

# Maryland Model Analytics

## Evaluation of the Care Transformation Initiatives Program: Pre-Implementation Report

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## Executive Summary

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Care Transformation Initiatives (CTIs) are a key component of Maryland's Total Cost of Care (TCOC) Model. These voluntary initiatives allow hospitals and health systems to test innovations that address specific clinical and population needs and promote efficient use of health care resources. Hospitals whose initiatives produce savings will be rewarded with a positive payment adjustment. By testing and evaluating the results of hospitals' care transformation efforts, the state hopes to identify and disseminate best practices for improving care and reducing costs.

IMPAQ is conducting a two-part evaluation of the CTI program. This report includes findings from the pre-implementation phase of the program. After the first performance period ends in 2022, we will conduct a second evaluation. In this first phase, we conducted a mixed-methods evaluation of the CTI program to (1) describe how hospitals designed their CTIs, (2) identify areas of spending that are (or are not) addressed by CTIs, (3) assess how CTIs align with published research on care transformation, and (4) describe the extent to which CTIs address socioeconomic status and race and ethnicity. We found that:

- **Three-quarters of CTIs focus on transitions of care or primary care.** Hospitals are targeting areas of spending for patients with acute care stays, or patients at risk of hospital admission or readmission. A smaller portion of CTIs focus on palliative or emergency care. The episode design and target prices of CTIs vary widely.
- **Nearly all Maryland hospitals are participating in the CTI program, and most are motivated by the potential to earn savings.** Many hospitals were already engaged in quality improvement and care transformation activities, and the CTI program offers an opportunity to evaluate these efforts.
- **CTI thematic areas generally align with recent research on care transformation; however, behavioral healthcare and quality measurement are two notable gaps.** Behavioral health is a known cost driver, and care for patients with behavioral health diagnoses is often fragmented. The CTI program presents an opportunity to integrate behavioral health care across different settings of care. In addition, nearly all recent research on care transformation includes quality measurement to detect changes in

care processes and observe changes in patient outcomes that may precede changes in cost.

- **CTIs are targeting chronic conditions, but few are in the primary care setting.** Costs for Medicare patients with chronic conditions are nearly double that of patients without these conditions. CTIs that target patients with chronic conditions are concentrated in hospital care rather than primary care, which is inconsistent with recent care transformation research.
- **CTIs use many of the same interventions documented in care transformation research.** Care coordination, care planning, and patient outreach are among the most common interventions in both CTIs and published studies. We note, however, that CTIs' interventions are not well documented, which could present challenges for identifying best practices in the future.
- **Half of all CTIs address social determinants of health (SDOH), but opportunities exist to align more closely with local population needs.** Although CTIs are targeting social needs, few hospitals that serve socially vulnerable and low-income populations are targeting SDOH through their CTIs. None of the CTIs explicitly state that they are focusing on the needs of racial or ethnic minorities. However, about a quarter of CTIs have baseline populations in which at least 40 percent of patients identify as a racial or ethnic minority.
- **Care coordination and data utilization are key challenges during the early implementation stages of the CTI program.** Coordination with outside health care providers, community organizations, and other partners has been challenging as many CTIs require the participation of multiple stakeholders. Some hospitals will require ongoing technical assistance to understand how to use data to transform care.

To identify success factors and share best practices for CTI design in the future, we identified considerations for the future of the CTI program. First, more comprehensive descriptions of CTIs will help the state, hospitals, and other stakeholders to understand how to scale up practices that lead to successful care transformation. Second, incorporating behavioral health care into CTIs could reduce costs and improve outcomes for patients with behavioral health diagnoses. Third, quality measurement could provide a more complete picture of CTIs' progress, and hospitals may be able leverage existing quality measures in

ways that do not create additional reporting burden. Finally, CTIs could be better aligned with the socioeconomic conditions of hospital service areas. Although hospitals should not be limited to conducting CTIs that address socioeconomic factors, these factors should be a consideration in the design of CTIs going forward.

## Overview of Care Transformation Initiatives

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Since 1971, Maryland has used an all-payer rate-setting system to pay hospitals for inpatient and outpatient services, and in recent years, it has developed innovative strategies using its authority to set hospital payments. On January 1, 2014, Maryland implemented the All-Payer Model for hospitals, which shifted the state to an all-payer, annual, global hospital budget.<sup>1</sup>

Building on the successes of the All-Payer Model, Maryland launched an eight-year demonstration TCOC Model in 2019, authorized by the Centers for Medicare & Medicaid Innovation (CMMI) within the Centers for Medicare & Medicaid Services (CMS).<sup>2</sup> Now in its third year, the TCOC Model holds hospitals and primary care providers accountable for the total cost of care for all Medicare fee-for-service (FFS) beneficiaries under a global budget. Maryland's innovative payment approach to paying hospitals under a global budget allows the state an opportunity to manage health care spending while holding hospitals and providers accountable for the quality of their patient care.

Recognizing that hospitals are not the only driver of health care costs, CMS requires the state to engage in care transformation efforts that can lead to savings across the entire delivery system as part of the TCOC Model. In 2019, the Maryland Health Services Cost Review Commission (HSCRC) established the CTI program to meet CMS requirements while allowing hospitals the flexibility to define their own episodes of care and test interventions to determine whether they reduce costs.<sup>3</sup> The CTI framework uses a three-part process to quantify how care transformation affects costs:

Step 1: Identify a patient population.

Step 2: Construct a clinical episode.

Step 3: Establish a Target Price using historical data.

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<sup>1</sup> Centers for Medicare and Medicaid Innovation, CMS. Innovation Models: Maryland All-Payer Model. Available at: <https://innovation.cms.gov/innovation-models/maryland-all-payer-model>

<sup>2</sup> Centers for Medicare and Medicaid Innovation, CMS. Innovation Models: Maryland Total Cost of Care. Available at: <https://innovation.cms.gov/innovation-models/md-tccm>

<sup>3</sup> A detailed description of the CTI methodology can be found in the Care Transformation Initiative User Guide. Available at: [https://hscrc.maryland.gov/Documents/Care%20Redesign/Steering%20Committee/DRAFT%20CTI%20User%20Guide\\_vF.docx](https://hscrc.maryland.gov/Documents/Care%20Redesign/Steering%20Committee/DRAFT%20CTI%20User%20Guide_vF.docx)

Step 4: Compare the total cost of care during the performance period to the target price to determine whether the CTI achieved savings.

Hospitals that conduct CTIs can earn additional payments by achieving savings for their defined episodes during a performance year. To fund these additional payments in a cost-neutral way, the state will reduce payments to all hospitals, including those that choose not to participate in the CTI program.

Between late 2019 and the spring of 2021, hospitals submitted 253 CTIs, which underwent a review and refinement process. HSCRC ultimately approved 114 CTIs for implementation in 2021.<sup>4</sup> At the time of this evaluation, 105 CTIs had been approved and had complete baseline data available for analysis. However, our follow-up evaluation will include all 114 CTIs.

To minimize administrative burden, hospitals are not required to report on their progress on, or savings achieved by, their CTIs during the performance year. Instead, the Chesapeake Regional Information System for Our Patients (CRISP), which operates the health information exchange (HIE) for Maryland and acts as a program administrator for many HSCRC Care Transformation programs, developed the Care Transformation Profiler (CTP), an online data tool, so that hospitals can track costs on a monthly basis during the performance period. The CTP uses dashboards and reports that aggregate Medicare claims data and show the hospital's performance on their CTIs month-to-month.

In its role as a program administrator, CRISP sponsors a learning collaborative that provides CTI participants with best practices, technical assistance, and feedback on their performance under the program. As part of this role, CRISP selected IMPAQ International to evaluate the CTI program during its first year of implementation. After the first year of the CTI program ends in June 2022, IMPAQ will conduct a follow-up evaluation that summarizes Year 1 results, including which CTIs achieved savings, feedback from participants, and recommendations on how the CTI program could be improved or expanded.

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<sup>4</sup> Although the program was intended to start in 2020, it was delayed until July 2021 due to the COVID-19 pandemic.

# Data, Methods, and Analysis

IMPAQ used a mixed-methods approach to evaluate the CTI program in the pre-implementation period. This section describes the qualitative and quantitative data sources and the methods we used to conduct our analyses.

**Literature Review.** IMPAQ conducted a brief literature review to (1) provide an overview of care transformation efforts in the U.S. and identify studies that have demonstrated success in reducing costs or encouraging appropriate utilization of health care resources; and (2) to examine how the clinical areas and interventions that are targeted in first-year CTIs compare to the published literature on care transformation.

We conducted the search using PubMed and Google Scholar, using a five-step process:

1. We searched scientific and gray literature using an initial set of keywords to refine the search strategy based on the results (Exhibit 1). The search was limited to studies published within the past ten years and conducted within the U.S.

### Exhibit 1. Literature Review Search Terms

Topics (joined by "AND")	Search Terms (joined by "OR")
Care transformation	Primary care transformation, health care transformation, value-based care transformation, acute care transformation, post-acute care transformation, care transformation intervention, care transformation savings, care transformation episode, care transformation bundle
Care redesign	Primary care redesign, health care redesign, value-based care redesign, acute care redesign, post-acute care redesign, care redesign savings, care redesign episode, care redesign bundle

2. After identifying the terms most likely to produce results on care transformation, we systematically identified, screened, and analyzed relevant materials. We screened results using a multi-stage process: we determined how recently an article was published, the type of publication, and its relevance to our study. We retained articles that were peer-reviewed clinical research studies or non-clinical research such as meta-analyses, qualitative studies, or analyses of claims data.
3. We then conducted a search of the grey literature using the same search terms, and retained editorials, blogs, and white papers that met our study criteria. To do this, we

ran a general web search and searched the websites of organizations that advocate for care transformation, as well as federal agencies that have published research on care transformation.

4. We then abstracted relevant details from each publication into an Excel spreadsheet: title, authors, the summary or abstract, the article type (clinical study, white paper, etc.), any interventions tested, specific populations, payers, or disease states targeted, and whether changes in utilization, cost, or quality were observed. We also created a variable to identify the CTI thematic area with which it aligned (if applicable). For clinical studies, we also created a variable to identify the model or unit being studied, such as a defined clinical episode, a patient panel, or a geographic area.
5. Finally, we imported the abstracted information into NVivo to code and analyze key information from the articles. Specifically, we used NVivo to categorize the interventions and outcomes observed in clinical studies and to code information on clinical, cost, or other outcomes. We used matrix analyses to identify instances where certain interventions co-occur with changes in cost or quality.

**Survey.** Due to the ongoing pandemic, we determined that a survey of CTI participants would be less burdensome than interviews with hospital and health system staff, we conducted a brief online survey of CTI participants to capture their perspectives during the pre-implementation phase. We used a short survey of 8 questions asking participants about their reasons for conducting a CTI, the type of care transformation they were undertaking, any early challenges to implementing the CTI, and other open-ended questions that would help us to understand the context in which the CTI is being conducted.

We fielded the survey to 76 contacts provided by CRISP. We received 21 responses; not all respondents answered every question. We reviewed and qualitatively coded the responses to identify key themes.

**Key Informant Interviews.** We conducted one-hour interviews with CRISP and HSCRC staff to gather information on how the CTI program evolved, the policy goals of the program, and any challenges experienced in the lead-up to the launch of the program. Because we were unable to interview hospital staff, we instead conducted an interview with staff from the Maryland Hospital Association to gather insights about the CTI program that they may have heard from their members.

The interviews were semi-structured discussions conducted by a researcher and recorded by a notetaker. We also audio recorded each interview to ensure that our notes were accurate. We conducted a qualitative analysis of the interviews using NVivo to identify common themes.

**CTI Data.** We analyzed descriptive data on CTIs that were active as of July 2021. The data included baseline information on each CTI, such as thematic area, the preliminary target price for each episode, the number of baseline episodes, a brief summary of the interventions, specific diagnosis-related groups or conditions targeted (if applicable), and the episode length.

We analyzed CTI data to summarize and describe:

1. The breakdown of CTIs by thematic area
2. Baseline episode cost within thematic areas
3. The volume and types of CTI episodes
4. The racial/ethnic composition of CTI patient populations
5. The extent to which CTIs focus on chronic conditions
6. Common types of interventions used in CTIs
7. How CTIs consider or incorporate socioeconomic factors or race/ethnicity.

**Social vulnerability and chronic condition indicators.** To understand the socioeconomic factors affecting CTIs and their patient populations, we linked hospital data with publicly available measures of social vulnerability and the prevalence of disease in hospital service areas. First, we linked zip codes in each hospital's service area to the Social Vulnerability Index (SVI) created by the Centers for Disease Control and Prevention.<sup>5</sup> The SVI ranks census tracts on 15 social factors, including poverty, lack of vehicle access, and crowded housing, and groups them into four related themes. The SVI is expressed as a percentage that indicates the vulnerability of a census tract relative to others in the state. For each hospital, we calculated an average SVI rank across all zip codes within a service area. We flagged hospitals whose SVI rankings were 75 percent or higher.

We also used CMS data from the Mapping Medicare Disparities Tool to identify hospitals whose service areas have high rates of hospitalizations for asthma (>10 per 1,000), diabetes (>5 per 1,000), hypertension (>14 per 1,000), and chronic kidney disease (>9 per 1,000).<sup>6</sup>

Finally, we used data on hospitals' payer mix (provided by CRISP) to identify those that receive 50 percent or more of their inpatient or emergency department (ED) revenue from Medicaid. A

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<sup>5</sup> Information on the SVI may be found at: [https://www.atsdr.cdc.gov/placeandhealth/svi/faq\\_svi.html](https://www.atsdr.cdc.gov/placeandhealth/svi/faq_svi.html)

<sup>6</sup> Information on the Mapping Medicare Disparities Tool can be found at: <https://www.cms.gov/About-CMS/Agency-Information/OMH/OMH-Mapping-Medicare-Disparities>

higher mix of Medicaid revenue indicates that the hospital is serving a relatively high-cost, low-income patient population that may have unmet social needs.

## Findings

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This section summarizes the key findings of our evaluation. We begin with an overview of the areas that CTIs are targeting in the first year of the program and show how CTI episodes and costs vary within these areas. We then use survey data to describe why hospitals chose to participate in the CTI program and why they chose to focus on the areas that they did. Next, we discuss how CTIs compare to published research in terms of the chosen thematic areas and care settings, episodes and interventions, and the extent to which CTIs address SDOH. Finally, we summarize the types of challenges they faced in designing and implementing their CTIs at the start of the program.

### Overview of CTIs: Thematic Areas, Episodes, and Baseline Costs

CTIs are grouped into thematic areas based on similarities between the clinical interventions used, the settings where the triggering event occurs (such as a hospital or a primary care practice), and how the patient populations are defined (such as diagnosis or the treating provider).<sup>7</sup> When developing the CTI program, HSCRC did not initially define the areas that hospitals should focus on in the CTI program, but instead asked hospitals to propose CTIs that aligned with areas that they considered high priorities. As hospitals submitted CTIs for approval, HSCRC and its CTI Steering Committee finalized five thematic areas:

- **Care Transitions**, which focus on transitional care management such as discharge coordination, home assessments, and telehealth transition services
- **Community-Based Care**, which target the broader community, including community health workers, providers assigned to senior living buildings, or care coordination for patients transitioning to or from skilled nursing facilities (SNFs)
- **Emergency Care**, which focus on reducing ED visits for patients who are at high risk for ED use (such as high utilizers and individuals who have unmet social needs)
- **Palliative Care**, which focus on managing direct care of chronic pain patients, improving advanced care planning, and coordination with home health, hospice, and SNF, and
- **Primary Care**, which is for hospitals that have programs to improve their primary care services, such as wrap-around services or completion of social, behavioral, and home safety assessments, or referrals to community resources.

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<sup>7</sup> HSCRC. Care Transformation Initiative Frequently Asked Questions. Available at: [https://hscrc.maryland.gov/Documents/Care%20Redesign/Steering%20Committee/Care%20Transformation%20Initiative%20FAQs\\_final.pdf](https://hscrc.maryland.gov/Documents/Care%20Redesign/Steering%20Committee/Care%20Transformation%20Initiative%20FAQs_final.pdf)

This evaluation includes the 105<sup>8</sup> CTIs that were approved and that had complete data available at the time of our analysis. These CTIs cover 233,228 Medicare fee-for-service beneficiaries in Maryland, which is nearly a quarter of the 1 million beneficiaries who have Medicare Parts A and B coverage in any given month. Nearly 75 percent of first-year CTIs are in Care Transitions or Primary Care (Exhibit 2).

### Exhibit 2. Number of CTIs by Thematic Area

Thematic Area	Number of CTIs	Total Number of Patients at Baseline
Care Transitions	55	35,612
Community-Based Care	10	29,985
Emergency Care	13	17,314
Palliative Care	6	986
Primary Care	21	149,331
<b>Total</b>	<b>105</b>	<b>233,228</b>

To construct a CTI, hospitals identify a patient population (for example, patients with chronic conditions being discharged from an acute care stay) and episode length, or the duration of time during which the patients will receive a set of interventions (Exhibit 3). Hospitals are responsible for all costs during the episode. Episodes lasting 90 days are most common, while 365-day episodes account for nearly a quarter of CTIs and are concentrated in the Primary Care thematic area. We note that HSCRC requires certain episodes (such as those that follow a panel of patients) to be 365 days, and hospitals do not have the option to change the length.

### Exhibit 3. CTI Episode Length by Thematic Area

Thematic Area	30 days	60 days	90 days	180 days	365 days
Care Transitions	6	10	29	8	2
Community-Based Care	1	2	5	0	2
Emergency Care	2	1	9	1	0
Palliative Care	0	0	3	1	2
Primary Care	0	0	1	1	19
<b>Total</b>	<b>9</b>	<b>13</b>	<b>47</b>	<b>11</b>	<b>25</b>

<sup>8</sup> CRISP assigns a numeric identifier for each unique CTI, where the identifier corresponds to a defined set of interventions, an episode length, and criteria for selecting the patient population. There are 92 unique CTIs. However, the same CTI may be conducted by more than one hospital. In these cases, CTI definition is the same, but each hospital has different baseline costs and will be evaluated individually for cost savings. Of the 92 unique CTIs, eight are being conducted at more than one hospital, and we treat each of these as a unique CTI.

Hospitals select a one-year period that serves as a baseline. Claims data from this baseline period is used to calculate a target price for the episode. After the performance year ends, costs will be compared to the target price to determine whether the CTI achieved savings. Because some hospitals had been engaged in care transformation efforts prior to the start of the CTI program, they could select a baseline period that predated those efforts so that the baseline did not include the period when interventions were being implemented.<sup>9</sup> CTIs vary widely in the number of episodes available in baseline data (Exhibit 4). This variation reflects differences in patient populations and the length of episodes.

#### Exhibit 4. Number of Baseline Episodes per CTI by Thematic Area

Thematic Area	Mean	Minimum	Maximum
Care Transitions	713	15	2,907
Community-Based Care	3,050	29	22,556
Emergency Care	1,624	13	5,531
Palliative Care	168	1*	342
Primary Care	7,262	82	32,525

Baseline episode data are masked when there are fewer than 12 episodes.

The target price per episode depends on the number of available baseline episodes, the variation in costs for those episodes, patient complexity and care needs, and the types of costs that hospitals chose to include in the episode. For example, CTIs may be triggered by an inpatient hospital stay, while others may not. For episodes that are triggered by an inpatient hospital stay, hospitals can choose to include or exclude the cost of that stay in the CTI episode. Eighty-eight CTIs include the index hospitalization in the cost of the episode, and most were Care Transitions or Primary care CTIs. Palliative Care CTIs have the highest costs per episode, likely due to the severity of illness in the patient population (Exhibit 5).

#### Exhibit 5. Preliminary Target Price by Thematic Area

Thematic Area	Minimum	Mean	Median	Maximum
Care Transitions	\$9,048	\$34,438	\$34,805	\$87,369
Community-Based Care	\$12,027	\$27,378	\$29,092	\$43,831
Emergency Care	\$8,203	\$14,552	\$11,165	\$29,871
Palliative Care	\$34,417	\$48,808	\$42,287	\$88,197
Primary Care	\$3,952	\$14,562	\$13,502	\$35,182

<sup>9</sup> The earliest baseline data available was 2016. Almost half (48) of CTIs are using a baseline data that is recent (2018 or later), while the remainder rely on 2016-2017 data.

## Nearly all Maryland hospitals are participating in the CTI program, and most are motivated by the potential to earn savings

Forty-three hospitals (or 90 percent of all Maryland hospitals) are leading CTIs during the 2021-2022 performance period. We surveyed CTI participants to understand why they are participating in the CTI program and why they chose the clinical areas they did. Reasons for participation vary among the twenty-one survey respondents: the majority (12) are participating in CTIs to earn potential savings or because they were already engaged in similar initiatives and are eager to be formally evaluated. Six other respondents said that they are conducting CTIs because they want to avoid financial penalties or because there is no downside financial risk if they do not achieve savings.

We also asked participants whether they designed CTIs to address clinical areas or patient populations that represent elevated areas of spending. The survey results were divided: eleven respondents said that their CTI was intended to address an area of high spending, while another ten said this was not the purpose of their CTI. As noted by several interviewees, hospitals may be more focused on designing CTIs that improve quality and patient outcomes rather than address costs. Other respondents indicated that the CTI program offers an opportunity to align quality with financial incentives, improve patient outcomes, or establish better relationships with communities and other providers.

These responses align with findings from our interview with HSCRC. During the planning phase of the CTI program, HSCRC conducted outreach to hospitals to understand the types of transformation projects they were already engaged in. Hospitals indicated a need to understand whether these projects were working to reduce costs but often lacked the internal data support to evaluate them. The CTI program helps to fill that gap.

## CTI thematic areas generally align with recent research on care transformation; however, behavioral health and quality measurement are two notable gaps

We reviewed recent research on care transformation to assess the extent to which CTIs are, or are not, addressing common areas of spending. Specifically, we reviewed recent research to identify (1) the clinical areas addressed, (2) the settings and episodes of care, and (3) the interventions being tested.

Among the 64 articles in our final list, 57 (89 percent) align with a CTI thematic area, with most focusing on transitions of care or primary care.<sup>10</sup> Thirty-five articles in our literature review

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<sup>10</sup> Seven articles that did not align with a thematic area were policy-focused and addressed system-level issues, such as the need to incorporate social needs into care, problems with fragmented payment, and the need to develop and leverage data systems to drive care improvements.

were clinical studies that were designed similarly to CTIs and tested care transformation interventions to reduce costs or improve patient outcomes. The settings of clinical studies were also similar to those in the CTI program: 18 were conducted in hospitals or across multi-site health systems, and 14 were conducted in primary care clinics, small practices, or within an accountable care organization (ACO). Of the remaining three studies, two were community-based, and one was based in an orthopedic practice.

The clinical studies mainly focused on reducing hospital admissions or readmissions after acute care stays and avoiding emergency department visits. Most of the clinical studies (23) did not measure changes in cost but instead measured changes in quality, patient or provider satisfaction, or overall utilization. Because most studies focused on transitions of care or primary care, they also defined their patient populations according to a clinical episode of care (such as a recent acute care stay) or patient panel, although five focused on a geographic area. Based on these similarities, we found that clinical studies aligned CTI thematic areas.

Twelve of the 35 studies assessed cost savings. Of these, 11 showed a reduction in costs for care transitions, community-based care, and primary care. Four of the 11 studies focused on the Medicare population (one of these also included Medicaid patients), and one focused on high-risk Medicare and Medicaid patients in a geographic area (East Baltimore). We note that one of these 11 studies (which focused on the impact of a mandatory CMS payment model for joint replacement) projected a reduction in costs for the Medicare program but an *increase* in costs for hospitals. This results of this study may provide lessons for the CTI program because it notes that hospitals may encounter two obstacles to reducing costs, even while faced with reduced Medicare reimbursement: first, that the volumes for certain episodes of care may be too low make the investments in care transformation worthwhile; and second, that certain models limit the ability nonhospital providers (such as physician groups, post-acute care providers, and management companies) to manage patients' care when it is not in the economic interest or the capability of an individual hospital to do so.<sup>11</sup> These potential obstacles to cost savings may be worthy of future examination under the CTI program.

The alignment between CTIs and the published literature shows that hospitals and health systems have been focusing on similar opportunities for care transformation in the past ten years. Alternative payment models and grant programs initiated by CMS, states, and commercial payers (all of which are represented in our literature review) have encouraged research on avoiding or reducing hospitalizations and emphasizing primary care. CTIs are largely in step with this pattern, although the CTI program has a few notable differences.

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<sup>11</sup> Maniya, O. Z., Mather III, R. C., Attarian, D. E., Mistry, B., Chopra, A., Strickland, M., & Schulman, K. A. (2017). Modeling the potential economic impact of the Medicare comprehensive care for joint replacement episode-based payment model. *The Journal of arthroplasty*, 32(11), 3268-3273.

**Gaps Between CTIs and Care Transformation Research.** One notable gap between the clinical areas covered by CTIs and those in the literature is the extent to which CTIs integrate behavioral health care. While a subset of CTIs include interventions such as behavioral health assessments or referrals to behavioral health providers, none include ongoing behavioral health services, even though behavioral health is a known cost driver for the Medicare population.<sup>12</sup> Our review of the literature identified three clinical studies of behavioral health integration in either the primary care or community settings, two of which resulted in cost savings.<sup>13,14</sup> Three additional sources (non-clinical studies) highlighted the importance of behavioral health integration but noted challenges in identifying which entities or stakeholders should finance this type of care transformation, which payers will benefit from it, and which model(s) are most effective. The Maryland Hospital Association acknowledged in their interview that behavioral health and addiction issues are known drivers of cost, but many hospitals are not focusing on behavioral health because the interventions are costly. HSCRC and CRISP could consider ways to help hospitals and health systems develop CTIs that target patients with behavioral health needs, or that incorporate behavioral health services into episodes in the future.

A second difference between the CTI program and published research is the CTI program's primary focus on cost reduction without measuring changes in quality or patient outcomes. HSCRC indicated that it consciously did not require quality measurement in the CTI program because hospitals are already required to report quality data through other programs, and because HSCRC could not identify quality measures without knowing what topics or thematic areas hospitals would propose. As hospitals implement their CTIs, they may show quality improvements before they demonstrate any cost reductions. Therefore, process and outcome measures, which are widely used in value-based models, could be used to demonstrate near-term changes in clinical practice and possibly predict cost savings in future years.

## **CTIs are targeting chronic conditions that drive costs, but few are doing so in the primary care setting**

Nearly 70% percent of Medicare beneficiaries have two or more chronic conditions, which increase care costs and mortality.<sup>15</sup> Chronic conditions such as heart disease, diabetes, and respiratory disease are also leading causes of death among older adults nationally.<sup>16</sup> On

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<sup>12</sup> Figueroa JF, Phelan J, Orav EJ, Patel V, Jha AK. Association of Mental Health Disorders With Health Care Spending in the Medicare Population. *JAMA Netw Open*. 2020;3(3):e201210. doi:10.1001/jamanetworkopen.2020.1210.

<sup>13</sup> Beil H, Feinberg RK, Patel SV, Romaire MA. Behavioral Health Integration With Primary Care: Implementation Experience and Impacts From the State Innovation Model Round 1 States. *Milbank Q*. 2019 Jun;97(2):543-582.

<sup>14</sup> Ross, K. M., Gilchrist, E. C., Melek, S. P., Gordon, P. D., Ruland, S. L., & Miller, B. F. (2019). Cost savings associated with an alternative payment model for integrating behavioral health in primary care. *Translational behavioral medicine*, 9(2), 274-281.

<sup>15</sup> CMS. (2012). *Chronic conditions chartbook: 2012 edition*. CMS. Retrieved from <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Chronic-Conditions/2012ChartBook>.

<sup>16</sup> Centers for Disease Control and Prevention. (2021, August 3). *FASTSTATS - older persons health*. Centers for Disease Control and Prevention. Retrieved from <https://www.cdc.gov/nchs/fastats/older-american-health.htm>.

average, a Medicare beneficiary with a heart condition has almost twice the total cost of care (\$18,270) compared to a beneficiary without a heart condition (\$9,203).<sup>17</sup> In Maryland, nearly two-thirds of Medicare beneficiaries have at least one chronic condition, and the per capita cost of care for Maryland beneficiaries with two chronic conditions is nearly 65 percent higher than those with no chronic conditions. Because chronic conditions are so widespread in the Medicare population and are a major cost driver, care transformation has increasingly focused on managing these conditions and preventing hospitalization.

Our literature review shows that care transformation efforts often target patients with chronic conditions and do so in primary care or community settings as a way to avoid unnecessary hospitalizations or readmissions.<sup>18</sup> For example, a meta-analysis showed that, for patients with chronic obstructive pulmonary disease (COPD), patient education, telemonitoring, and home visits reduced hospital admissions.<sup>19</sup> One CMS-funded primary care transformation initiative in Michigan that targets chronic conditions has reduced costs for this population by expanding the capacity of patient-centered medical homes.<sup>20</sup> In contrast, few of the 21 Primary Care CTIs include chronic conditions in their defined target population (Exhibit 6).<sup>21</sup> The 51 CTIs that specify chronic conditions in their target patient population are heavily concentrated in the Care Transitions thematic area.

**Exhibit 6. Number of CTIs that Target Chronic Conditions, by Thematic Area**

Thematic Area	Number of CTIs	Number CTIs Targeting at Least 1 Chronic Condition
Care Transitions	55	37
Community-Based Care	10	4
Emergency Care	13	1
Palliative Care	6	4
Primary Care	21	5
<b>Total</b>	<b>105</b>	<b>51</b>

<sup>17</sup> Ewald, E., Koenig, K., Schluterman, N., & Ward, C. (2017, December). *Prevalence and health care expenditures among Medicare Beneficiaries Aged 65 Years and Over with Heart Conditions*. Centers Medicare and Medicaid Services. Retrieved from [https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Downloads/HeartConditions\\_DataBrief\\_2017.pdf](https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/MCBS/Downloads/HeartConditions_DataBrief_2017.pdf).

<sup>18</sup> Fifteen sources in our literature review focused on, or included, patients with chronic conditions. Ten of these were in the primary care setting.

<sup>19</sup> Yang F, Xiong ZF, Yang C, Li L, Qiao G, Wang Y, Zheng T, He H, Hu H. Continuity of Care to Prevent Readmissions for Patients with Chronic Obstructive Pulmonary Disease: A Systematic Review and Meta-Analysis. *COPD*. 2017 Apr;14(2):251-261. doi: 10.1080/15412555.2016.1256384. Epub 2017 Feb 7. PMID: 28326901.

<sup>20</sup> Zhai S, Malouin RA, Malouin JA, Stiffler K, Tanner CL. Multipayer Primary Care Transformation: Impact for Medicaid Managed Care Beneficiaries. *Am J Manag Care*. 2019;25(11):e349-e357.

<sup>21</sup> One primary care CTI includes chronic care management in its description but does not use chronic care flags or DRGs to define the target population.

Thirty-nine CTIs (37 percent) are being conducted by hospitals that are located in counties with high hospitalization rates for chronic conditions. High hospitalization rates for chronic conditions likely indicate a high overall burden of disease in the county and unmet primary care needs. More than half of the CTIs in these counties are targeting chronic conditions in their patient population, and nearly all focus on transitions of care. Thirteen primary care CTIs are being conducted in these counties, but only three target chronic conditions.

Hospitals can use different indicators to include patients with chronic conditions in their CTI population. Thirty-nine CTIs use chronic condition flags that are available in the episode creation template designed by HSCRC, while 14 CTIs specify their patient population using diagnosis-related groups<sup>22</sup> (DRGs) (three CTIs use both chronic condition flags and DRGs). Four CTIs use ICD-10 codes<sup>23</sup> (Exhibit 7). This variation in how episodes flag certain conditions may be an area that HSCRC wishes to study in the future to determine how they affect the alignment of patients to a CTI.

**Exhibit 7. Number of CTIs that Include Chronic Conditions in the Patient Population**

Chronic Conditions	Number of CTIs that use chronic condition flags	Number of CTIs that use DRGs	Number of CTIs that use ICD-10 codes
COPD/Asthma	34	14	2
Chronic Kidney Disease	22	8	0
Diabetes	31	11	3
Heart Disease	21	16	2
Hypertension	20	7	0
All Major DRGs	N/A	6	N/A
Number of Unique CTIs	39	14	4

**CTIs use many of the same interventions documented in care transformation research**

Hospitals and health systems are implementing a range of interventions to lower costs and improve quality through their CTIs. HSCRC and CRISP required only minimal CTI descriptions in order to give hospitals maximum flexibility and to minimize administrative burden at the start

<sup>22</sup> DRGs are a patient classification system that standardizes prospective payment to hospitals and encourages cost containment initiatives. In general, a DRG payment covers all charges associated with an inpatient stay from the time of admission to discharge.

<sup>23</sup> ICD-10 codes are the International Statistical Classification of Diseases and Related Health Problems (ICD), a medical classification list by the World Health Organization (WHO).

of the program. However, to identify best practices among the CTIs, it will be important to identify interventions that had a measurable impact on costs and quality so they can be scaled across hospitals. We reviewed CTI descriptions and categorized the interventions to identify common strategies and assess how the interventions align with those described in the literature. Early in this process, we discovered that CTI applications included very brief descriptions of the interventions being used. Four CTIs did not describe any interventions, and 22 only describe one general intervention such as team-based care, making referrals, using data analysis, or conducting clinical assessments. Despite these limitations, we identified six interventions that were common between CTIs and clinical studies from our literature review.<sup>24</sup>

**Clinical study interventions that align with CTIs.** By far, the most common intervention type is care coordination and care planning (Exhibit 8). This includes assisting patients with referrals and scheduling, warm hand-offs, and developing and coordinating care plans with patients and multiple providers. In the clinical studies we reviewed, care coordination was frequently used to improve care transitions after hospitalization and manage high-risk patients, such as those with chronic conditions.

**Exhibit 8. Interventions: Common Areas of Alignment Between CTIs and Clinical Studies**

Intervention Type	Number of CTIs (Percentage of CTIs)	Number of studies (Percentage of studies)
Care coordination and care planning	63 (60%)	18 (51%)
Screening or referrals for social needs	36 (34%)	9 (26%)
Patient outreach, education, and follow-up	34 (32%)	13 (37%)
Data analysis, Enhanced EHR or Registry use	16 (15%)	8 (23%)
Medication Reconciliation or Medication Management	16 (15%)	5 (14%)
Home-based Care	11 (10%)	4 (11%)

Interventions related to SDOH are present in about one-third of CTIs, and include screening for and documenting social needs, referrals to community service providers, and providing transportation to and from appointments. These were slightly less common in the clinical studies we reviewed; however, social needs have gained more attention in recent years, and

<sup>24</sup> When comparing interventions, we focused on clinical studies from our literature review because they contained more detailed descriptions. We did not include non-clinical studies such as meta-analyses, retrospective claims analyses, or other non-clinical sources because they did not contain sufficient information about interventions to compare to CTIs.

therefore more studies on care transformation initiatives that address them may be forthcoming.

Increased patient engagement is also common in both CTIs and the care transformation literature. More than a third of CTIs and clinical studies describe interventions such as increased patient outreach, education about their clinical conditions, and enhanced communication such as reminders about appointments and telephonic follow-up to check on patients' status. Interestingly, less than a quarter of CTIs and clinical studies describe the use of data resources as an intervention. It is possible that hospitals intend to leverage data to support their CTIs but have not fully articulated how data will be used. In the final section of this report, we describe the challenges of accessing and using data that surfaced during our survey of CTI participants, through interviews, and in our review of the literature.

Also relevant is the small overlap in medication reconciliation and home-based care. These interventions were less common but are used in combination with other interventions to prevent hospital readmissions and manage complex patients.

We note that most common interventions being used in CTIs were also used in the 11 clinical studies that produced cost savings. However, it is not clear whether these interventions will produce savings in the CTI program, given the difficulty in isolating the impact of any single intervention and the variation in the methods and intensity of the interventions.

***Differences between CTI and Clinical Study Interventions.*** Almost a third of CTIs (30) are using clinical assessments and early intervention to identify high-risk patients and provide tailored treatment plans. CTIs are also testing interventions such as discharge planning and remote patient monitoring. These were far less common among the clinical studies we reviewed. In addition, a third of clinical studies included interventions related to provider education, training, or financial incentives as part of care transformation, along with expanded patient access. These differences between the published literature and CTIs are likely due to the number of studies we reviewed, differences in patient populations in the published literature, and the limited descriptions that hospitals provided for CTI interventions.

## **Half of all CTIs address SDOH, but opportunities exist to align more closely with local population needs**

Hospitals' ability to achieve savings through their CTIs will depend on several factors, including the design of interventions and episodes, as well as the patient populations they target. The SDOH for CTI patient populations—including socioeconomic status, racial/ethnic composition, and prevalence of disease—are also important factors that affect patient complexity, risk, and health care costs.

We reviewed CTI descriptions and survey responses to determine the extent to which CTIs acknowledge or address SDOH or target minority racial/ethnic populations.<sup>25</sup> We then considered the socioeconomic context of CTIs by identifying those that are being conducted in areas with high social vulnerability ratings, which signal high rates of unmet social needs within an area and can drive costs and make care transformation challenging. We also reviewed hospitals' payer mix to identify hospitals with higher Medicaid revenue.<sup>26</sup> Hospitals that serve a large Medicaid population can have higher patient costs overall because Medicaid patients tend to be more medically complex and often need social supports due to their low-income status. Although the CTI program focuses on Medicare patients, hospitals that receive a larger share of their revenue from Medicaid may also have more dually-eligible individuals included in CTIs.<sup>27</sup>

***SDOH is a common theme in CTIs, although race and ethnicity are not explicitly mentioned in CTI descriptions.*** Half (46) of all CTIs acknowledge SDOH, but in different ways: some CTI descriptions state that they include patients with unmet social needs in their patient populations, while others include SDOH-related interventions (as discussed in the previous section) or include social service professionals or community organizations as part of the care team (Exhibit 9).

**Exhibit 9. SDOH and Race/Ethnicity Indicators in CTIs**

Thematic Area	Number of CTIs that Address SDOH	Number of CTIs with ≥40% Minority Baseline Population
Care Transitions	25	17
Community-Based Care	1	1
Emergency Care	8	4
Palliative Care	2	2
Primary Care	10	4
<b>Total</b>	<b>46</b>	<b>28</b>

One third of all Maryland Medicare fee-for-service beneficiaries identify as Black, Indigenous, or Person of Color (BIPOC). However, none of the CTI descriptions explicitly state that they are

<sup>25</sup> Social determinants of health are conditions in the places where people live, learn, work, and play that affect a wide range of health and quality-of-life-risks and outcomes. They include safe housing transportation, racism, violence, education, economic opportunity, and other factors. See <https://health.gov/healthypeople/objectives-and-data/social-determinants-health>

<sup>26</sup> For detailed information on these indicators, please refer to the Data, Methods, and Analysis section.

<sup>27</sup> According to recent statistics, dually eligible individuals represent about 34 percent of spending under Medicare despite making up 20 percent of enrollees. Under Medicaid, dually eligible individuals represent about 32 percent of spending and 15 percent of enrollees. See Medicaid and CHIP Payment and Access Commission. *Data Book: Beneficiaries dually eligible beneficiaries for Medicare and Medicaid.* <https://www.macpac.gov/wp-content/uploads/2020/07/Data-Book-Beneficiaries-Dually-Eligible-for-Medicare-and-Medicaid-January-2018.pdf>

focusing on racial or ethnic minorities, and only 37 CTIs have baseline populations in which at least 33 percent of patients identify as BIPOC.<sup>28</sup> Because race and ethnicity are social factors that contribute to health outcomes, there is opportunity to further articulate how CTIs can acknowledge or address racial and ethnic disparities.

Survey responses provide some additional context the ways hospitals plan to address SDOH or the needs of racial/ethnic minorities: Twelve respondents said their CTIs would reduce health disparities for racial or ethnic minorities or low-income populations by directly addressing health-related social needs, using stratified data to inform care, or by utilizing risk assessment tools. Others indicated that focusing on chronic conditions will allow them to target populations with social needs. In general, however, CTI descriptions are limited in the level of detail provided on SDOH or how the interventions are expected to impact racial or ethnic minorities.

***Few hospitals that serve socially vulnerable and low-income populations are targeting SDOH through their CTIs.***

There are 12 Maryland hospitals whose service areas have high SVI rankings, and 10 are participating in CTIs (we note that not all of these hospitals are leading a CTI, some are participating sites).<sup>29</sup> However, only about half of the 29 CTIs being conducted in hospitals with socially vulnerable service areas are targeting SDOH. Twenty-one CTIs are being conducted in hospitals with high Medicaid revenue, seven of which explicitly include SDOH as part of the interventions (Exhibit 10). These seven CTIs are concentrated among three hospitals and health systems—Johns Hopkins, University of Maryland, and Mercy Medical Center.

**Exhibit 10. CTIs in Hospitals with High Medicaid Revenue or in Socially Vulnerable Areas**

Thematic Area	Number of CTIs in Hospitals with Higher Medicaid Revenue	Number of CTIs in Service Areas with High SVI*
Care Transitions	12	15
Community-Based Care	3	1
Emergency Care	3	2
Palliative Care	2	1
Primary Care	1	10
<b>Total</b>	<b>21</b>	<b>29</b>

\*CTIs may be conducted in multiple locations. We counted a CTI in this column if one or more of the participating hospitals has a service area with a high SVI ranking. However, other hospitals with lower SVI rankings may also be participating in the same CTI.

<sup>28</sup> Race/ethnicity categories available in the CTI data are: American Indian/Alaska Native, Asian/Pacific Islander, Black (or African-American), Hispanic, non-Hispanic White, Other, and Unknown.

<sup>29</sup> Hospitals with high SVI rankings are: Adventist Healthcare Fort Washington Medical Center, Adventist White Oak Hospital, Johns Hopkins Hospital, Levindale, Medstar Good Samaritan, Medstar Harbor Hospital Center, MedStar Union Memorial Hospital, Mercy Medical Center, Northwest Hospital Center, UMMC Midtown Campus, UM-Prince George’s Hospital Center, and University of Maryland Medical Center. Levindale and Adventist Fort Washington are not participating in CTIs.

All interviewees agreed that SDOH is a high priority for hospitals HSCRC, and CRISP. However, addressing social factors remains a challenge. Not all hospitals have consistent screening practices or access to data on SDOH. HSCRC indicated that linking socioeconomic data with claims data is a complex undertaking and may be a goal for the future. And while CTIs allow hospitals to test interventions that address SDOH, this program alone may not be able to address social factors, and other statewide programs would be needed. The Maryland Hospital Association noted that CRISP is conducting a pilot program that screens patients for social needs and analyzes the data. Hospitals that the Association represents have indicated an interest in expanding this statewide.

## **Care coordination and data utilization have been key challenges during the early implementation of the CTI program**

To understand the challenges of standing up and sustaining CTIs, our survey included questions about issues that CTI participants faced at the start of the performance period. At the time, some participants had experience with care transformation projects, while others did not. Because of the variation in their experience and heterogeneity in the design of CTIs, we expected to see differences in the degree to which participants were experiencing challenges with implementation. We found that two challenges were most common: (1) coordination among providers and other stakeholders; and (2) collecting, understanding, and using data.

***Challenges with care coordination and working with other stakeholders.*** A majority (16) of the 21 survey respondents described difficulties engaging with stakeholders or accomplishing the requirements of the program. While some respondents said that their partners and stakeholders were supportive of the CTI, several said their partners wanted to simplify the design of CTI, or they found it challenging to convince partners to implement a financially focused CTI. Other respondents said they had received feedback from partners and stakeholder encouraging them to focus on quality, identifying gaps in care, aligning goals and incentives, and providing education to hospital stakeholders. Several respondents noted that they are consulting with their senior leadership or are in the process of strengthening their partnerships and referral processes.

Our interviews with both CRISP and HSCRC staff indicated that coordination among stakeholders was a challenge during the CTI design phase. Successfully designing and implementing CTIs requires input from clinical, financial, and information technology staff, and hospitals often struggle to bring these stakeholders together due to various constraints and competing demands. These coordination challenges are also noted in the care transformation

literature.<sup>30,31</sup> Specifically, researchers note that the fragmentation of the health care system and competing demands on providers' and administrators' time make it difficult to share information needed to provide coordinated care.<sup>32,33</sup>

**Challenges with collecting and leveraging data.** Sharing, understanding, and applying data were other challenges noted by CTI survey respondents. Specifically, respondents said that they had trouble utilizing CTI resources such as CRISP's care transformation dashboard or CTI reports. The Maryland Hospital Association noted that hospital staff vary in their experience with utilizing data to support care transformation. Some hospitals have staff who are technologically savvy, while others are just beginning to leverage data. Several survey respondents said they are making investments to update their hospital's information technology infrastructure by developing performance dashboards or by updating electronic health records to capture more information needed for the CTI.

Research on care transformation supports CTI participants' experience. One study found that the time needed to incorporate and use new data in their project was a major challenge.<sup>34</sup> Other studies note that data collection is challenging and costly, yet it can still be insufficient to identify which interventions affected certain outcomes.<sup>35,36</sup> CRISP and HSCRC staff echoed these challenges during interviews and acknowledged that a subset of CTI participants needed additional technical assistance to define clinical episodes during the CTI application process. CRISP and HSCRC have also committed to providing ongoing technical assistance on data use throughout the program.

**Other implementation challenges.** In the final month before implementation of CTIs began, 14 respondents said that they were still making adjustments to their CTI episodes. These changes included broadening the target population, changing the structure of the care team, or

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<sup>30</sup> Shmerling, A. C., Gold, S. B., Gilchrist, E. C., & Miller, B. F. (2020). Integrating behavioral health and primary care: a qualitative analysis of financial barriers and solutions. *Translational Behavioral Medicine*, 10(3), 648-656.

<sup>31</sup> Berkowitz SA, Brown P, et al; J-CHiP Program. Case Study: Johns Hopkins Community Health Partnership: A model for transformation. *Healthc (Amst)*. 2016 Dec;4(4):264-270. doi: 10.1016/j.hjdsi.2016.09.001. Epub 2016 Sep 29. PMID: 27693204.

<sup>32</sup> Beil H, Feinberg RK, Patel SV, Romaine MA. Behavioral Health Integration With Primary Care: Implementation Experience and Impacts From the State Innovation Model Round 1 States. *Milbank Q*. 2019 Jun;97(2):543-582. doi: 10.1111/1468-0009.12379. Epub 2019 Apr 7. PMID: 30957311; PMCID: PMC6554552.

<sup>33</sup> Bustamante AV, Martinez A, Rich J, Chen X, Rodriguez HP. Comparing costs of a senior wellness care redesign in group and independent physician practices of an accountable care organization. *Int J Health Plann Manage*. 2019 Jan;34(1):241-250. doi: 10.1002/hpm.2622. Epub 2018 Aug 15. PMID: 30109902.

<sup>34</sup> Fairbrother G, Trudnak T, Christopher R, Mansour M, Mandel K. Cincinnati Beacon Community Program highlights challenges and opportunities on the path to care transformation. *Health Aff (Millwood)*. 2014 May;33(5):871-7. doi: 10.1377/hlthaff.2012.1298. PMID: 24799586.

<sup>35</sup> Johnson, D. C., Kwok, E., Ahn, C., Pashchinskiy, A., Laviana, A. A., Golla, V., Saigal, C. S. (2019). Financial margins for prostate cancer surgery: quantifying the impact of modifiable cost inputs in an episode based reimbursement model. *The Journal of urology*, 202(3), 539-545.

<sup>36</sup> Jayakody, A., Bryant, J., Carey, M., Hobden, B., Dodd, N., & Sanson-Fisher, R. (2016). Effectiveness of interventions utilising telephone follow up in reducing hospital readmission within 30 days for individuals with chronic disease: a systematic review. *BMC health services research*, 16(1), 403. <https://doi.org/10.1186/s12913-016-1650-9>.

developing committees or partnerships with providers, health systems, and local communities. These late-stage changes relate to the other challenges noted above regarding data use and coordination among partners. Notably, only one survey respondent mentioned challenges due to the COVID-19 pandemic, although this certainly presented challenges for all hospitals.

Given the low rate of response to our survey, and our inability to interview staff participating in the CTIs, we have limited information on the broader implementation challenges encountered by CTI participants and how they are addressing them. However, we expect to conduct in-depth interviews with a set of CTI participants and field a follow-up survey in the post-implementation period to gather more information.

## Conclusion

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Maryland hospitals and health systems have operated under an all-payer, global-budget model since 2014 and are attuned to the dual objectives of controlling costs while increasing quality of care for Medicare patients. The CTI program is intended to further encourage hospitals and primary care providers to control costs by testing innovative approaches to care. As this evaluation shows, the CTIs being implemented in the program's first year are similar to recent care transformation research, with a few noted exceptions. However, the results of recent research are mixed in terms of demonstrated cost savings. The extent to which CTIs can achieve savings will depend on the variation in populations being studied, the quality of the study designs, and the combinations of interventions and how they may interact. In order to identify success factors and share best practices for CTI design in the future, we offer the following considerations:

### **More comprehensive descriptions of CTIs will help to articulate interventions and support the spread of best practices.**

CTI's descriptions of interventions were limited, which presents challenges in understanding the scope of CTIs and comparing them to published research. These limitations could also present challenges for future evaluation of the success of the program. For CTIs that achieve cost savings, it will be essential to understand which interventions influenced the outcomes. Similarly, for those that do not achieve savings, it will be important to assess the set of interventions for possible deficiencies.

### **Incorporating behavioral health into CTIs could address a major cost driver.**

Behavioral health is a known driver of health care costs and is an area that intersects with both social determinants and chronic conditions. While patients with behavioral health diagnoses are may be included in CTIs, they are not the primary focus of any CTIs, and behavioral health services do not appear to be included in CTI episodes. The CTI program presents an opportunity for hospitals and health systems to improve costs and outcomes for patients with behavioral health diagnoses through many of the same interventions that are being tested in current CTIs—including care coordination, partnerships with behavioral health, and social service providers, and medication management.

### **Quality measurement could provide a more complete picture of CTIs' progress.**

Quality measurement and improvement is a long-standing component of Maryland's all-payer model. Under the TCOC model, Maryland hospitals are required to meet selected population health targets. While it may not be feasible to require a distinct set of measures for each CTI,

HSCRC, and CRISP could consider ways to leverage existing quality measures in ways that do not create additional reporting burden for hospitals and health systems. In future years of the CTI program, these measures will be needed to assess interactions between quality, outcomes, and costs.

**CTIs could be better aligned with the socioeconomic conditions and prevalent health conditions of hospital service areas.** We found that hospitals in socially vulnerable communities did not necessarily design CTIs that address SDOH. In addition, only half of the CTIs taking place in counties with high hospitalization rates for chronic conditions are targeting them in their patient populations, and few are in the primary care setting. It is possible that hospitals in these areas have other programs that address SDOH or chronic conditions, and the CTI program would have duplicated those efforts. Hospitals should not be limited to conducting CTIs that only reflect the health of the local population; however, these factors should be considered in the design of CTIs going forward.

This evaluation provides a starting point for assessing the first year of the CTI program by highlighting the areas of care transformation that hospitals are choosing to prioritize, assessing the extent to which CTIs align with other care transformation efforts, and identifying possible gaps. The follow-up evaluation will examine why CTIs were or were not successful in achieving cost savings, describe lessons learned by CTI participants, and identify possible updates to the CTI savings methodology.

## Appendix A. List of Citations

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# Appendix B. Interview/Discussion Guides

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## B.1 Questions for CRISP and HSCRC Staff

1. Please describe your role(s) in implementing the CTI program.
2. Can you discuss the evolution of the CTI program, including its short- and long-term goals?
3. Had the state identified any key areas for care transformation prior to the application process? If so, what were they, and why?
4. Please describe the process for vetting the CTI applications.
  - a. Were there concerns about cherry-picking among the hospitals in how they select the populations (such as the populations that the hospitals knew would have cost savings)?
5. How does CRISP work with HSCRC to implement the program?
6. How does CRISP interact with the implementing sites? Which hospital staff do you interact with?
7. The CTI program currently measures only changes in costs. Can you discuss the decision to measure cost and not measure quality or patient experience of care?
8. What feedback have you received from CTI participants about the cost savings methodology?
9. Hospitals and providers have raised concerns about risk adjustment in value-based care models. Have you received similar feedback from Maryland hospitals?
10. How do you plan to scale up or dissemination lessons from successful CTIs? What would this process look like?
11. Socioeconomic status, race, and ethnicity are indicated as HSCRC and CRISP priorities. However, relatively few of the applications explicitly address these issues. How will you encourage subsequent hospital initiatives to address socioeconomic status, race, and/or ethnicity?
12. What changes, if any, do you think would improve the CTI program? Are there opportunities for the hospitals to provide their perspectives on the way the CTI program is being implemented?

## **B.2 Discussion Guide for the Maryland Hospital Association**

1. What are some of the major areas of care transformation among hospitals in the state?
2. Did the Association work with HSCRC to develop the themes for the CTIs?
  - a. Which areas of care transformation were focused on the most? Why?
3. What were hospitals' reactions to the incentives introduced by the CTI program?
4. Did hospitals raise concerns about the costs of implementing CTIs?
  - a. The CTI program does not include quality metrics, and is based solely on cost savings. How have hospitals reacted to this?
5. Have your member hospitals shared their experiences with implementing CTIs so far?
  - a. What are some of the challenges they are facing, and to what extent is social risk a factor?
6. In terms of the data, are hospitals starting to collect information on social needs or outcomes?
  - a. Are there challenges around the privacy of this data, or any plans to make the identification of patients with social needs more robust?
7. Is there a desire among hospitals to further risk adjust patients based on social risks?
8. Are you aware of any examples of successful care transformation—in Maryland or elsewhere—that could be scaled up in the state, or that you think could serve as models for hospitals in the state?
9. What kinds of changes or supports would help Maryland hospitals implement care transformation efforts to drive down costs and increase quality?

## Appendix C. Survey Questions

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1. Briefly explain why your hospital decided to implement a CTI (*FREE TEXT*)
2. Has the focus of your CTI been a major cost driver at your hospital system/hospital? (*YES/NO*)
3. Have you made any adjustments to the CTI design (such as the triggering event, population of interest, or interventions) since you began implementing it? (*YES/NO*)
  - a. If yes, what are those specific changes? (*FREE TEXT*)
4. Has your hospital made structural changes in order to implement your CTI? For example, hiring additional staff, investing in new IT systems, or forming partnerships with other organizations? (*YES/NO*)
  - a. If yes, please explain these changes. (*FREE TEXT*)
5. Does your hospital's CTI focus on racial/ethnic minorities and/or low-income populations? (*YES/NO*)
  - a. If yes, please explain. (*FREE TEXT*)
6. What, if any, early challenges have you experienced when implementing the CTI? (*FREE TEXT*)
  - a. How have you addressed these challenges? (*FREE TEXT*)
7. Aside from cost savings, what other benefits do you anticipate as a result of this CTI? Please include benefits for staff, patients, and community in your answer, as applicable. (*FREE TEXT*)
8. What feedback, if any, have you received from your staff, patients, partners, and other stakeholders about the CTI thus far? (*FREE TEXT*)

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