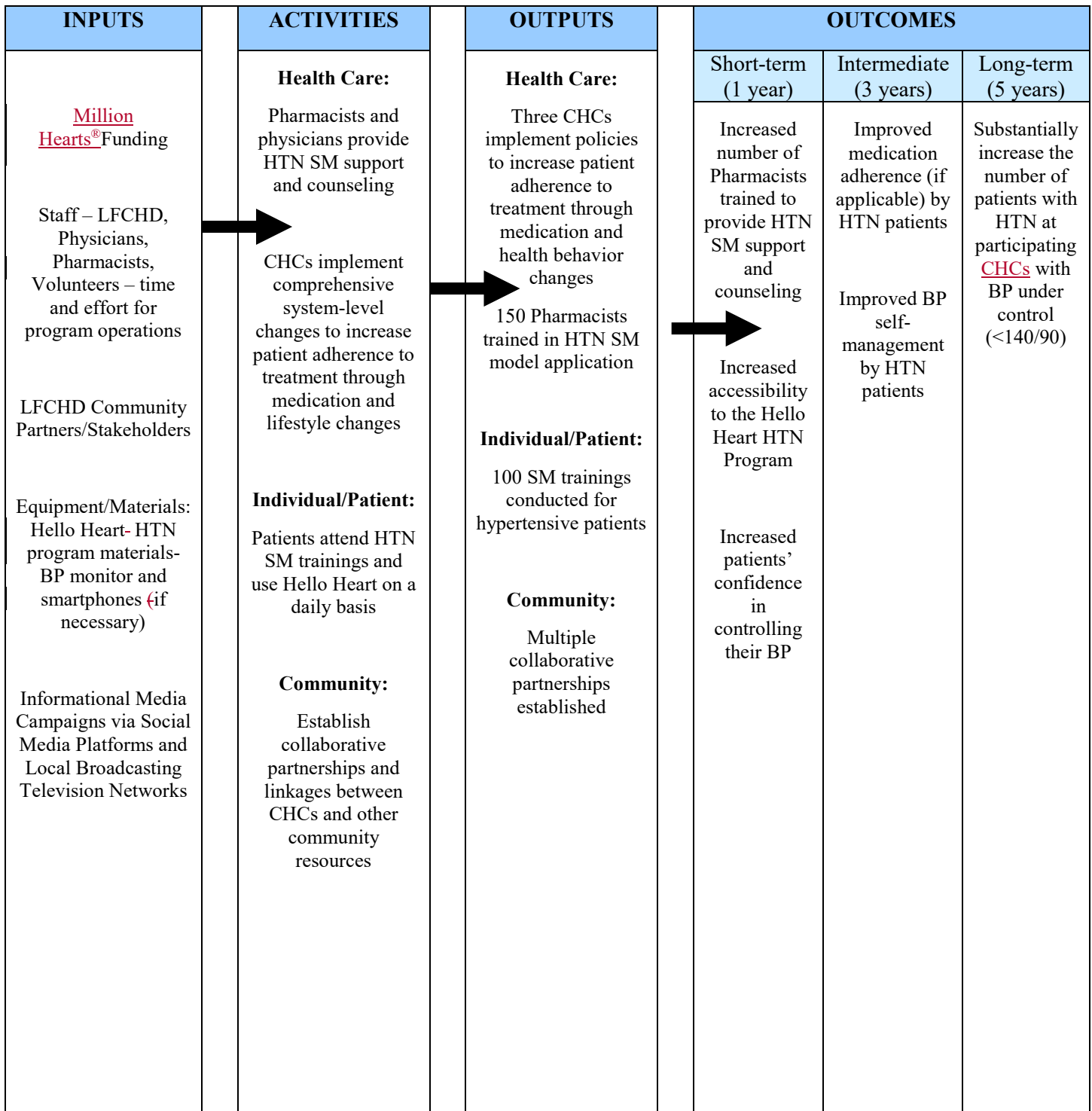
Hello Heart offers the sustainable, long-term solution that the group of stakeholders needs for a successful HTN SM program for the citizens of Lexington. It achieves the broad goal and objective because it can effectively target all three recommended systems-level changes: healthcare, individual/patient, and community.

Kaplan, Cohen, & Zimlichman (2017) found Hello Heart to be an innovative mHealth application that supports patient engagement in self-measured BP monitoring. It is more efficacious than other mHealth applications to lower BP because it integrates multiple feature interfaces (i.e., tracking, gamification, education, and notification alerts) versus a single feature. In their study, users experienced substantial improvement in their BP in just 4 weeks, prolonged BP reduction through behavioral change, high prolonged engagement among regular users, and users with the highest clinical need demonstrated the highest levels of engagement.

Funding provided by the Million Hearts® initiative will provide the materials needed for Hello Heart: a BP monitor and the cost of the subscription.

1. Based on the background information, identify and list the following elements of the project on the table below OR as a logic model:
 - a. A minimum of three inputs
 - b. A minimum of three activities
 - c. A minimum of three outputs
 - d. A minimum of one short-term outcome, one intermediate outcome, and one long-term outcome

Figure 1: HTN SM Logic Model



(CDC, 2013).

The Health Belief Model (HBM) was developed in the 1950s by Hochbaum, Rosenstock, and other social psychologists in the U.S. Public Health Service to explain the widespread failure of people to participate in programs to prevent and detect disease.

The HBM contains five primary components (or constructs) that predict whether and why people will take action to prevent, detect, or control illness. These constructs include *perceived susceptibility*, *perceived severity*, *perceived benefits* and *barriers* to engaging in a behavior, *cues to action*, and *self-efficacy*. The model applies to behaviors that can reduce the risk of developing a disease and the effects of existing disease (e.g., regular BP monitoring) (Skinner, Tiro, & Champion, 2015).

The HBM is the theory of change explaining the logic model expected links between program resources, activities, and outcomes (CDC, n.d.a). It is the most frequently used model for investigating behavior changes and disease prevention in the HTN population (Chunhua, 2018).

Previous research focusing on self-care behavioral actions to reduce HTN, such as regular control of BP, smoking cessation, and weight loss, has found that the HBM constructs of perceived barriers and cues to action (Kasmaei, et al., 2015) as well as perceived susceptibility, severity, and (especially) self-efficacy (Chunhua, 2018), were key predictors that affect HTN self-care behaviors.

According to the model, the adoption of self-care behaviors by hypertensive adults requires their insight that they are vulnerable and liable to develop HTN complications (perceived susceptibility); that HTN and its complications deteriorate health outcomes (cardiovascular disease) and do harm health (perceived severity); that self-care behaviors have some benefit (perceived benefits); that they will encounter some barriers against behavior modifications (perceived barriers); that relatives, members of their community, healthcare providers, and mass media encourage them to adopt healthy behaviors (cues to action); and finally, they can control BP through self-care behaviors (self-efficacy) (Chunhua, 2018).

Background Part 3

The LFCHD implemented this hypertension self-management model training program in one community health center. During the first year of implementation, the department wanted to find out whether the program was implemented as planned (this is a process measure) and whether the program had increased participants' confidence to control their blood pressure (refer to the short-term outcome from the logic model). Before offering this program at other community health centers, the participating community health center director and surrounding community health centers wanted to learn from the evaluation whether the training program was effective, and make any necessary improvements.

Task 3: Focusing the Evaluation Design

1. Identify the purpose of the evaluation. State whether the evaluation focuses on process, outcomes, or both.

- The purpose of this evaluation is to examine the HTN SM program implementation. Stakeholders want to know whether the training program was effective.

- The evaluation seeks to determine if program activities have been implemented as intended and resulted in certain outputs. It is also measuring program effects in the target population by assessing the progress in the outcomes or outcome objectives it purported to achieve (CDC, n.d.b). It is therefore focusing on both process and outcomes (CDC, 2013).

2. Identify the users of the evaluation.

- LFCHD
- CDC Division for Heart Disease and Stroke Prevention and The Centers for Medicare & Medicaid Services
- Community Physicians
- CHC Administrators
- KPhA & MPI

3. Identify the use of the evaluation.

- Determine if the program has been effective in its first year
- Determine if the program is sufficient to be expanded to a wider audience (CDC, 2013).

4. Discuss whether what you are being asked to evaluate is a reasonable request. Explain and support your answer. If no, please identify what you can reasonably evaluate.

- Yes, because, as noted, it will serve several purposes. It will require limited resources – Hello Heart is downloaded and only requires a BP monitor. It is easy to use and follow. Pharmacists can aid participants that have difficulty. It will be easy to survey healthcare workers following the pilot of the training course. It will save resources in the long-term if it is determined that the program is ineffective and requires change (CDC, 2013).

5. Identify a minimum of two examples of process and outcome evaluation questions you would need to ask.

Examples of process and outcome evaluation questions that need to be asked are:

- For process evaluation questions:
 1. Are project activities being implemented on schedule?
 2. What barriers have been encountered?
 3. How many patients have downloaded and begun using Hello Heart and completed the required training? (CDC, 2013).
- For outcome evaluation questions:
 1. To what extent are pharmacists providing SM support and counseling?

2. Are patients expressing more confidence about controlling their high BP? (CDC, 2013)

Task 4: Gathering Credible Evidence

1. Record two evaluation questions you identified in Step 3 in the first column of the table below.
2. Identify and list indicators for each question in the second column.
3. Identify and list the data sources or methods you will use to collect data about the indicators in the third column. Consider selecting sources and methods that can enhance the credibility of the data with stakeholders.

Table 1: Program Evaluation Questions, Indicators, and Data Sources/Methods for Data Collection

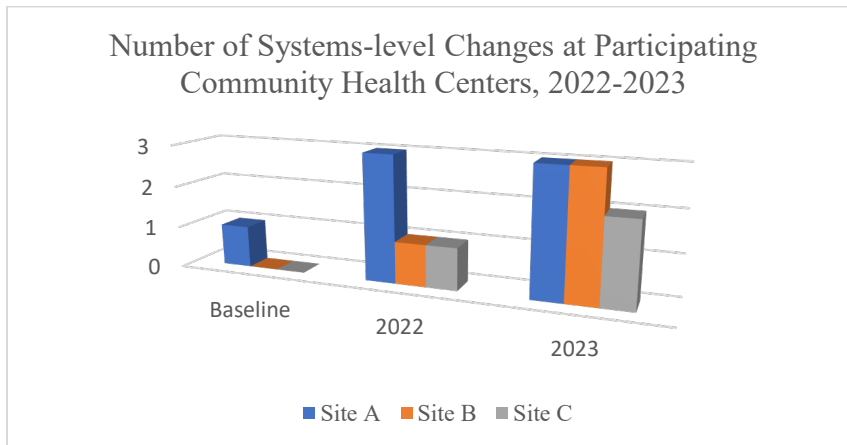
	Evaluation Questions	Indicators	Data Sources/Methods
Question 1: Process	To what extent were the HTN SM training sessions implemented as planned?	Number and duration of sessions conducted Schedule of training sessions Participants' implementation of Hello Heart instructions	Training Session Logs Random observations of training sessions Participants' data retrieved from Hello Heart mobile platform
Question 2: Outcome	What policy changes related to patient adherence to treatment through Hello Heart guidance, medication adherence, and lifestyle changes in CHCs occurred as a result of this project?	Number of policy changes adopted, by site Type of policy changes adopted, by site	CHCs' progress reports

(From: CDC, 2013)

Background Part 5

The main objective of the self-management program is to demonstrate a 25% increase in the proportion of patients with diagnosed hypertension at participating community health centers with blood pressure under control. Twelve months after the start of the program, the interim evaluation findings indicated an 11% increase among participating patients. It was discovered

that all of the participating community health centers adopted systems level changes within their healthcare delivery system to promote patient self-management. However not all of the sites adopted a comprehensive self-management model.



The above figure illustrates data collected over the two-year period summarizing the number of community health centers in Lexington with policy or systems-level changes to encourage patient self-management of hypertension. It was noted that Site A experienced the highest level of participation in the self-management training sessions among their patients.

Findings also indicated a significant increase in patients' awareness and knowledge of chronic disease related risk factors. An increase in patient self-management ability was determined by a 15% increase in the number of patients who do self-monitoring of blood pressure and a 20% increase in the number of patients who regularly receive counseling and support from a pharmacist.

Participation in regular exercise also increased by 12%. Additionally, the evaluation documented an improvement in adherence to medication regimens and community environmental changes such as increasing access to safe and free physical activity facilities. These changes were viewed by stakeholders as positive outcomes resulting from the program. *Sites with comprehensive self-management models addressed all 3 levels of the intervention—health care, individual/patient, and community (see “Program Description” in Step 2).

Task 5: Justifying Conclusions

Based on the above evaluation results:

1. Identify at least two evaluation results and write a corresponding recommendation for each evaluation result
 - **Result:** The participating CHCs with comprehensive HTN SM models had high participation rates among their HTN patients.
 - **Recommendations:**
 - ✓ CHCs should continue to adopt systems-level changes that are reflective of a comprehensive HTN SM model, particularly the adoption of Hello Heart.





- ✓ Further investigate the practices of these sites reporting the most favorable outcomes to fully understand their implementation processes.
- ✓ Technical assistance and support can be provided to those sites that experience challenges with adopting and implementing all 3 recommended systems-level changes (CDC, 2013).

- **Result:** An increase in patient self-management ability was determined by a 15% increase in the number of patients who monitor their BP with Hello Heart and engage in suggested activities.
- **Recommendation:**
- For hypertensive patients, increase training opportunities on and access to Hello Heart (CDC, 2013).

- **Results:** Program participants reported:
 - A significant increase in awareness and knowledge of chronic disease-related behaviors associated with HTN
 - A 20% increase in patient SM ability among those who regularly consult a physician and follow Hello Heart guidelines
 - A 12% increase in regular physical activity
- **Recommendation:**
- ✓ Expand the offering of the Hello Heart HTN SM training sessions to all CHC sites in Lexington (CDC, 2013).

- 2. Make sure you discuss your recommendations in the context of the four standards for evaluation:
 - a. Utility: Have different interpretations of the findings been considered?
 - b. Feasibility: Are the recommendations realistic for the program to implement?
 - c. Propriety: Are the conclusions and recommendations reflective and respectful of key stakeholders, including those served by the program?
 - d. Accuracy: Can the conclusions be explicitly justified?

Table 2: Four Standards of Evaluation

Question	Answer: YES	Answer: NO	Justification
Utility: Have different interpretations of the findings been considered?			The outcomes were shared amongst diverse stakeholders throughout the evaluation process to invite their interpretations of the findings
Feasibility: Are the recommendations realistic for the program to implement?			It is realistic to provide technical assistance to sites to implement all 3 systems-level changes It is realistic to increase the number of training opportunities for and access to Hello Heart It is realistic to expand the SM training sessions to other CHC sites
Propriety: Are the conclusions and recommendations reflective and respectful of key stakeholders, including those served by the program?			The conclusions and recommendations are reflective of the key stakeholders, in particular the LFCHD, CDC Division for Heart Disease and Stroke Prevention, CHC administrators, and physicians, patients, and their families
Accuracy: Can the conclusions be explicitly justified?			If Step 4 of gathering credible evidence is completed as intended with systems level and behavioral data collected over the 2-year period the conclusions can be justified

(From CDC, 2013)

Task 6: Ensuring Use and Sharing Lessons Learned

You will now need to put a plan in place to ensure use of the evaluation.

1. Describe various methods for communicating the evaluation findings

- It is probably best for CHC staff to present the results during team meetings or summary reports
 - KPhA and MPI may benefit from a scientific manuscript identifying Hello Heart, in conjunction with medication adherence (if applicable), as a best management practice for HTN
 - Community members can receive information at town hall meetings to encourage follow-through, and the use of simple program handouts that highlight success stories can be used rather than graphs, tables, and the use of technical jargon (CDC, 2013).
2. Consider the various stakeholders you have identified throughout the evaluation and put together a specific plan for each of those stakeholders that highlighted what to communicate, when to communicate, and how often.

Table 3: Plan for Communicating Program Results to Stakeholders

Stakeholder	What to Communicate	Method of Communication	Frequency
CDC Division for Heart Disease and Stroke Prevention	Final Findings	Presentation and written, comprehensive report	End of project
LFCHD Staff	Progress on Evaluation Activities Interim Findings Final Findings	Verbally during Leadership Debriefings Written Summary Report Presentation and written, comprehensive report	Quarterly Every 6 months End of project
Administrators and CHCs	Progress on Evaluation Activities Interim Findings Final Findings	Verbally during Leadership Debriefings Written Summary Report Presentation and written summary report (e.g., Executive summary)	Quarterly Every 6 months End of project
Community Association Volunteers	Final Findings Action Steps	Verbally during outreach events Summary of findings in a brochure format	End of project
Community Physicians	Lessons Learned Promising practices identified	Scientific manuscript	End of project

(From: CDC, 2013).

References:

- Centers for Disease Control and Prevention (CDC). (2013). *Evaluating Public Health Programs Case Study: Hypertension*. Atlanta, GA. U.S. Department of Health and Human Services. Retrieved from https://www.cdc.gov/globalhealth/healthprotection/fetp/training_modules/18/eval-ph-prog-elect_htn-cs_pg_final_09252013.pdf.
- Centers for Disease Control and Prevention (CDC) Division for Heart Disease and Stroke Prevention. (n.d.a) *Evaluation Guide: Developing and Using a Logic Model*. Atlanta, GA. U.S. Department of Health and Human Services. Retrieved from https://www.cdc.gov/dhdsp/docs/logic_model.pdf.
- Centers for Disease Control and Prevention (CDC) Division of STD Prevention. (n.d.b). *Types of Evaluation*. Retrieved from <https://www.cdc.gov/std/program/pupestd/types%20of%20evaluation.pdf>.
- Chunhua, M. (2018). An investigation of factors influencing self-care behaviors in young and middle-aged adults with hypertension based on a Health Belief Model. *Heart & Lung, 47*(2), 136-141.
- Gazit, T., Gutman, M., & Beatty, A. L. (2021). Assessment of hypertension control among adults participating in a mobile technology blood pressure self-managing program. *JAMA Network Open, 4*(10):e2127008. doi:10.1001/jamanetworkopen.2021.27008.
- Kaplan, A. L., Cohen, E. R., & Zimlichman, E. (2017). Improving patient engagement in self-measured blood pressure monitoring using a mobile health technology. *Health Information Science and Systems, 5*(4), <https://doi.org/10.1007/s13755-017-0026-9>.
- Kasmaemi, P., Yousefi, P., Farmanbar, R., Omidi, S., & Hassankiadeh, R. F. (2015). *Health Education and Health Promotion, 3*(3), 5-13.
- Skinner, C. S., Tiro, J., & Champion, V. L. (2015). The Health Belief Model. In: *Health Behavior: Theory, Research, and Practice, 5th ed.* Glanz, K., Rimer, B. K., & Viswanth, K., Eds. Published by Jossey-Bass.