



# Applying the Value Transformation Framework in Federally Qualified Health Centers to Increase Clinical Measures Performance

Cheryl Modica • Curt Bay • Joy H. Lewis • Camila Silva

## ABSTRACT

**Introduction:** The transition in health care from a volume-based to value-based model of care, combined with pressures brought about by the COVID-19 pandemic, makes the need for efficiency and coordination of the health center system imperative. The Value Transformation Framework (VTF), developed with health centers in mind, provides an organizing framework to support transformation of infrastructure, care delivery, and people systems.

**Methods:** NACHC applied the VTF within a cohort of health centers across the country to drive systems change and improve performance on measures of clinical care.

**Results:** A comparison of health centers “participating” in application of the VTF relative to “nonparticipating” health centers nationally showed improvement during 3 years of program implementation. Significant differences ( $p < .05$ ) favoring health centers who participated were noted for screening of colorectal cancer ( $p < .001$ ), depression ( $p < .001$ ), hypertension ( $p < .001$ ), obesity ( $p = .001$ ), and cervical cancer ( $p = .011$ ). Performance for diabetes control also favored participating programs, although the difference did not quite reach significance ( $p = .45$ ).

**Conclusions:** Applying a systems approach, organized by the VTF, with evidence-based interventions and deployed in a learning community, can result in improved performance across multiple measures of clinical care.

**Keywords:** evidence-based practice, performance improvement, systems approach, vulnerable populations

## Introduction

In 1964, President Lyndon B. Johnson declared an “unconditional war on poverty” and signed into law the Economic Opportunity Act. This federal legislation established a variety of social programs and laid the foundation for the community health center model, where vulnerable populations could receive quality health care, regardless of their ability to pay. In 2021, there were nearly 1,400 community health centers (hereafter referred to as “health centers”) operating approximately 13,000 delivery sites serving

nearly 30 million people. Health centers are community-based, patient-directed organizations that deliver primary care to the nation’s most vulnerable individuals and families. They receive federal health center program grant funding to support the delivery of culturally competent, high-quality services, including supportive services such as health education, translation services, and transportation. Many are located within communities who face economic, geographic, or cultural barriers and offer access to integrated mental health, pharmacy, substance use, and other services. Health centers provide care to low income, uninsured, and underinsured populations including one in three people living in poverty and one in eight children in the United States.

With the emergence of the SARS-CoV-2 virus that causes COVID-19, the world forever changed. Virtual health care, remote work, online schooling, and a host of other shifts to a new virtual world have affected the way we interact and deliver goods and services, including health care. In the years preceding the pandemic, health centers had been shifting from a model of care based on the volume

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of services delivered to one focused on value and delivering better outcomes at lower cost. The pandemic has made the need for efficiency and coordination of the many moving parts of a health center system imperative. Fortunately, before the current public health emergency, the National Association of Community Health Centers, Inc. (NACHC) had efforts underway to guide health centers toward whole-systems changes that advance value-based care. This work is organized around a conceptual framework for systems change developed by Modica<sup>4</sup>. The Value Transformation Framework (VTF) outlines evidence-based actionable steps that health centers can readily implement to bring about changes needed to transition from volume-based to value-based care, with value defined by the Quintuple Aim goals of improved health outcomes, improved patient experience, improved staff experience, reduced costs, and improved equity.<sup>2,3</sup> The underlying premise of the VTF is that the work of systems change can be distributed across staff such that the demand on any one or few individuals is minimized, allowing the organization to mobilize change in multiple areas of the system simultaneously.

The VTF (Figure 1) was designed and developed in a four-step process over a period of several years and is outlined elsewhere.<sup>4</sup> The development of the VTF was needed because existing conceptual models were primarily focused on chronic disease management,<sup>5</sup> the patient-centered medical home,<sup>6</sup> or quality improvement<sup>7</sup> and did not give full consideration to

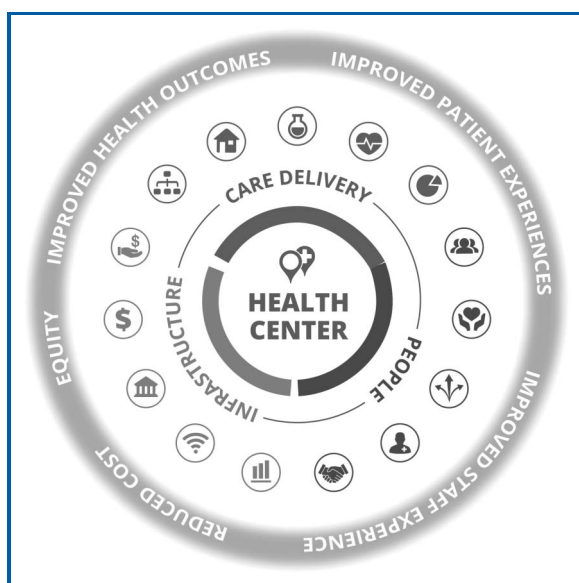
the larger organizational system or Quintuple Aim goals. In addition, these earlier models were not developed with health centers or vulnerable populations in mind.

The VTF organizes health center systems into three *Domains*, each with five practical *Change Areas* that, when acted on, can help advance a health center toward the Quintuple Aim. The VTF seeks to promote the performance of evidence-based and promising practices related to clinical conditions and to improve performance metrics across the system by providing pathways to modify health center *Domains*: infrastructure, care delivery, and people systems. The 15 *Change Areas* are distinct components within the *Domains* that can be targeted for transformation based on evidence-based research and best practices. Many of the *Change Areas* are further broken down into smaller, yet flexible, action steps detailed in written *Action Guides* with concise, step-by-step instructions for change. Taken together, the actions of many staff across the *Change Areas* can result in overall systems transformation and value. A full list of available *Action Guides* can be found on our organization's website.

The VTF has been shown to be effective as a conceptual framework to guide systems change. In the first application of the VTF within eight health centers across two states in 2017, a 13.3 percentage point improvement in colorectal cancer screening (CRCS) rates was demonstrated.<sup>8</sup> This 2017 application combined the VTF, evidence-based CRCS interventions, and the learning community model to drive health center system improvements and implement evidence-based practices.<sup>9-11</sup> Improvements in other clinical practices were also evidenced in specific clinical measures for cervical cancer screening, diabetes, hypertension, obesity, and depression. This two-state effort continued in six health centers in 2018 and then scaled and spread to a national level project in 2019. This national level application of the VTF was called the Elevate learning forum ("Elevate"). The 2019 project engaged 115 health centers and 17 primary care associations (PCAs) and/or health center controlled networks (HCCNs) across 16 states.

The partners engaged in the application of the VTF within each project year included:

- (1) National Association of Community Health Centers: The national organization dedicated to expanding healthcare access for medically underserved populations through the community health center model.



**Figure 1.** Value Transformation Framework.

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- (2) Health Centers: Community-based healthcare providers (hereafter referred to as “health centers”) who receive funds from the Health Resources and Services Administration (HRSA) Health Center Program to provide primary care to medically underserved populations regardless of insurance status or ability to pay.
  - (3) Primary Care Associations: State or regional health center membership organizations that offer training and technical assistance to safety-net providers.
  - (4) Health Center Controlled Networks: Groups of health centers working together to support and enhance the use of health information technology to improve healthcare access and quality at lower costs.

## Methods

In each of the three project years, we combined the VTF, evidence-based interventions, and the learning community model to drive health center system improvements and implementation of evidence-based practices. This article examines the impact of applying the VTF and evidence-based interventions in a collaborative learning approach within participating health centers: eight in 2017, six in 2018, and 115 in 2019. Although the overall aim of project efforts was improvement across the Quintuple Aim goals, this article focuses on performance across a set of measures of clinical care. The expectation is that changes across a health center system would improve not one, but multiple clinical measures. The included measures were for six high-cost, high-burden conditions or preventive screenings for high-cost, high-burden conditions: colorectal and cervical cancer screening, diabetes control, hypertension control, obesity screening, and depression screening. This project was submitted to the A.T. Still University (ATSU, Arizona) Institutional Review Board. It was deemed to be a quality improvement project (#2017-034) and classified as “non-jurisdiction” by the board.

## Setting

NACHC engaged health center leaders (Chief Executive Officer/Executive Director and Chief Medical Officer/Medical Director) from the participating 115 health centers to identify a project lead. Because the VTF’s *Change Areas* focus on different components of the system, health center leaders were encouraged to invite staff from a range of different roles to participate in the project. This typically included quality improvement and clinical

staff as well as finance, health information technology, administrative, and other personnel. The number of participating health center staff ranged from three to 20 with the average being seven.

## Intervention

The project’s intervention was the application of the VTF within a cohort of health centers. Activities in support of this intervention included: (1) education about the VTF, (2) evidence-based interventions in each of the VTF’s 15 *Change Areas*, and (3) collaboration and sharing through the learning community model to implement evidence-based strategies that can improve systems. The learning community model involves multidisciplinary engagement with health center staff including regular calls and training plus supportive instruction and/or coaching.<sup>9-11</sup> This model provides a collaborative learning environment which has been shown to achieve greater effectiveness among groups of individuals as task complexity increases.<sup>12</sup>

Information and education about the VTF were delivered through a variety of means, including “core” monthly one-hour webinars throughout the year and multiple “elective” learning forums. These sessions offered content in each of the VTF’s three *Domains* and 15 *Change Areas*, along with corresponding interventions.<sup>4</sup> The number and type of staff engaged in each learning forum varied by topic. Depending on the topic area, specific job roles and activities were called out to provide examples of how to implement evidence-based practices. For instance, QI and HIT staffs were targeted with messaging and action steps related to population health management and risk stratification. When it came to improving outcomes for segments of the population for CRCS (e.g., individuals 50–75 years), members of the care team were targeted and providers were the focus when discussion centered around updating the clinical protocols or implementing standing orders. Elective sessions included: cancer screening, leadership, risk stratification, care management, and diabetes. To further illustrate an example as applied to cancer screening, one recommendation included the implementation of standing orders for cancer screening while acknowledging that implementation must consider local/state laws and licensure parameters fit to local conditions. Sample standing orders were provided for adaptation by a health center, where appropriate. The project, and application of the VTF conceptual framework, was designed to balance flexibility (to ensure ease of implementation) and fidelity/standardization (to aim for generalizability).

In addition, staff within each participating organization were invited to join a virtual online platform that served as a centralized repository of project information, tools, and resources. Participants also regularly received “Action Guides” that outlined evidence-based, step-by-step actions that a health center can take for a specific *Change Area* and additional guidance on areas such as reimbursement.

The VTF was operationalized in partnership with PCAs and HCCNs which allowed these partners to apply knowledge gained through the project to their own quality and transformation efforts with their member health centers, thereby leveraging and enhancing local, state, and regional transformation efforts.

Data for the six measures of clinical care that the project tracked are part of routine data collection that health centers perform for federal reporting under the Uniform Data Systems (UDS).<sup>13</sup> These data are publicly available through the HRSA website for all Health Center Program grantees.

### Analysis

Summary statistics are provided as means (standard deviations) and counts (percentages), where appropriate. In one analysis, we compared the performance of six measures of clinical care within health centers participating in the three project years with the performance of all other nonparticipating health centers during those years. This analysis includes

eight participant health centers in 2017, six participant health centers in 2018, and 111 of the 115 participant health centers in 2019. The 2019 analysis excluded data for four participant “look alike” health centers because, while these organizations meet HRSA Health Center Program requirements and operate similar in nature to health centers, they did not receive federal funding and are not required to report UDS data. A second analysis used only 2019 data. In this analysis, we compared data from 104 health centers who participated in the VTF program for the first time in 2019 (e.g., excluded the health centers who had participated in any of the previous two years and excluded the four “look alike” health centers) with 1,264 health centers who had never used the program.

The first analysis, across three years, used a generalized estimating equations approach for count data to compare rates of measure performance between participating and nonparticipating health centers. Generalized estimating equation was used because data were collected from some of the same health centers multiple times. The percentage of patients who met the criteria for each measure was calculated using the count of eligible patients who met UDS clinical measures criteria divided by the total number of eligible patients. Conservative (robust) estimating procedures were used because we were not able to track all patients from visit-to-visit, although, undoubtedly, patients were counted multiple times during each year.

**Table 1. Means (95% Confidence Intervals) for Percent of Patients Meeting Measure Criteria for Participating and Nonparticipating Health Centers (2017–2019)**

Category	Participating (n = 111 Health Centers and 124 Health Center Years <sup>a</sup> )	Nonparticipating (1,392 Health Centers and 3,970 Health Center Years <sup>a</sup> )	p
Colorectal	43.5 (40.6–46.6)	36.8 (35.8–37.7)	<.001
Depression	72.4 (68.2–76.7)	61.7 (60.4–63.0)	<.001
Hypertension	65.3 (63.8–66.9)	59.9 (59.2–60.6)	<.001
Obesity	66.4 (61.5–71.7)	58.5 (57.2–59.8)	.001
Cervical cancer	50.1 (46.8–53.5)	45.9 (44.9–46.9)	.011
Diabetes <sup>b</sup>	29.8 (28.2–31.5)	31.6 (31.1–32.2)	.045

<sup>a</sup> Health Center years take into account both the number of health centers in the project and the amount of time each health center spent in the project. A project that followed three health centers for 1 year would include three health center years of data. Similarly, a study that followed one health center for three years would include three health center years of data.

<sup>b</sup> The UDS diabetes control measure is calculated as the percentage of patients with uncontrolled diabetes (HbA1c > 9%); a decrease in rate reflects an improvement.

UDS, Uniform Data System.

For the analysis of 2019 only data, independent samples *t* tests were conducted to evaluate the percentage of patients who met the measure criteria for health centers who first entered the VTF program in 2019 compared with health centers who had never participated. Alpha = .05 (two-tailed) was used as the criterion for statistical significance. No adjustments in the significance level were made for multiple tests. Analyses were conducted using SPSS version 27 (IBM Corporation, Armonk, New York).

## Results

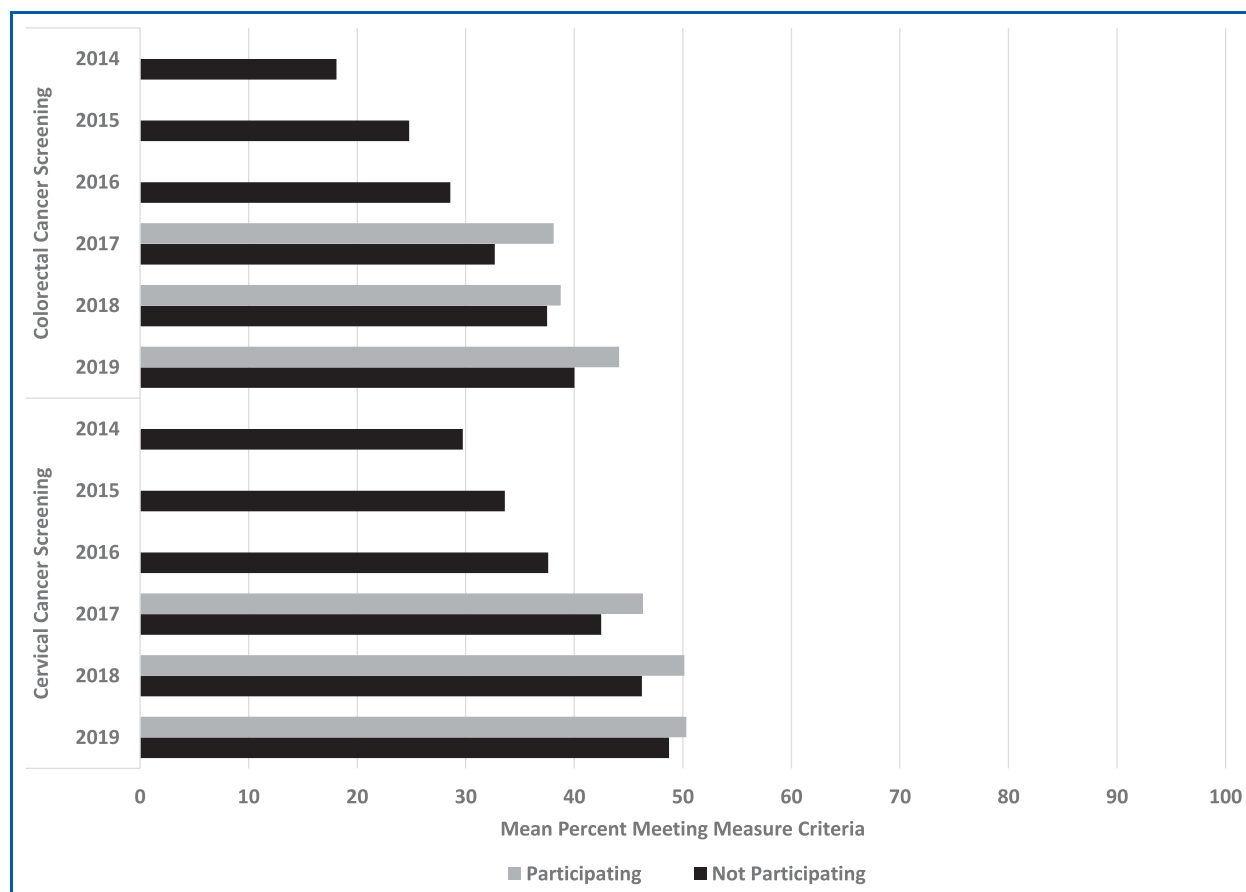
Data reflecting mean rates of performance (95% confidence intervals [CIs]) for the UDS clinical guidelines, by participant category, are presented in the Table 1. These tests revealed significant differences in bivariate comparisons of participating health centers versus nonparticipating health centers during these three years of program implementation, favoring participant health centers across all six

clinical measures. In the figures that follow, data for years 2014–2016 are provided for context, but they did not enter the analyses of differences.

Previous findings by these authors point to the significance of several interventions that may have contributed to noted improvements: a formal written clinical policy, standing orders, patient recall/outreach, performance data shared at the provider/team level, and performance data shared at the site/organizational level.<sup>14</sup> Additional research by the authors echoed the important role of standing orders, sharing performance data, and electronic health record alerts.<sup>8</sup>

Figure 2 shows higher cancer screening performance per UDS guidelines among participating sites for colorectal ( $p < .001$ ) and cervical cancer screening ( $p = .011$ ).

Higher levels of performance were also noted (Figure 3) among participating sites for hypertension ( $p < .001$ ), depression ( $p < .001$ ), and obesity ( $p = .001$ ).



**Figure 2.** Mean percent meeting measure criteria: colorectal and cervical cancer screening.

The mean percent of patients with poor control of diabetes according to the UDS guidelines decreased for participating health centers (Figure 4). This UDS measure looks at the percentage of patients with uncontrolled diabetes as measured by HbA1c >9%. A decrease in the mean is considered an improvement for this measure.

Table 2 summarizes means (95% CIs) for the percentage of patients who met measures of clinical care within health centers who first engaged in this program, and application of the VTF, in 2019 (n = 104) compared with patients in health centers who had never participated in the program or application of the VTF (n = 1,264). These data reflect the percent of patients meeting the measure criteria in 2019 only, when there were a large number of health centers participating. Significant differences ( $p < .05$ ) favoring participant health centers were noted for screening of colorectal cancer, depression, and hypertension. Performance for diabetes control also favored

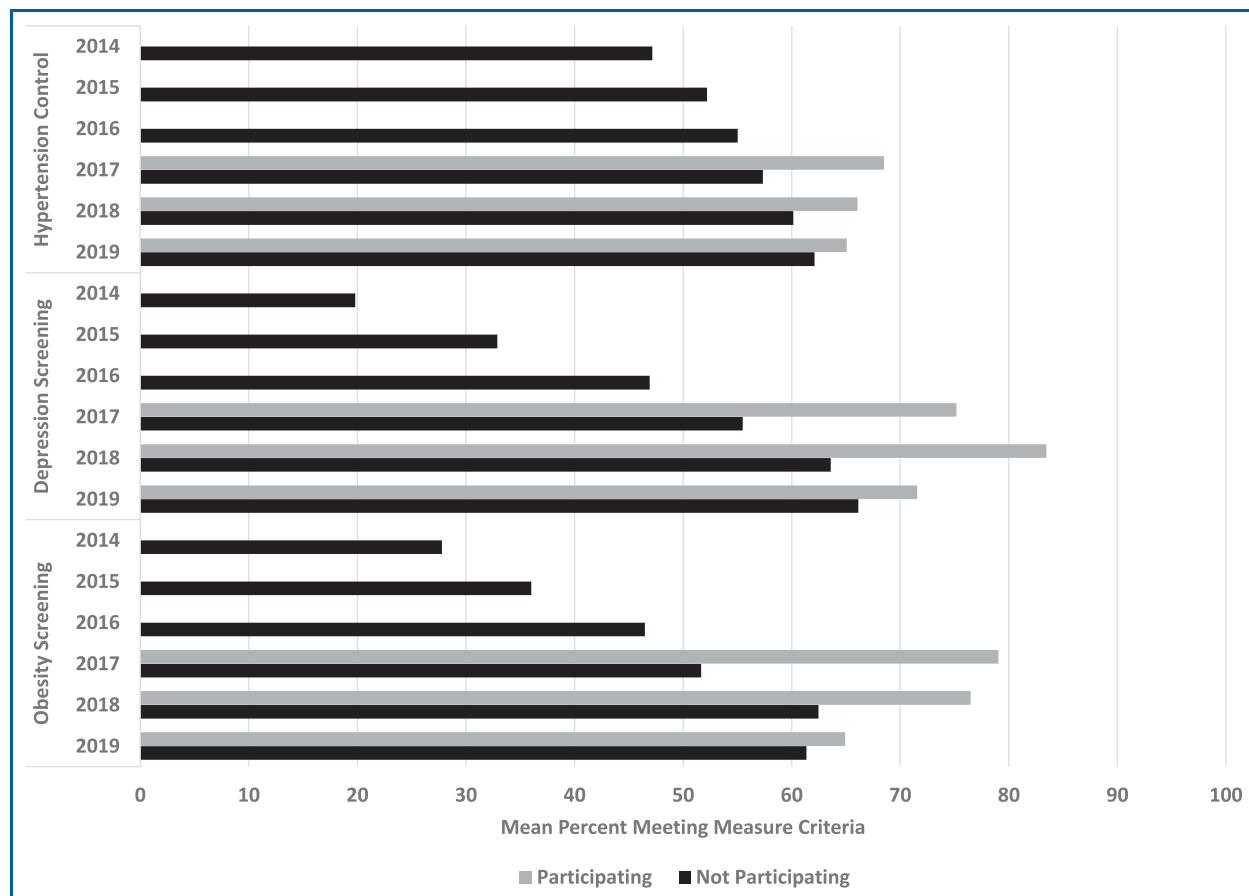
participating programs, although the difference did not quite reach significance ( $p = .051$ ).

### Limitations

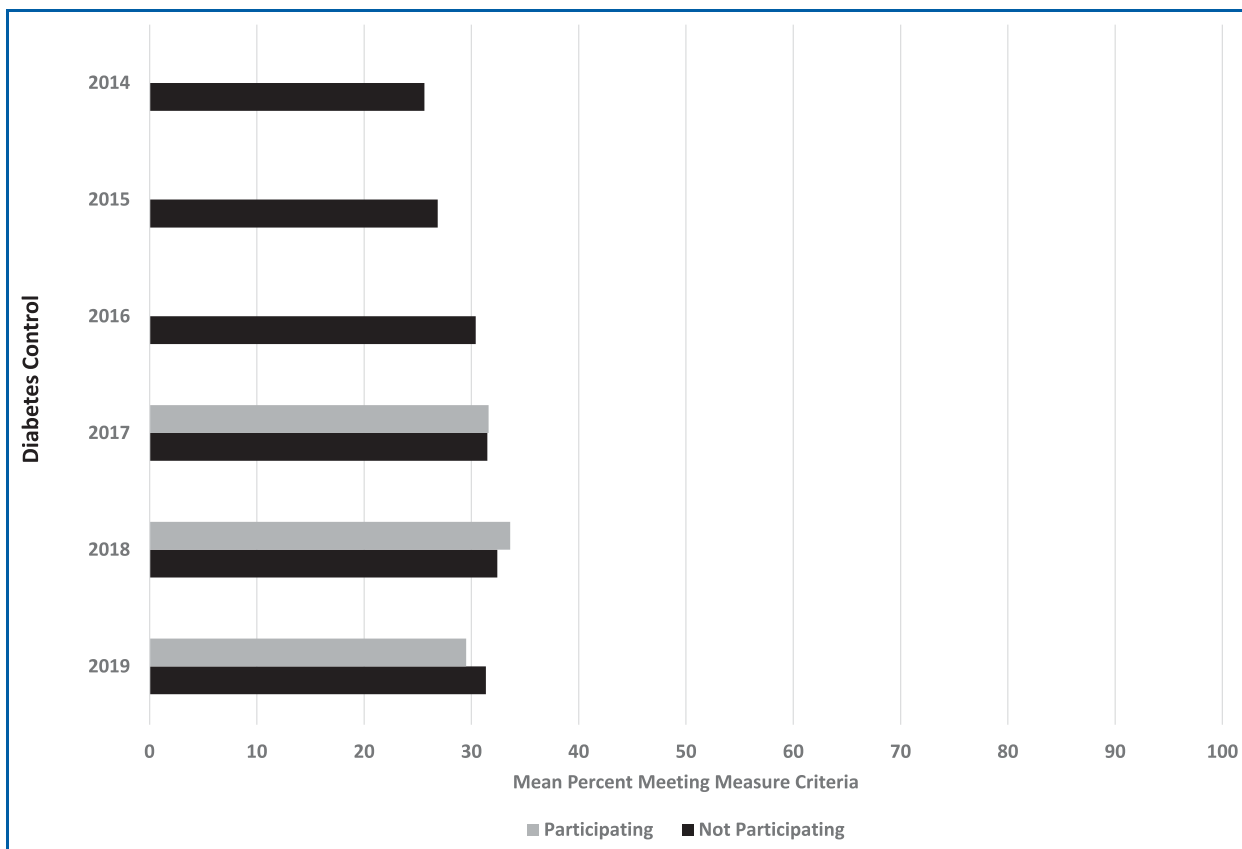
The flexibility offered by the VTF means that a method or approach adapted by one health center may not be generalizable to other health centers. This evaluation does not identify which interventions were specifically adopted by each center nor are we able to correlate adoption or use of tools with changes in clinical outcomes. However, application of the overall framework was shown to correlate with improvement across multiple important measures of clinical care. Thus, access to, and utilization of, the VTF can help individual health centers achieve important clinical goals.

### Discussion

The transition from a volume-driven to value-driven model of care, combined with pressures and changes brought about by COVID-19, requires health centers to



**Figure 3.** Mean percent meeting measure criteria: hypertension (HTN), depression, and obesity screening.



**Figure 4.** Mean percent meeting measure criteria: diabetes poor control (% with HbA1c >9%).

take a whole-systems approach to change and transformation. The results from health center application of the VTF from 2017—2019, offering evidence-based interventions in a learning community format, show improved performance for multiple measures of

clinical care beyond that expected to occur naturally over time. This analysis builds on earlier work by these authors demonstrating improvements in CRCS and measures of diabetes control when health centers applied the VTF in the context of a learning community

**Table 2.** Means (95% Confidence Intervals) and P values for Percentage of Patients Meeting Measure Criteria Within Health Centers Who First Participated the VTF Program in 2019 and Those Who had Never Participated in the Program

Category	Participated only in 2019 (n = 104)	Never participated (n = 1,264)	p
Colorectal cancer	44.20 (40.87–47.53)	40.13 (39.10–41.20)	.031
Depression	70.80 (66.87–74.74)	66.21 (64.81–67.60)	.032
Hypertension	64.85 (63.26–66.44)	62.17 (61.42–62.91)	.003
Obesity	64.32 (59.24–69.39)	61.46 (59.88–63.04)	.323
Cervical cancer	50.27 (46.76–53.78)	48.89 (47.82–49.97)	.486
Diabetes	29.40 (27.61–31.19)	31.30 (30.65–31.94)	.051

VTF, Value Transformation Framework.

and evidence-based interventions.<sup>8,14</sup> We recognize that although improvements have been demonstrated, health centers have not yet achieved the Healthy People 2020 goals for many of the UDS measures included in this analysis, and that efforts continue in health centers to improve performance on these key measures of clinical care. Future work will focus on systems-based approaches in these areas.

Although the focus of this analysis was on clinical performance measures, the systems approach taken by the multiyear project aims to advance the Quintuple Aim goals of improved health outcomes, improved patient and staff experience, reduced costs, and improved equity. Additional analyses are planned to compare cost measures in participant versus non-participant health centers and to design future strategies to measure patient and staff experience uniformly across a diverse, national cohort.

With a multidisciplinary, multimodality approach to health center improvement and systems change and a clear path for health center systems transformation, implementation at the local, individual health center level becomes feasible. The VTF is designed to be tailored to each health center's unique organizational culture, quality improvement processes, and resources. This nationally driven approach is demonstrating improvement in one area of the Quintuple Aim goals with additional analyses planned to assess other measures of value.

## Conclusions

In recent years, health centers have been shifting from a model of care based on volume to one based on value. A value-based model aims to improve health outcomes, improve patient and staff experience, reduce costs, and improve equity (Quintuple Aim goals). The COVID-19 pandemic has made the need for efficiency and coordination of the many moving parts of a health center imperative. The VTF can provide health centers with a practical and actionable framework that simplifies the complex undertaking of health center systems change. Implementation of this framework is correlated with improvements in a set of diverse measures of clinical care within a cohort of health centers from across the country.

## Implications

A model for transforming health center systems from a volume-based to value-based model of care can be applied within diverse health centers of various shapes

and sizes to improve the health of vulnerable populations. Our findings demonstrate the potential for other health centers and healthcare organizations to apply the VTF to achieve performance improvements across multiple measures of clinical care.

## Authors' Biographies

**Cheryl Modica, PhD, MPH, BSN**, Director, Quality Center, National Association of Community Health Centers (NACHC, Bethesda, Maryland), leads national collaborative efforts and strategies in support of improved patient and staff experience, improved outcomes, improved health equity, and reduced costs. Dr. Modica directs and strategically coordinates clinical quality improvement, performance measures and metrics, and operational integration and transformation. Dr. Modica is responsible for building and expanding NACHC's Quality Center and leading clinical and quality innovation.

**Curt Bay, PhD**, is a professor of biostatistics in the Department of Interdisciplinary Health Sciences. For 12 years before joining ATSU, Dr. Bay served as director of medical research, Department of Academic Affairs, Maricopa Medical Center, in Phoenix. He is a graduate of Arizona State University, where he received a doctorate in psychology, with an emphasis in statistical methodology. Dr. Bay teaches courses in research methodology and statistical analysis.

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**Camila Silva** is the Deputy Director, Innovation with NACHC's Development and Innovation team. Camila's experience involves business and project management, human-centered design, gamification, and social entrepreneurship.

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