

The Shands Jacksonville Patient-Centered Medical Home Diabetes and Hypertension Self-Management Education Model: Evaluation Summary¹

Background

Hypertension—also known as high blood pressure—is a major risk factor for heart disease and stroke, but can be prevented or controlled through proper health education, improved self-management practices, and increased access to care and treatment. The Centers for Disease Control and Prevention (CDC) conducted a pre-evaluation assessment and identified the Shands Jacksonville Patient-Centered Medical Home ("Shands Jacksonville") as a promising practice because its diabetes and hypertension selfmanagement education (DHSME) model addresses health disparities, reduces barriers to care, and improves treatment. In collaboration with staff from Shands Jacksonville and the contractor ICF International, CDC evaluated the implementation processes, clinical outcomes, and costs² of the Shands Jacksonville model.

Methods

This mixed-method evaluation included three components: a process evaluation, an outcome study, and a cost study. The process evaluation included a comprehensive program description and allows for a better understanding of how the model was implemented. The outcome study compares health outcomes for two sets of patients from Shands Jacksonville: those who received services through the DHSME model and those who received usual care through the Patient- Centered Medical Home (PCMH). A cost study assessed costs associated with implementation, for both direct care and operations. The program description was informed by a systematic review of program documents and semi-structured interviews with PCMH staff. The outcome study looked at two data sets: analysis of demographic and clinical data from the Physician Quality Reporting System database for patients enrolled in the PCMH, and self-management data for a subsample of 300 patients extracted from the Shands Jacksonville electronic health records (eHR) system. For the cost study, documents were reviewed and select Shands Jacksonville staff completed a Cost Study Questionnaire and a Time Use Questionnaire.

Evaluation Questions

- What are the core elements of the DHSME model at Shands Jacksonville?
- What are the factors that affect implementation of the DHSME model at Shands Jacksonville?
- What is the reach of the DHSME model at Shands Jacksonville?
- What is the cost of implementing the DHSME model at Shands Jacksonville?
- What is the effect of the DHSME model on clinical and self-management outcomes?

1. The findings in this summary focus solely on the hypertension component of the evaluation. For information on the entire evaluation study findings, please send an e-mail request to AREBHeartInfo@cdc.gov.
2. A separate summary on the results of the Shands Jacksonville cost study is available at http://www.cdc.gov/dhdsp/evaluation_resources.htm.

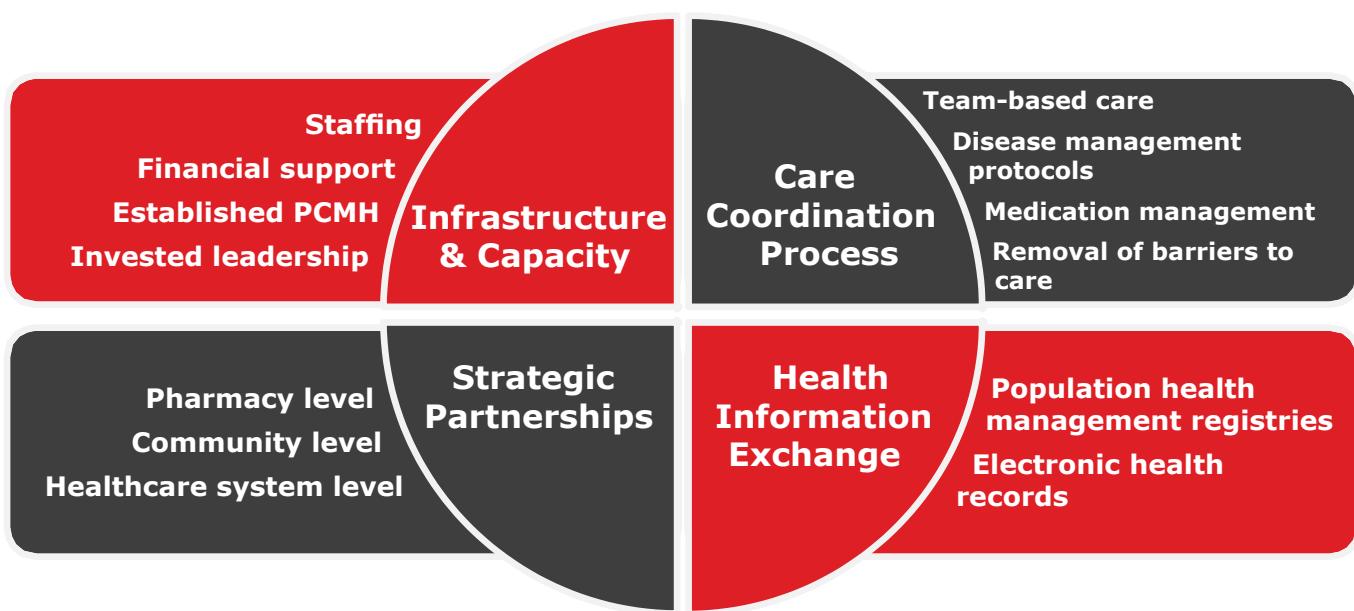


Core Components of the Shands Jacksonville DHSME Model

Guided by the American Association of Diabetes Educators' self-management education framework, the Shands Jacksonville DHSME model is intended to improve clinical outcomes related to diabetes and hypertension by increasing healthy behaviors and removing barriers to care for patients in the urban core of Duval County, Florida. Three of the designated provider clinics (DPCs) offer the Diabetes Rapid Access Program (D-RAP) and the Review Evaluate and Control Hypertension (REACH) programs to patients with diabetes or hypertension. To increase access to and affordability of care for DHSME patients, patients also get help with transportation and medication management.³

As illustrated in Figure 1, the DHSME model has four core components:

Figure 1. Core Components of the Shands Jacksonville DHSME Model



- Heartbeat icon **Infrastructure and capacity** includes building a strong staffing structure, obtaining sustainable financial support, being an established PCMH, and leveraging the support of an invested leadership.
- Heartbeat icon **Coordinated care process** emphasizes promoting team-based care, providing medication management treatment and support, removing barriers to care, and applying evidence-based disease management protocols.
- Heartbeat icon **Strategic partnerships** are established at the community-, pharmacy-, and healthcare system-levels to help reduce barriers for patients and to support and sustain the model over time.
- Heartbeat icon **Health information exchange** involves collecting, tracking, monitoring, and managing patient treatment and clinical outcome data through population health disease management registries and eHRs.

3. Additional implementation guidance is provided in the Shands Jacksonville Patient-Centered Medical Home Diabetes and Hypertension Self-Management Education Model Implementation Guide, which is available at http://www.cdc.gov/dhdsp/evaluation_resources.htm.

Key Findings

The following are key findings related to factors affecting implementation, reach, and impact of the Shands Jacksonville DHSME model.

Factors Affecting Program Implementation

Facilitators

- Heartbeat icon Developed strategic partnerships to help reduce treatment and medication management barriers for patients.
- Heartbeat icon Coordinated care and communicated regularly with team members, partners, and patients to ensure that chronic disease management was safe, accessible, affordable, and effective.
- Heartbeat icon Engaged leadership and other stakeholders who prioritized chronic disease management and supported the implementation of the DHSME model.
- Heartbeat icon Used evidence-based protocols to treat and help patients better manage diabetes and hypertension.
- Heartbeat icon Applied a population health management approach to monitor and track patient care and treatment outcomes.

Barriers

- Heartbeat icon Faced challenges with helping patients complete the necessary insurance paperwork to secure treatment coverage.
- Heartbeat icon Community had limited awareness and knowledge of services provided through the DHSME model.
- Heartbeat icon Difficulties communicating with and ensuring continuous care for transient patient population.
- Heartbeat icon Did not always have enough providers to serve the large volume of patients scheduled.
- Heartbeat icon Self-monitoring equipment not always available to provide to patients in need.
- Heartbeat icon Low literacy among patients meant that staff had to communicate health-related information to patients using videos and other technology.

Reach

- Heartbeat icon There were 27,340 unique patients treated at the Shands Jacksonville PCMH during the evaluation timeframe (March 2010 and July 2014).
- Heartbeat icon Sixty percent (15,647) were newly diagnosed⁴ with hypertension.
- Heartbeat icon Overall, compared with patients receiving usual care, DHSME patients were more likely to be black, diagnosed with diabetes and hypertension, enrolled in Medicaid, and overweight or obese.

Patient Outcomes

Efficiency: the amount of time it takes for a patient to achieve hypertension control following diagnosis⁵

- Heartbeat icon Patients in REACH were able to control their blood pressure 20 days faster than those receiving usual care.
- Heartbeat icon Black patients in REACH were able to control their blood pressure in 103 days on average, which was 19 days faster than for black patients receiving usual care.
- Heartbeat icon Non-black patients between 45 and 54 years of age in REACH controlled their blood pressure in an average of about 83 days, compared to 100 days for similar patients receiving usual care.

4. Patients were characterized as being newly diagnosed if they had uncontrolled blood pressure at time of diagnosis and had diagnostic information recorded for at least two visits at a DPC or within the PCMH or both. Blood pressure was uncontrolled if systolic pressure was greater than 140 mm Hg and diastolic blood pressure was greater than 90 mm Hg.
5. Using the Cox proportional hazard model, efficiency is measured as the number of days it takes for a patient to reach a controlled status following new diagnosis of hypertension within the PCMH, estimated through the predicted "hazard" of blood pressure being controlled.



Stability: the amount of time blood pressure remains controlled⁶

- ⌚ Twenty-five percent of patients had uncontrolled blood pressure after 1 to 2 months, and 50% were no longer controlled after 3 to 4 months, regardless of whether they participated in REACH or received usual care.
- ⌚ After controlling for patient characteristics, there were no differences in the probability of REACH or usual care patients maintaining control once it was achieved.

Control Status: blood pressure control at specified points in time⁷

- ⌚ On average, patients in REACH were significantly more likely to have controlled blood pressure at 3 and 6 months after enrollment than those receiving usual care.
- ⌚ Non-black patients were more likely to have controlled blood pressure than black patients in each quarter over the 12 months of observation.
- ⌚ For both REACH vs usual care patients, systolic and diastolic levels decreased within 12 months of enrollment. But patients in REACH had lower systolic and diastolic blood pressures by the second and third quarters than those receiving usual care.
- ⌚ Among patients receiving usual care and patients in REACH, the number who were able to control their blood pressure increased in each quarter following enrollment.

Self-Management

- ⌚ Of the subsample (n=300) of patient records that contained self-management information
 - 35% of patients discussed goals with staff during DPC visits.
 - 76% of patients discussed goals related to exercise.
 - 27% of patients reported taking hypertension medication.
- ⌚ Black patients in REACH who set one or more self-management goals with their DHSME provider
 - Controlled their blood pressure faster.
 - Were more likely to maintain control status each quarter.
 - Had lower systolic and diastolic blood pressure levels than those who did not set goals.

Conclusions

The findings of this evaluation suggest that Shands Jacksonville DHSME was effective in reaching populations most at risk and helping patients more efficiently achieve hypertension control, decrease blood pressure over time, and set and achieve self-management goals. While results such as the stability of hypertension control did not show significant positive change for patients in DHSME compared with those in the PCMH, the data showed that patients still benefitted from the PCMH program. This evaluation has also illustrated several strengths and lessons learned. The core elements of the DHSME model are well-integrated and provide a framework for public health practitioners to consult when planning and tailoring a chronic disease self-management program.

6. The Cox proportional hazard model estimates the length of time a patient maintains first controlled blood pressure after being diagnosed with hypertension. A comparison of the mean number of months maintaining blood pressure control after first control was performed between REACH and usual care patients using a two-tailed t test assuming the variances for the two populations are unequal.
7. To compare the effects of the two treatment regimens, the last blood pressure reading at the end of each quarter following diagnosis is used to estimate control. Logistic regression is used to estimate the relative probability of controlled status at the end of each quarter.



Considerations for Program Replication

The following recommendations should be considered when seeking to implement a similar model that also focuses on reducing barriers to care and improving hypertension outcomes for patients in urban community settings:

- Conduct a systematic assessment of a community's needs, assets, and barriers to inform the development and implementation of the model.
- Determine priorities and identify the unique sociocultural aspects of the community and use this information to tailor the model to address a particular set of barriers or challenges faced by the targeted population.
- Ensure self-management tools and protocols are guided by and updated according to the most recent policies and treatment guidelines for diabetes and hypertension.
- Hire and train staff members who have clear responsibilities and are highly motivated to improve the health of the community.
- Establish and strengthen strategic partnerships to help improve healthcare access and increase access to funding and other resources.
- Focus health information exchanges and electronic data collection systems on population health management and use to coordinate care through tracking and monitoring patient health data.
- Demonstrate the value and benefits of the program to build and sustain support for the model over time.

Disclaimer: The opinions and conclusions are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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