Community-Based Nursing Services (CBNS) Toolkit

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A toolkit to assist development, implementation, and sustainment of a nurse-led chronic care management program in the community

OHSU AdventistHealth TFA American Nurses Foundation

Contents

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Executive Summary

As nurses, we know that effective nursing interventions can make a difference in patient health, quality of life, and potentially reduce healthcare costs by assisting patients in better managing their health and preventing health crises from exacerbating existing conditions. There is evidence demonstrating the positive outcomes of nurse-led interventions, particularly in the management of chronic health conditions. However, these nurse-led interventions are rarely implemented in healthcare systems or sustained as routine care. Through the process of identifying unmet needs and underlying causes for poor chronic illness(es) management, we became aware that the lack of a sufficient payment mechanism contributes to why these nurse-led interventions for chronic care management are not implemented and sustained in healthcare systems despite evidence of their effectiveness. Based on this awareness, we set our goal to develop a Registered Nurse (RN)-led chronic care management program that is effective in meeting patient needs, suitable in healthcare systems, and financially sustainable.

To meet this goal, we submitted a proposal titled “Making nursing visible and reimbursable to improve the health of people living in communities” to the American Nurses Foundation under their Reimagining Nursing Initiative, and we were awarded a 3-year grant. In this project, we have developed a Community-Based Nursing Services (CBNS) program based on the existing innovative services a group of nurses at Adventist Health Primary Care Clinics in Tillamook and Vernonia, Oregon, has been delivering with the intention of enhancing the structure to make the service delivery more systematic and financially sustainable in the future.

Through the process of this project, we faced various challenges in developing an RN-led program and making it financially sustainable. The purpose of this toolkit is to share our experiences and lessons learned with nursing and healthcare leaders, entrepreneurs, and policy makers who envision developing an RN-led program that aims to achieve quadruple aims (better patient experiences, better population health, reduce costs, and improve clinician experiences). This toolkit is not a prescriptive blueprint. Our intention and hope is that readers of this toolkit can accelerate the effort to develop financially sustainable RN-led programs by using the ideas, strategies, and materials available in this toolkit.

The CBNS Toolkit describes the process of developing an RN-led chronic care management (CBNS) program in 6 steps and one discussion section.

Step 1: Clarify the unmet needs the program will address
Step 2: Operationalize the scope of the program and services
Step 3: Pilot and data collection planning
Step 4: Reconfiguring EHR for RN-led care management practice
Step 5: Cost and revenue modeling
Step 6: Evaluation of the program
Understanding healthcare payment structure and working with payers

These steps are iterative and not necessarily sequential. Some steps may not be applicable depending on the needs and goals of the users' organization. This toolkit includes actual and simulated examples from our CBNS project. They may not mean that they are the best practice or the best way to do your program. We encourage the users of this toolkit to read and adapt the sections that suit their interests as needed.

Acknowledgement

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Introduction

Toolkit Purpose

The purpose of this toolkit is to provide a pragmatic guide and information that supports developing, implementing, and sustaining a registered nurse (RN)-led chronic care management program that supports patients and their families living with multiple chronic conditions and complex care needs. We designed this toolkit based on the experience, knowledge, and lessons learned from our pilot project "Making Nursing Visible and Reimbursable to Improve the Health of People Living in Community" funded by the American Nurses Foundation in 2022-2025. The goal of the project was to develop, pilot, and evaluate a financially sustainable nurse-led program in the ambulatory setting. The program we developed is named "Community-Based Nursing Services (CBNS)." This toolkit encapsulates knowledge, templates, examples, and lessons learned in this project.

The focus of this toolkit is to illustrate the key steps our project took to design, build the infrastructure, implement, and evaluate the CBNS program, and share examples of artifacts produced in our project. This toolkit is not a prescriptive blueprint. Our hope is to reduce the time and effort future teams may spend creating and launching similar nurse-led programs by sharing information, examples, and recommendations from our project. We invite readers to use the contents, ideas, and strategies as modifiable guides to streamline and accelerate their efforts to develop a nurse-led program that would fit in the context of their organization and community.

Who Should Use This Toolkit?

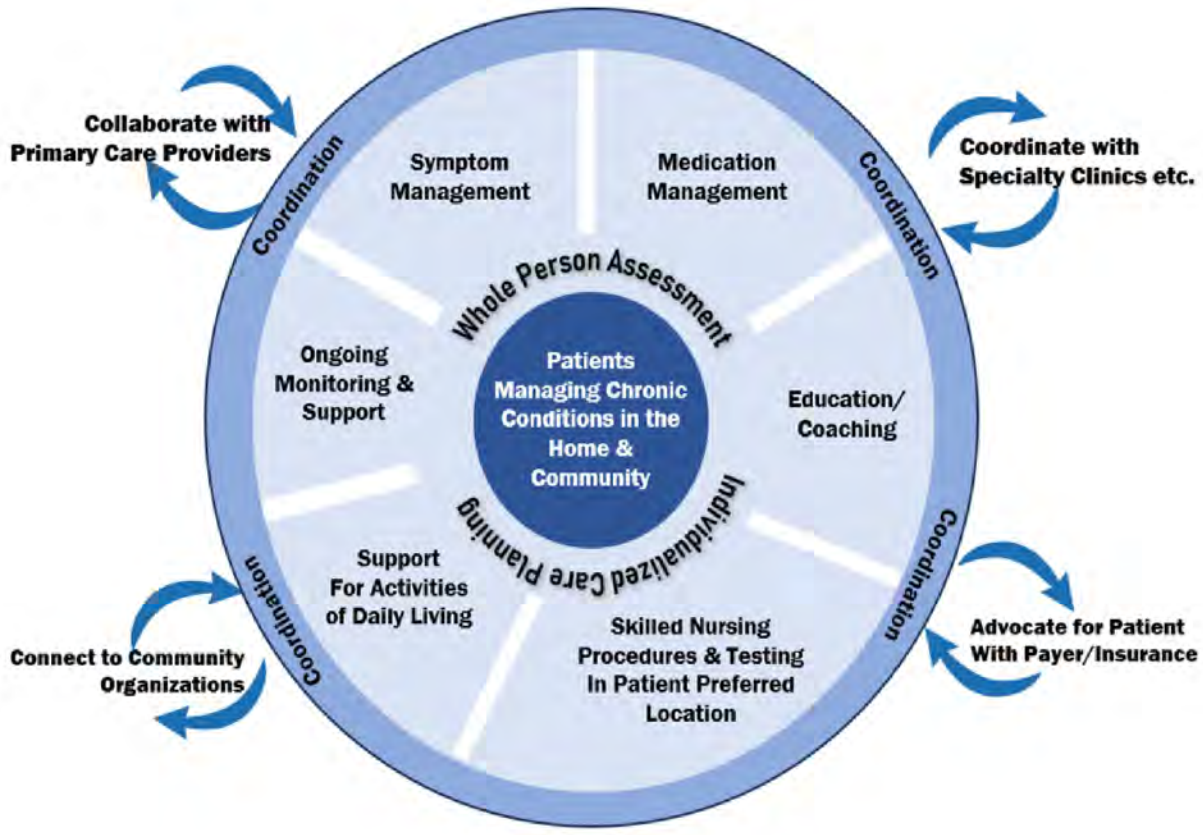
This toolkit is designed to be used by healthcare leaders/administrators/managers in healthcare organizations and nurse entrepreneurs who seek to create a marketable nurse-led program to enhance the health and well-being of patients who manage chronic conditions in their home and (non-institutionalized) community settings.

What is Community-Based Nursing Service?

Patient-centered care led by registered nurses (RNs) assisting people living with chronic conditions outside of hospital settings including:

1. Whole person assessment
2. Individualized care planning
3. Direct care to manage health (e.g., symptom management, medication management, education and coaching, hands-on care, psychosocial support)
4. Longitudinal monitoring and support
5. Care coordination (with PCP, specialists, healthcare systems, community-based organizations, etc.)

Figure. Registered Nurse-Led Community-Based Chronic Care Management Model



Izumi S, Mood L, Velk L, et al. (2025). Key components of chronic care management programs: Qualitative descriptions of care managers' practice. BMC Health Services Research, 25 (1): 1542. Doi:10.1186/s12913-025-13788-1.

Why a Nurse-Led Chronic Care Management Program in Community?

Multidimensionality of care needs with chronic conditions

Problems: Patients who manage chronic conditions have significant needs for clinical, logistical, and psychosocial support. In the fragmented healthcare system, services for these patients are divided by different specialists and disciplines (e.g., PCP, specialists, psychologists, behavioral specialists, social workers) who are experts in one area but do not address issues that are outside of their focused area of expertise.
Solutions: Registered nurses see a patient's health as a whole and address physical, psychological, social, behavioral, and spiritual needs by bringing the right team members and resources for their multidimensional health-related needs.

Patient centeredness

Problems: Medical treatments based on the practice guideline may not be the best treatment for a patient if they do not meet the patient's goals, values, or their current situation.
Solutions: Registered nurses solicit the patient's goals, values, and situations through the whole-person assessment, and create and coordinate a care plan that centers on the patient's needs, values, and priorities.

Accessibility and affordability

Problem: Patients with chronic conditions may have difficulties accessing needed healthcare services due to their frailty, lack of transportation or other resources, or long waiting times to schedule the next appointment resulting in worsening conditions that could be preventable.
Solutions: Registered nurses visit patients and deliver care where they are (e.g., at home, in the community) as needed. Registered nurses assist patients to overcome these challenges and coordinate care to reduce barriers.

Longitudinal relationship and engagement

Problem: Patients receive care from a wide range of healthcare teams who may see patients for specific problems or procedures but may not *know* the patients' history or situations. It is a burden for patients to know who to contact when they have concerns or questions and explain their needs to someone who may not know their history or situation.
Solution: Registered nurse care managers who are part of the patient's primary care team have a longitudinal relationship and know the patient's history and situations. They build a relationship, engage patients, and ensure continuity of care.

Coordination across healthcare settings

Problem: Patients receive care from a wide range of healthcare providers and organizations. Communication among providers and across different organizations is not optimal. Patients may be harmed by miscommunication or communication gaps.
Solution: Registered nurses communicate and coordinate care across healthcare providers, healthcare organizations, and resources in the communities to ensure patients do not fall into the gaps in the healthcare system.

Overview of Toolkit Content

This toolkit describes 6 steps and one overarching consideration to develop, implement, and sustain an RN-led community-based care management program, as shown below. We will describe each step in detail and share examples developed during the CBNS project.

Step 1 Identify the unmet needs the program will address

Step 2 Operationalize the scope of the program and services

Step 3 Pilot and data collection planning

Step 4 Reconfigure EHR for RN-led care management practice

Step 5 Cost and revenue modeling

Step 6 Evaluation of the program

Understanding healthcare payment structure and working with payers

Each team interested in developing a nurse-led program is unique, starting from a different place, and the goal of the program may be different. While this toolkit describes 6 steps in order, they are not necessarily sequential; some steps occur simultaneously and iteratively. All steps may not be necessary or applicable depending on your goal. This Toolkit includes examples and templates from our CBNS project in each step and the Appendix. We share them as concrete examples, but it does not mean they are the best way for your program. We offer this Toolkit as a resource to draw upon, modify, and enhance as needed to address different needs, target populations, settings, clinical scopes of practice, and regulatory constraints in your area. We encourage you to use steps that suit your group, program, and setting, and adapt them as needed.

Step 1: Identify the Unmet Needs the Program Will Address

The first step is to assess needs, collect information, and learn from stakeholders of your program. Understanding your patient population, clinicians, organizations implementing the program, payers who will pay for the program, and their pain points is important. Spending time conducting user research and assessing stakeholders' needs in the early phase of the project will help you to determine the scope and goals of the program that meet the needs of the stakeholders and prospective customers.

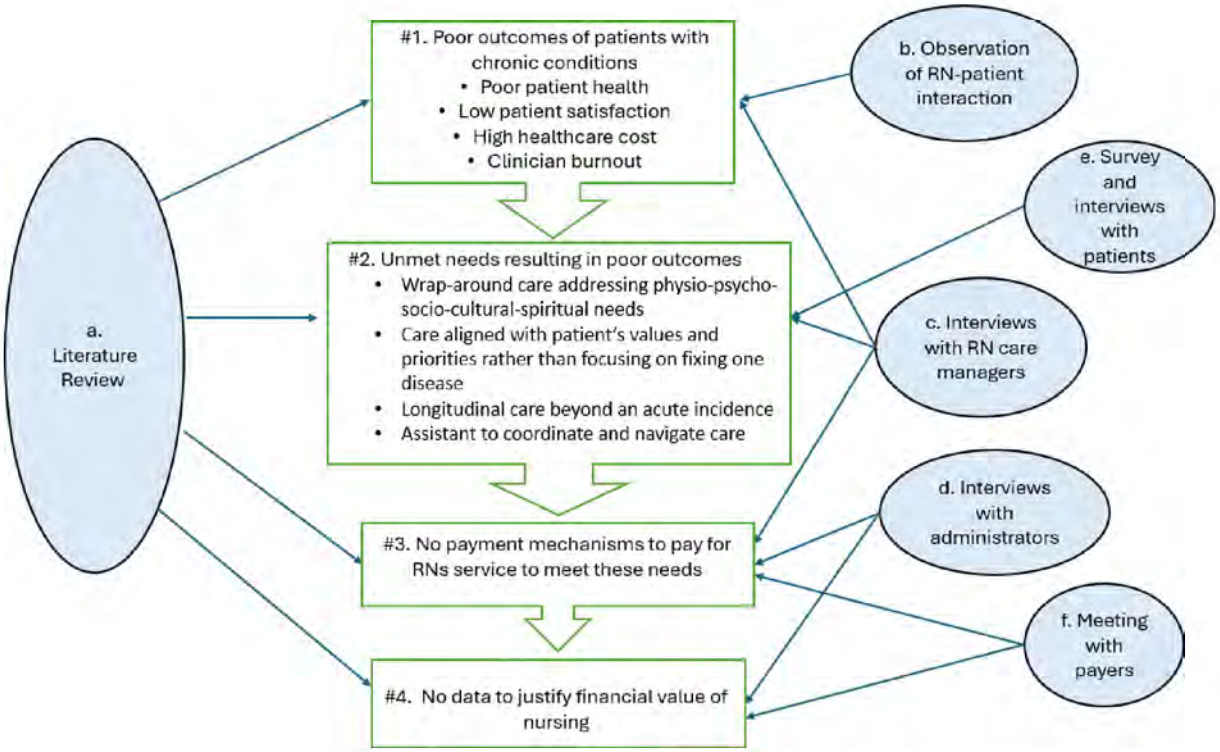
Identify the Challenges, Gaps, and Unmet Needs the Program Will Address

Identifying issues the program will address is the first step to developing a program. A clear understanding of the problems, needs, and barriers/facilitators is necessary to design the program to be effective and meaningful for the prospective customers. The problems and underlying factors contributing to unmet needs can be identified through a variety of methods, including literature reviews, surveys and interviews with clinicians and patients, focus groups, and needs assessment in the organizations and the communities, among other methods. A literature review would be important to understand the background, context, and general state of the issues you are going to address. Learning from key stakeholders who have first-hand experience of the issues is invaluable. Problems may be the same, but how they manifest or what barriers exist to overcome these problems may be different in each setting or by the perspectives of different stakeholders. For the program to be acceptable and meet the needs of the people who will be impacted by the program, gaining input from them is crucial. In parallel, it is also important to validate that addressing the identified needs would align with the entities' or stakeholders' scopes and missions. Figure 1.1 illustrates our process to identify unmet needs and underlying causes and set the goals in the CBNS project.

The various sources we sought input from over the course of the project include (blue circles in Figure 1.1):

a. Literature
b. Practice observations
c. Interviews with nurses (frontline practicing RNs who manage care for patients with chronic conditions in community settings)
d. Interviews with healthcare system administrators
e. Surveys and interviews with patients with chronic conditions in the communities
f. Meetings with potential payers

Figure 1.1. Process to identify unmet needs and underlying causes the CBNS Program intends to address



Process of identifying the problems and sources of unmet needs (green boxes in Figure 1.1):

We started by exploring key problems in chronic care and sources of the problems via literature review (a), practice observations (b), and interviews with RNs (c). Inputs from these explorations identified the problems (#1) and revealed underlying unmet needs (#2) that drive the poor outcomes.

We explored why these needs cannot be met by interviewing RNs (c) and healthcare administrators (d. including clinic managers, medical directors of outpatient clinics, nurse directors in ambulatory care) and learned that there are no payment mechanisms to cover nurses' time to deliver care meeting these needs (#3). This is confirmed in literature (a).

We further explored the root cause of why these nursing services cannot be billed or paid by asking healthcare administrators (d) and payers (f). According to responses from the administrators (d), payers (f), and in the literature (a), services delivered by RNs are allowed to bill only when it is delivered "incident to" billing providers' order in the current healthcare payment structure, and services to meet the patient needs (#2) often do not fall in the "incident to" category therefore not billed or paid (#3). Administrators (d) and payers (f) further commented that not much data is available to demonstrate and convince payers how paying for nurse-led care management services will improve the outcomes and save healthcare costs (#4).

We sought patient input using patient reported outcome survey and interviews (e) as part of evaluation of the pilot program towards the end of the project.

Set the Goals of the Program Addressing These Gaps

Based on analyses of information gathered, the goals of the CBNS program, as an example, are to:

- Deliver person-centered wrap-around care to patients with chronic conditions in communities (addressing #1 and #2 gaps)
- Develop a potential payment model to pay for an RN-led chronic care management program (addressing #3 gap)
- Create a prototype of infrastructure to collect data to demonstrate the financial value of an RN-led chronic care management program (addressing #4 gap)

Lessons Learned

- Start from a problem you observe and want to solve but stay open because the focus of the problem may shift as you understand the context better.
- People with firsthand experience of the problem can help understand the problem and what it means in real life, that may be different from your original thought or from literature.
- People with firsthand experience of the problem often have ideas how to solve the problem or how to meet the needs.
- Explore contributing factors to presenting problems. Keep asking “why (it is not/happening)” to uncover the root cause or underlying barriers that may not be visible in first glance.
- Seek input from diverse perspectives. People in different disciplines, roles, or positions offer new perspectives or insights into the causes behind the problems.

Recommendations

- Seek input from a broad range of sources to understand what unmet needs means in real life and causes why they are not met.
- Seek input from a broad range of people who would be involved in or impacted by the program to explore underlying barriers and potential resources.
- Identify the unmet needs the program will address and use it to set clear goals for your program.

Step 2. Operationalize the Scope of the Program and Services

Based on the identified goal of the program, it is critical to clearly define the scope of the program, outline the service, and operationalize the service. For example, who will deliver the service, where, when, and how? How will the program interact with the existing healthcare structure, other services, and regulatory requirements? Descriptions below include examples of how we operationalized the CBNS program using state and community level population-based data as well as input from practicing nurses, clinic administrators, and prospective payers who were interested in the program.

Target Patient Population

Determine who will be the target patient population your program will serve. Depending on the specific goals of your program, the needs and distribution of the patients needing the program's service in your area, and the expected capacity of your program, define the target patient population your program will serve and set the inclusion and exclusion criteria for the program.

The CBNS example:

Inclusion criteria:

- Adult patients with one or more chronic conditions with high risk of poor control, complex care needs, health deterioration, or health-related social needs. Target chronic conditions include:
  - Diabetes (DM)
  - Kidney disease
  - Chronic Obstructive Pulmonary Disease (COPD)
  - Asthma
  - Coronary Artery Disease (CAD)
  - Congestive Heart Failure (CHF)
  - Liver disease
  - Adult patients living in the service areas covered by the Adventist Health Tillamook and Vernonia clinics.
  - Adult patients who are living in the community independently.

Exclusion criteria:

- Patients who are receiving Hospice services or residential care (e.g., Skilled Nursing Facility, group home, foster care).

The Location and Setting of the Program

An RN-led chronic care management program can be set in an existing healthcare organization or potentially a stand-alone independent program outside of healthcare organizations (e.g., NaviNurse: https://navinurses.com/). Determine the location and settings where the RNs delivering the program service would be stationed.

The CBNS example:

- The CBNS Program is set in Adventist Health primary care rural health clinics with nurses who are hired as nurse care managers in these clinics. CBNS nurses distribute their work time between tasks as a staff nurse in their clinic and as a care manager for patients enrolled in the CBNS program (The distribution of CBNS nurses' full-time equivalent (FTE) between clinic work and CBNS was need-based and not predetermined during the pilot period.)
- Patients enrolled in the CBNS program are mostly seen by primary care providers (PCPs) in these clinics where CBNS RNs work. Information of patients who enrolled in the CBNS program is in the electronic health record (EHR) that clinics use, and CBNS RNs have access to and document their CBNS practice in the clinic's EHR.
- RNs deliver CBNS service in the following locations based on the needs, accessibility, and availability for patients:
  - Home or patient-preferred community location (e.g., community center, soup kitchen)
  - Telephone
  - In-clinic
  - RNs coordinate care with PCP, specialists, pharmacy, or other organizations from their office via telephone, messaging, and in-person communication.

Note: Situating CBNS within a primary care clinic afforded key benefits, including 1) access to at-risk patients who are already receiving care in the clinic and known by the RN care managers, 2) existing relationship between RNs and patients' primary care providers (PCPs), 3) sharing of infrastructure including physical and information management infrastructure, human resources management, insurance coverage, legal entity, among other building blocks, and 4) established relationships with health plans as the target payer for new nurse-led services.

Staffing for the Program

Define nurses and other potential members who deliver and/or are involved in the program services, their scope of practice, qualifications, and positions.

The CBNS example:

Registered nurse:

Scope of practice:

- Meet the RN Scope in the Practice of Nursing defined by the Oregon State Board of Nursing (https://secure.sos.state.or.us/oard/viewSingleRule.action?ruleVrsnRsn=322299)
- Independent practice including assessment of patient's state of health, development of a care plan, implementation of the care plan, and evaluation of patient progress towards expected outcomes

Pre-requisites and qualifications:

- Registered nurses licensed in Oregon
- Hired as nurse care managers in Adventist Health Tillamook or Vernonia primary care clinics
- Experience in nursing care for patients with chronic conditions
- Demonstration of independent practice within the scope of practice for Registered Nurse in community settings
- Demonstration of ability to collaborate with patients' primary care provider (PCP) and other team members.
- The expected Full Time Equivalent (FTE) required to deliver CBNS will be determined through the pilot project. (More information can be found in Step 5 Cost and Revenue Modeling in this toolkit.)
- FTE estimation will be calculated based on the time allocated for CBNS by participating RN care managers. In CBNS pilot, the work of four RN care managers (total 3.0 FTE) in two clinics were allocated to delivery of CBNS service and primary care clinic tasks. Their time allocation for CBNS service varied by their workload as clinic nurses.

Other members:

The CBNS program is offered as an extension of primary care embedded in rural primary care clinics. Existing members in the clinics (e.g., PCPs, MAs, schedules) assume their roles, functions, and workload as usual. No additional staffing was allocated for CBNS.

Process and Core Services of the Program

Define key contents of services and the process from enrollment to disenrollment of the program.

Case finding and enrollment

Describe the steps to identify patients eligible for program enrollment and the process to obtain consent and enroll the patient in the program.

The CBNS example:

Case finding: Primary care providers and clinicians in the clinics or a health plan refer their patients who need assistance to manage their chronic conditions (e.g., medication management, education, care coordination) or high risks for poor outcomes to CBNS RNs. It could be done in the form of warm hand-off from a PCP to an RN, a message requesting RN to reach out to specific patients, or a curbside consult to RNs by clinicians in the primary care team.

Screening: Upon referral, a CBNS RN will review patient information provided by the referring entity and other information available in a patient's EHR, and outreach and screen the patients for inclusion and exclusion criteria (via telephone, home visit, or clinic visit).

Enrollment: If patients meet the CBNS criteria, CBNS RNs explain and invite them to participate in the CBNS program (i.e., Receiving care from the CBNS RNs to manage their health conditions. Enrollment is voluntary. No additional cost for patients to enroll in the program.) If patients agree to receive care from the CBNS RNs, the patients are assigned to the CBNS RN who conducts the intake assessment.

Core services of the program

Describe the core services of the program. This is the description of the services that health plan/payers would consider paying for. Therefore, this will determine how much payers are willing to pay for the program, and the program would be accountable for the delivery of these services as a prerequisite to payment.

The CBNS example:

Table 2.1. Descriptions of CBNS Services

Service	Description
Assessment	Whole-person assessment • *Health/medical conditions* • *Social history and health-related social needs* • *Patient goals and values*
Care Planning	Individualized care plan for patient needs and clinical condition(s) • *Plan for nursing interventions*

Direct Care	Include following care based on patient's needs and priority • Medication management • Symptom management • Education and coaching • Skilled nursing procedure • Assistance for activities of daily living • On-going monitoring and support to maintain health
Care Coordination	Coordinating care with PCP, other healthcare professionals and organizations, and social support in communities based on patients' needs and priorities.

See Appendix A for how these services are documented for purposes of billing and auditing by the payer(s).

Disenrollment and Discontinuation of the Service

Define the conditions and criteria for discontinuation of program services.

The CBNS example:

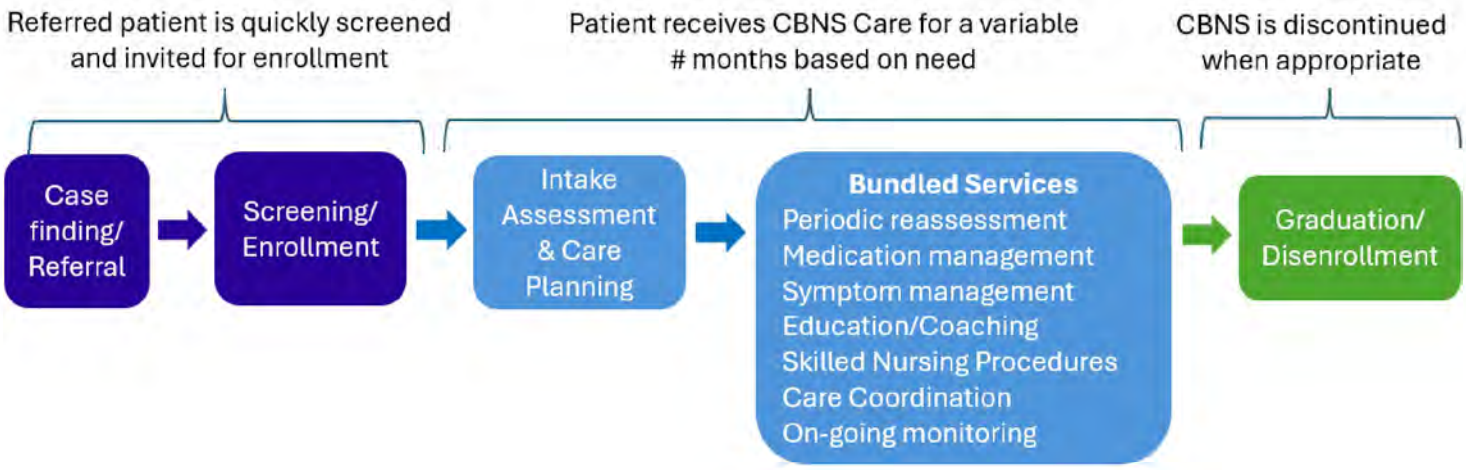
- Patients can choose to disenroll from the CBNS program at any time for any reason. Disenrollment from the program will not affect their relationship with the primary care providers and other clinicians in the clinic.
- CBNS RNs conduct a periodic reassessment every 3 months. CBNS service will be discontinued if the assessment indicates patient readiness to leave the CBNS program (i.e., patient has developed appropriate self-care skills) or the patient is not engaging or out of reach of the program.
- Patients disenrolled from the program in the past can be re-enrolled through the same enrollment process as their conditions and situations may have changed.

Table 2.2. Descriptions of enrollment/disenrollment status

Enrollment Status	Description
Enrolled	Actively enrolled in the CBNS program and receiving regular CBNS care.
Enrolled on Hold	Patient remains in the CBNS panel, but services are paused temporarily (e.g., when a patient lives in another area during a certain time of the year, a patient temporarily lives in nursing home for rehabilitation purposes).
Graduated - Patient Self Managing Care	Patient has developed appropriate self-care skills to manage their chronic conditions without CBNS RNs' assistance.
Disenrolled - Lack of Engagement	After repeated attempts to engage, the patient is not returning phone calls or unwilling to take steps to self-manage chronic conditions.
Disenrolled - Patient choice	Patient chose to disenroll from CBNS.
Disenrolled - Deceased	Patient is deceased.
Disenrolled - Lost to Follow-Up	Patient cannot be reached by telephone, seen in the usual location where RNs typically interact with, or was otherwise lost to follow-up.
Disenrolled - Change in Level/Type of Care	Patient moved into a skilled nursing facility or other institutionalized care.
Disenrolled - Moved	Patient moved out of the service area or changed primary care affiliation.

Process of CBNS Program from Enrollment to Disenrollment

Figure 2.1 Process of CBNS Program from enrollment to graduation/disenrollment



Lessons Learned
• To develop a care management program that is potentially reimbursable, payers want to see a clear picture of what services are included in the program to understand the value versus cost of the program. • The program will not exist in a vacuum: it will be part of the existing healthcare system. Learn the existing healthcare system structure and clinical settings related to the intended program, and operationalize the program service to fill in the gaps or meet their needs instead of creating duplicative or competing services. • Scope of service delivered by RNs needs to be consistent with RN's professional scope of practice and regulatory requirements of the state. • Expect pushback if the planned service or delivery methods of the service are different from the current practice.

Recommendations
• Draft the scope of the program and seek input from various stakeholders and people interested in the program (e.g., practicing nurses who are likely to be the staff delivering the service, practice administrators/leaders, clinicians who are likely to interact with the program, people operating similar programs, potential payers). • Describe each aspect of the program with as much detail as possible with the information you have. You will refine the program service as you gain more information. • If you encounter resistance, clarify whether it is an indication that the service is not needed (assessment error), the service cannot be delivered that way (regulatory or logistic restrictions), or it differs from the way it has been done (discomfort with the innovation). Make appropriate adjustments and/or collaboratively find the common ground to overcome the resistance.

Step 3: Pilot and Data Collection Plan

Piloting a new nurse-led program is a critical and necessary step. It offers the opportunity to test and fine-tune the program to fit your specific context and collect data to evaluate and demonstrate the value of the program to administrators, C-Suite, and payers. Setting a clear and realistic boundary and goals you want to achieve in the pilot is a useful strategy. For example, (1) when the pilot phase starts and ends, (2) what do you want to achieve by the end of the pilot, and (3) what data do you want/need to collect and for what purpose. Descriptions below include examples of how we piloted the CBNS program through an iterative process. Our descriptions below are a retrospective summary of what we did and reflections of what we may have done differently if we were to begin again.

Set the Parameter/Scope of the Pilot

Testing the workflow of the program and its service from beginning to end on a small scale is critical before formally implementing the new RN-led care management program on a full scale. Adapting a rapid cycle quality improvement approach, plan for small incremental steps with frequent assessments of what is working, what is not working, and adjust as needed. Set the goals that you want to achieve by the end of the pilot, then plan what and how to test it.

Set timeframe

Our CBNS pilot project was funded by the American Nurses Foundation with 3-year funding period. It took us about 18 months (from April 2022 - October 2023) to draw a blueprint of the CBNS service, a service workflow (Step 1 & 2), how to document (Step 4) and collect data (Step 3) regarding the CBNS program. We set our pilot period for 1 year (December 1, 2023 - November 30, 2024) to test the CBNS delivery and collect associated data within the funding period.

Set goals for the pilot

Goals we aimed to achieve by the end of the pilot period are:

- Evaluate the feasibility of delivering CBNS service to a small number (n=60-100) of patients meeting eligibility criteria
- Refine processes of CBNS delivery (from case finding, enrollment, intake, bundled service, to graduation/disenrollment)
- Collect (structure, process, and outcome) data of the CBNS delivery from EHR
- Collect outcome data (clinical data, health service utilization, and patient perception about the service) to evaluate and demonstrate the impact of the CBNS services

We set these goals with consideration of what we need to do to demonstrate the value of the program to two target groups: 1) C-suite executives who have decision authority over implementation of a chronic care management program in their organization, and 2) health plans and payers who decide whether to pay for the chronic care management services delivered by RNs as a covered service.

Determine what data to collect

We asked pilot site administrators what type of data they expect to see to evaluate the operational, practical, and financial feasibility of the program. We also discussed with potential target payers what data they want to consider paying for the service. Information we collected during the pilot period based on input from health system administrators and payers is summarized below. Some data elements were already being collected and could be manually or electronically extracted from the clinic's EHR. Other data elements required EHR enhancement to facilitate electronic data capture.

Table 3.1. Data elements to collect

Domain	Data	Measure	Source
Structure	Number of patients who are eligible and receive the CBNS	Count	Extract from EHR
	Characteristics of patients (social factors)	Life Challenges*	EHR enhancement
	Number of nurses who deliver CBNS	Count	Pre-determined
Process	Number of referrals to CBNS	Count	EHR enhancement
	Number and reasons for CBNS enrollment and disenrollment	Count	EHR enhancement
	Types and volume of service	- Count types of documentation (Assessment, care plan, care management, care coordination, follow up) - Count types of interaction (in-person visit, telephone visits, communication with healthcare team, driving) - Minutes for each interaction	EHR enhancement
Outcomes	Clinical measures (e.g., HbA1c, blood pressure)	(If applicable) - HbA1c - Blood pressure	Extract from EHR
	Patient ability to manage their health	Self-Sufficiency Metrics†	EHR enhancement

	Patient reported outcomes	Patient survey‡ including perceived health, helpfulness of the service, net promoter score	Patient survey immediately and 2 months after enrollment
	Health Service Utilization ¥	Number of hospitalizations, length of hospital stays, and number of ED visits 6 months before and 6 months after CBNS enrollment	State All Payer All Claims (APAC) database
	Total cost of care ¥	Total cost of care 6 months before and 6 months after CBNS enrollment	State APAC database

* Life Challenge: Various social factors impact the patients' ability to manage their health. We included 15 life challenges (e.g., food insecurity, housing, social support) from the original Self-Sufficiency Matrix to assess characteristics of social determinants of health of patients enrolled in CBNS. (See Appendix A - Intake Form)

† Self-Sufficiency Matrix: The Self-Sufficiency Matrix was originally developed by the state of Arizona as an evaluation tool to measure a client's ability to live without assistance. We selected 5 domains related to self-management of chronic conditions and modified items to evaluate patients' progress toward self-care as a CBNS intervention outcome. See Appendix B for the SSM scale we used.

‡ Patient Survey: To obtain direct input from patients who received CBNS, we created a Patient Survey by combining items used in Patient-Reported Outcome scales. Questions include patient perceptions of their health, experiences of receiving CBNS, and likelihood of recommending CBNS to family and friends. See Appendix C for the patient survey.

¥ We include data regarding patient health service utilizations and total cost of care from a State All Payer All Claims Database to evaluate the health system and financial outcomes of CBNS services in this project. Access and timely availability of these data are often limited or not feasible. We recommend early exploration of data that are available internally or accessible in your area/region.

Plan how to collect data

We sorted the list of data we were going to collect into 3 groups: 1) data that can be captured in the clinic's existing EHR; 2) data that does not exist in the current EHR but should be documented in EHR; and 3) data that needs to be captured outside of the EHR. We developed plans for how to collect these data for each group. Data collection methods are outlined below with underline.

Data that exists in the clinic's EHR:

- Identify where data is documented and in what form.
- Determine how to extract these data from the EHR (e.g., automated extraction as a report, manual extraction by researcher/project staff, nurses double-charting in EHR and in an external spread sheet)

- Determine frequency of data extraction (e.g., monthly, weekly, every time a nurse documents)
- Establish a plan for assessing data quality (e.g., monthly review of report by project manager, bi-weekly review by 2 project staff to validate the accuracy of extracted data)

Data that does not exist in the current EHR but should be documented in the EHR:

- Determine what forms of data to collect (e.g., using existing measures or tools such as SSM and Life Challenges; type of documentation indicating the delivery of service)
- Determine appropriate locations for documentation within the EHR that support nurses' workflow and accessibility for other team members.
- Collaborate with the clinic's information management EHR teams to plan and execute necessary EHR enhancements. (See Step 4 Reconfiguring EHR for RN-led Care Management Practice in this toolkit for detail)
- Establish a plan for data extraction (frequency, person responsible for extraction and audit – e.g., monthly extraction by project staff to the tracking dataset)

Data that needs to be captured outside of the EHR:

- Identify data sources (e.g., patients who received the service; claims data)
- Determine how to collect/obtain the data (e.g., survey, interview, data request from external sources) at what time points, who will collect the data and how (e.g., mail survey, telephone survey), and prepare materials to collect/obtain data.
- Develop survey questions (e.g., Patient Reported Outcome [PRO] questionnaire, satisfaction with services, number of hospitalizations during a given period, total cost of care for patients enrolled in the program)

Preparing Nurses to Launch the Pilot Delivering and Documenting Care Management Service

Collaboration and continuously seeking input from nurses who deliver the service throughout the pilot planning process is critical. Goals of the pilot, timeframe for launch, and role expectations should be clear and agreed upon. In our CBNS project, participating nurses have been delivering services, now defined as CBNS (see Step 2), in previous years. At the outset of the pilot, we discussed with nurses to set the parameters by defining which care activities are CBNS and which patients are regarded as CBNS enrollers to collect data to test the impact of the CBNS. We discussed and confirmed what nurses are expected to

do as CBNS that are different from their usual clinic practice: i.e., documentation of CBNS practice in EHR (including new measures for CBNS), weekly meetings with the project staff to audit and validate data collection, and communication with CBNS patients requesting to respond patient survey.

Lessons Learned

- Setting a clear goal you want to achieve at the end of the pilot is critical. Common goals of piloting a new program are testing the feasibility of care delivery, fine-tuning the care delivery process in a real-life context, and collecting data to demonstrate the potential impact of the program. Clearly set goals will guide you to determine what needs to be done during the pilot.
- Setting a clear and practical timeframe for the pilot will help manage participating nurses and staff expectations and workload. Pilot testing a newly developed program is often an evolving process. Setting a starting date and ending date will help to set achievable goals, determine what is in/out of scope, and evaluate progress.
- Careful planning for evaluation of pilot outcomes and future program impact is critical. Anticipate what data stakeholders want to see to make decisions to adopt and pay for the program. The pilot phase provides a valuable opportunity to test data collection methods. The data we collected during the pilot phase became valuable preliminary data to demonstrate potential impact and value of the CBNS program to key stakeholders including organization administrators and potential payers.
- Close collaboration and seeking input from nurses and frontline personnel is necessary to assess acceptability, feasibility, and challenges/barriers/facilitators, and adapt the service and data collection methods accordingly to fit the program to the real-life practice. For example, important data may not be collected if the methods of data entry do not align with nurses' workflow or EHR structure. Service may not be delivered on the pilot launch date if the date was set without nurses' input (e.g., conflicting with their scheduled out-of-office dates).

Recommendations

- Pilot test the new program on a small scale for a limited time before implementing the full scope of the program. Set the scope, goals, and time to test the program, and systematically evaluate feasibility, identify barriers and challenges, and modify the program accordingly to increase the feasibility and acceptability of the program in the real-life practice settings.
- Plan how to evaluate the (pilot and future full scope) program and how to collect data for the evaluation with the goals of the program and stakeholder's interests in mind.

Step 4: Reconfiguring EHR for RN-Led Chronic Care Management Practice

Documentation and information management are important aspects of efficient, effective, and accountable healthcare delivery. A RN-led chronic care management program that is effective and financially sustainable needs a system to document the content, volume, and outcomes of services nurses deliver for practice, evaluation, and auditing purposes. Although the primary care setting is a natural “home” for RN-led chronic care management services, the CBNS program has notable differences from traditional primary care practice and introduces new information management needs. A comparison against traditional primary care reveals that RN-led chronic care management involves greater flexibility in the location of care delivery, higher responsiveness spanning both scheduled and ad hoc care delivery, care provision through multiple modalities, a whole-person focus including health-related social needs, and adaptable coordination of myriad clinical, administrative, and logistical matters. Additionally, because RNs are historically non-billing providers, mechanisms to quantify the types and volume of RN-provided care are underdeveloped in most ambulatory Electronic Health Record (EHR) systems. The ambulatory EHR used in the pilot site needed substantial reconfiguration to address the needs of the CBNS program.

To support effective and reliable information management in a manner that promotes efficiency and minimizes RN documentation burden, we applied the following principles in designing new clinical documentation forms in ambulatory EHR for the CBNS program.

- Align documentation steps to nurses’ workflow (e.g., present data elements in an order that mirrors the nursing process, auto-populate fields where appropriate, minimize clicks)
- Avoid double documentation of content within the EHR and/or external datasheets
- Record chronic care management data within the clinic’s base EHR system to facilitate information sharing with other team members (e.g., PCPs)
- Automate the extraction of data for program evaluation and reporting to the extent possible

Ambulatory EHR systems often offer an optional care management software module that may address many information management functions needed in chronic care management. However, acquisition and implementation of a new software module is costly, and the module’s functionality may not fully address the information management needs of an RN-led chronic care management program. Additionally, data captured in a module outside primary care providers’ typical workflows may complicate information sharing. For these reasons, we enhanced the pilot clinic’s existing EHR system (Cerner Ambulatory) to address program needs, rather than implement a new care management module or stand-alone EHR system for the pilot program.

In the following section, we describe identified information gaps and reconfiguration approaches used to address them. Information gaps arise from differences between chronic care management practice and traditional primary care practice. While each EHR system is unique, we share our experience in addressing information gaps through EHR enhancement as examples to highlight common information needs, questions to ask, and EHR reconfiguration strategies with the hope of expediting future EHR configuration among teams that undertake a similar mission. (See Appendix D Information Management Workflow and Appendix E Reconfiguring EHR for CBNS)

Information Management Gaps and EHR Reconfiguration Strategies

Gap 1. Program Enrollment Management

Electronic program enrollment is foundational to program administration, care delivery, and program delivery, as the CBNS services are offered to a subset of patients in the pilot site clinics. Ambulatory EHR systems offer robust clinic registration functionality but typically lack preconfigured support for "secondary" enrollment into a special program, such as the CBNS program. To address this gap, we collaborated with clinic information technology (IT) teams to identify ways an ambulatory EHR that can be modified by local IT teams to capture CBNS enrollment data.

*Needed Functions**:***

1. Record of patient consent for program enrollment
2. Program-specific rostering
3. Enrollment and disenrollment dates and reasons
4. Current enrollment status
5. Reporting of current and cumulatively enrolled patients

Reconfiguration Strategies:

- Created a new CBNS "*Location/Department" in EHR* to provide separation between regular clinic and the CBNS program data, and facilitate use of preconfigured, location-based reporting capabilities for patient counts, appointment volumes, and revenue.
- Created a new "*Nursing Communication Order"* for the CBNS services which is placed on enrollment and remains active until a patient is disenrolled or graduated from the program. Presence of "active" order serves as a flag that a patient is currently enrolled.

- Implemented new documentation forms containing enrollment related fields, e.g., record of patient consent for enrollment, enrollment/disenrollment dates and reasons.

Gap 2. RN Assignment, RN Panels, and Patient List

RN-patient assignment is needed to foster nurse-patient relationships and care continuity, but unlike acute care EHRs, ambulatory EHRs typically do not offer this functionality. Consequently, prior to EHR reconfiguration, RNs manually maintained assignment data in a shared folder outside of the EHR.

Needed Functions:

1. RN-patient panels, to identify RN-assigned patients and facilitate calculation of RN quality metrics
2. Interactive RN-specific patient lists, for review of assigned patients and quick access to their EHR records

Reconfiguration Strategies:

- Included a field for "assigned RN" in the CBNS Intake Form (See Appendix A) as a mechanism for capturing RN-patient assignment. This provides value, as clinicians can view this field in the chart, and recorded data is available for retrospective reporting. However, the population of a data field in a Form does not automatically create or add a patient to a formal RN patient panel, as panels require separate configuration.
    - Historical explainer: RNs are licensed clinicians with an independent scope of practice, but unlike Nurse Practitioners, RNs do not meet the definition of Licensed Independent Provider (LIP), as they are non-prescribing clinicians. Consequently, most ambulatory EHR systems are designed around a longstanding assumption that PCPs/LIPs are the only clinician type that needs specific types of EHR functionality, including patient panels, clinician-specific quality metrics, and the ability to charge for services.
    - In a related manner, functionality designed for providers (e.g., patient panels) typically requires a National Provider Identifier Number (NPI), issued by the Centers for Medicare and Medicaid Services (CMS) to uniquely identify billing providers. To have similar functionality, RNs have to obtain an NPI number, and the nurse "role" in the EHR must be identified as a role that manages a panel of assigned patients.
- Configured CBNS RNs as a type of "specialist." Reconfiguring of an EHR that is shared by multiple clinics must be approached with caution, as changes to RN role-based permissions and other functionality affect all clinics and RNs. This was the case in the pilot program, so rather than reconfigure the EHR to create a patient panel for every RN in the system, RNs in the pilot program were configured as a type of "specialist". This avoided unintentional removal of patients from their PCP panel,

as patients can be members of multiple specialist panels, in addition to one PCP panel.

- To reduce the burden of RN panel maintenance, a rule was configured to add a patient to an RN panel after a patient has completed at least two (a configurable number) appointments with the same RN, scheduled using a CBNS-specific appointment type. The current solution is not impervious to errors, such as the use of a CBNS appointment type for a non-CBNS patient, resulting in unintentional addition of patients not enrolled in CBNS to an RN panel. A longer-term solution will be future creation of program-specific RN panels that have awareness of patients' program enrollment status.
- A dynamic "Patient List" was configured to enable review of all patients associated with the new CBNS EHR Location/Department and provide quick to the records of all enrolled patients.
- A pending task is to find a reconfiguration method to create RN-specific lists to enable RNs to review only assigned patients.

Gap 3. RN Schedules, Appointment Types, and Encounters

The design of most ambulatory EHRs reflects the traditional or medical model of care, in which patients schedule a PCP appointment and travel to a physical clinic for diagnosis and treatment of a medical condition. It naturally follows that scheduling templates assume that a clinician will remain in the same location throughout a calendar day, and that a scheduled appointment is a prerequisite to the generation of a patient encounter. However, RN-led chronic care management is more flexible. RN-patient interactions may be scheduled or ad hoc and occur in a location that is most conducive to the patient's situation. Additionally, RNs may travel to more than one clinic, home, or community location on the same calendar day.

In contrast to PCP visits, which are generally well encapsulated by a single, visit-specific encounter, RN-led care management is better suited to a recurring encounter that remains open for an entire month, eliminating the need for a scheduled appointment for each encounter, and enabling documentation for multiple visits and calls to be attached to the same encounter. We anticipate a flat monthly charge for bundled CBNS services as a future reimbursement model, which also aligns with use of a recurring monthly patient encounter.

Needed Functions:

1. Individual RN schedules (to replace formerly used, shared RN schedules at each participating clinic).
2. An RN schedule template that accommodates appointments spanning multiple locations on the same day.
3. Recurring monthly encounters as a "container" for both scheduled and unscheduled interactions.

a. Examples of scheduled interactions: Scheduled RN visits at home, community location, or a clinic

b. Examples of unscheduled interactions: Ad hoc phone calls to/from patients, and as-needed care coordination with PCP, external pharmacies, facilities, specialists, and community organizations

4. Appointment types for scheduling one-time appointments (home/community and clinic) within a recurring monthly encounter.

Reconfiguration Strategies:

- Implemented an individual schedule for each RN (replacing a shared nursing schedule)
- Implemented recurring monthly encounters and new appointment types to enable scheduling of one-time appointments within a recurring encounter. RNs use the new CBNS "Location/Department" (see Gap 1) for all scheduled CBNS appointments.
- An outstanding enhancement is the configuration of an RN schedule template that accommodates appointments spanning multiple clinic and community locations on the same calendar day, given current configuration-related limitations. As an interim solution, RNs maintain a shadow schedule in Outlook to achieve a consolidated view of daily appointments across multiple locations.

Gap 4. Nursing Process and Outcomes Documentation

RNs routinely author clinical notes in the EHR to summarize patient visits, phone calls, and care coordination events. Nurses' clinical notes capturing patient information are critical for longitudinal chronic care management and continuity of care. Nurses' notes contain data regarding a patient's situation and needs, care-related goals, and plans for enhancing self-management of chronic conditions. Ambulatory EHRs provide generic tools with which a clinic can create highly tailored documentation forms that contain a combination of unstructured and unstructured data fields, and embedded logic that can be used to perform other functions. We collaborated with frontline CBNS RNs and the local EHR build team to create CBNS Forms (Appendix A) that are user-friendly and tailored to RNs' information needs and chronic care management practice (e.g., capture of patient's situations and needs, care-related goals, and plans for enhancing self-management of chronic conditions).

Needed Functions:

1. Program-specific documentation forms to capture CBNS practice data in a manner that is synergistic with RN thought processes and workflows. Utilization of a combination of structured and unstructured data fields balances RN usability and structured reporting needs:

    a. Examples of elements that should be structured: Record of patient consent, enrollment/disenrollment dates and reasons, vital signs, lab values, outcome measures

b. Examples of elements that can remain unstructured: Patient story, patient goals stated in their own words, individually tailored education, symptom management, medication management, summary of care coordination calls, RN-PCP communication

2. Care Plan documentation, focusing on chronic care management and self-sufficiency.
3. Documentation to track the chronological change in patient health conditions and ability to manage their health.

Reconfiguration Strategies:

- Designed and implemented new documentation forms for each type of RN interaction: Intake, Follow-up, Care Coordination, and Reassessment (see Appendix A).
    - Each form contains a combination of structured and unstructured data fields. We prioritized use of structured data for fields with a small number of pre-defined response options, binary fields, and other fields where use of structured documentation did not increase documentation burden.
        - Each documentation form contains a structured field to identify the care location where car occurred (e.g., home/community/clinic, phone-based).
        - Intake and periodic reassessment forms contain structured fields for the reason for enrollment/disenrollment.
        - Because improving patients' ability to manage their health is a primary goal of the CBNS program, we included the Self-Sufficiency Metrics (SSM: Appendix B) as a structured nurse-sensitive outcome measure in Intake and Reassessment Forms.
        - CBNS RNs also input structured data (e.g., vitals, point of care labs) outside the context of new CBNS Forms.
    - We utilized free text fields for items that contain variable information specific to each patient's situation. The Intake and Reassessment Forms contain named "segments" comprised of a Heading and corresponding Free text field. Heading names correspond to the nursing process and CBNS workflow e.g., Assessment (physical, psychological, functional, social), Care plan, Intervention (medication management, symptom management, education, other), and Care coordination. RNs flexibly document information related to each "segment" Heading.
    - We anticipate that future integration of generative artificial intelligence (AI) in the EHR will enable automated creation of draft longitudinal care plans and summaries of the chronological trajectory of patients' health.

- Free text fields can be used to provide summary information within traditional query-based reporting strategies as well. For example, it is plausible to infer that presence of a free text in a "segment" represents that an activity type (e.g., "Assessment" as the associated Heading name) occurred. Conversely, it is plausible to infer that the absence of content in a free text field reflects that an activity did not occur. Utilizing this estimation method, it is possible for a clinic to report the quantity and types of nursing services delivered based on whether field values associated with Headers are null or non-null.

- Where possible, we utilized embedded logic to streamline documentation of care. For example, Intake, Follow-up, and Reassessment Forms automatically pull in a patient's last three HbA1c values, if available, to provide awareness of the most recent date and recent trend in values.

- An outstanding enhancement is configuration of automated RN alert to notify an RN when a patient is overdue for a follow-up visit or periodic reassessment, based on the date of the most recent documentation form(s). This item was deferred to a future enhancement phase due to limited availability of EHR build personnel.

Gap 5. Billing for RN-led Services

EHR systems streamline healthcare billing by linking patient conditions and treatments to standardized diagnosis and procedure codes, verifying insurance eligibility, providing error checking, and managing the electronic claims submission process. These functions promote compliance with regulations, quicker reimbursement for providers, and simplify billing audits. RNs are typically not recognized as "qualified billing healthcare providers" in the Current Procedural Terminology® (CPT) codes that is maintained by the American Medical Association and utilized for reimbursement by the Centers for Medicare & Medicaid Services (CMS) and commercial payers. EHRs are configured to verify that billing providers' credentials match those specified by CPT codes being billed. Therefore, an electronic claim submitted by an RN as the billing provider will be rejected. Most often, there is no mechanism for RNs to submit bills for their service in the EHR.

In the CBNS program, we aim to build a template and pilot test EHR function for RNs to bill for CBNS services. We modeled the cost of the CBNS program and developed a Payment Model to propose to partnering payer(s) (Step 5). We use the CBNS Payment Model as a template for a provider-payer agreement for CBNS payment to design EHR functions for future CBNS billing. We identified the following EHR functions are needed to submit a CBNS claim to payers through the EHR system. Our plan is to set up the EHR system so that, once a provider-payer agreement for CBNS payment is in place, CBNS charges will be generated monthly, and an electronic claim will be submitted to payer(s) as outlined in the provider-payer agreement.

Needed Functions:

1. Electronic claims management for CBNS services, based on the terms specified in provider-payer agreements

a. Recognizes CBNS as a billable service in the EHR

b. Recognizes RNs as billing providers in the EHR

c. Establishes billing code(s) and charge amounts for CBNS in the clinic's Charge Master file

d. Generate charges for CBNS intake and monthly services

Reconfiguration Strategies:

- Each RN obtained a National Provider Identifier (NPI) number, and the NPI numbers were configured within RN profiles, provider credentialling system, and applicable EHR modules.
- Include applicable billing code in each CBNS Forms, so that a code is recorded each time an RN documents care that has been given.
    - Intake Form: S0280, one-time service, billed once
    - Follow-up Form: S0281, bundled service, billed monthly
    - Care coordination Form: S0281, bundled service, billed monthly
    - Reassessment Form: S0281, bundled service, billed monthly
- Add CBNS billing codes and associated charge amounts to the clinic's Charge Master file. Anticipated billing codes and billing frequency:
    - S0280: Medical home program, comprehensive care coordination and initial plan. Charged once per episode of CBNS care at Intake
    - S0281: Medical home program, comprehensive care management and coordination, and maintenance of the plan. Monthly charge until the patient is disenrolled from the CBNS program.
- Configure a billing rule to "flatten" multiple S0281 charges (arising from multiple documentation instances of follow up care, care coordination, and reassessment during a calendar month) into a single monthly bundled service charge.

Setting and implementing billing rules for an innovative pilot program within an EHR system requires collaboration across RNs, IT teams, revenue cycle leaders, billing and coding specialists, financial officers, and partnering payers. In our CBNS project, price negotiations with payers are ongoing, so agreed-upon charge amounts for CBNS service have not been determined. To pilot test the electronic claim management process for future CBNS billing, we configured the EHR to record a CBNS charge with each instance of RN documentation to relieve RNs of the need to track whether or not a monthly charge has been recorded as they deliver care. Because each documentation form is linked to the applicable billing code, and multiple instances of documentation typically occur during a calendar month, we configured a rule to flatten multiple instances of the same CBNS code for bundled services into a single monthly charge. The claims process has been tested, but billable claims will not be sent to payers until associated agreements are in place.

Lessons Learned

- Many EHR system structures are underdeveloped to document RNs' practice and bill for services that are delivered over a period of time such as chronic care management (in contrast to a single visit, single encounter medical procedures).
- Care management data is optimally maintained in an EHR system shared by all members of the healthcare team for ease of access and information sharing.
- Documentation of an RN-led chronic care management program requires extensive reconfiguration of many interdependent parts of a traditional EHR system: profiles, permissions, provider credentialling, encounter creation, clinical documentation, charges, coding, Charge Master, billing rules, claims error checking logic, electronic claims submission, among others. Defining necessary EHR modifications requires collaboration with and across representatives of all functional areas.
- In an environment of limited EHR design/build resources, clinics allocate EHR design/build resources to the highest priority needs. Competing for limited EHR build resources is a common challenge when developing infrastructure for a new program.
- RNs are best supported by documentation forms that align with nursing workflow and introduce minimal documentation burden. Given limited access to EHR design/build resources, we found that low-fidelity prototyping (e.g., use of smart/dot phrases to rapidly iterate on the design of new documentation forms prior to building a structured documentation form in the EHR system) is a useful technique to pilot and engage RNs to ensure the forms meet with their workflow and are acceptable.
- IT teams need the program to be well-defined with functional requirements at a granular level before engaging operational IT teams or placing EHR enhancement requests. An implication is that having an informatics subject matter experts on team(s) supporting the design and implementation of innovation programs is highly beneficial, if not imperative.

Recommendations

- Identify a new program's key information management needs (including purpose, processes and outcome measures, and audit requirements) as early as possible.
- Map out a workflow that encompasses both EHR and non-EHR components of an RN-led chronic care management program, highlighting points of intersection with the EHR and required EHR modifications and enhancements.
- Engage frontline RNs who will deliver program services in the design of new documentation forms, as their input is critical to the usability and adoption of new forms in practice.
- To reduce documentation burden, EHR design/build teams may consider employing structured documentation judiciously, exploring AI-based methods of gleaning insight from free text data, and implementation of burden-relieving data capture methods such as ambient documentation.
- Identify key organizational stakeholders that influence prioritization decisions (e.g., allocation of resources to support EHR modification and enhancement) and ensure that they are well-informed of program's short- and long-term objectives. Gaining these

individuals' support and guidance regarding organizational navigation will accelerate the implementation of the program.

- Identify teams and personnel that are important to involve in defining the program and its associated information needs. Understand their roles/function, and coordinate work within and across teams. For example, identify what information administrators need to make key program-related decisions and when; what level of functional specification EHR build teams require, what approvals are required, and how much time is needed to make necessary EHR modifications and enhancements.
- Include subject matter experts with experience in EHR systems analysis and design, as they can identify needs and communicate bidirectionally across clinical and technical languages/jargon. Check the compatibility of requested modifications against EHR design constraints as early as possible to avoid surprises and delays.

Step 5: Cost and Revenue Modeling

Obtaining buy-in from healthcare organizations and payers is a necessity to build and operate a financially sustainable RN-led chronic care management program. To convince and gain buy-in from healthcare organizations and payers, the program needs to demonstrate the estimated cost-benefit and Return on Investment (ROI) of the program. The goal of our project was to propose a payment model for a financially sustainable RN-led chronic care management (CBNS) program based on the data from our pilot project. We partnered with Torrie Fields Analytics (TFA), Inc., to conduct cost and payment model analysis with the goal of proposing a value-based payment model (i.e., a per-member*, per-month [PMPM] bundled payment) for the CBNS program. The following section shows how we calculated the cost to deliver the CBNS services, a payment proposal, and estimated revenue for the CBNS program with the proposed payment model.

Calculation of Cost to Deliver the CBNS

Total cost to deliver CBNS is estimated as follows.

NOTE: Costs used in below calculation are the typical market cost, not the actual cost of the pilot site.

Care model costs = [staffing cost per hour x care hours PMPM x number of opfatpiaetniet ncet ncesuns]u +s][o+v[eorvheerhadeacdoscto]st]

1. **Staffing Costs:** Hourly staffing costs are estimated based on
    1) the annual salary for clinicians who deliver the service (RNs in the CBNS program)
    2) the benefit (% of salary) for clinicians who deliver the service
    3) number of their working hours for the CBNS program

    In the CBNS program, staff who deliver the service were limited to RNs. If your program includes other team members, staffing costs need to be calculated for each discipline.

Example:	Average annual salary per FTE for CBNS Nurse	$105,000
	Fringe benefit (40%)	$42,000
	Work hours in work year	2,080 hours
	Computed hourly rate for RN	$70/hour

2. **PMPM Care Hours:** Based on the data we collected from the CBNS pilot project, the average minutes RNs spent to care for a patient per month was 50.14 minutes (0.83 hour). That includes assessment, care planning, disease management, education, and

care coordination, plus time to drive for home visits. The first month after enrollment is typically resource intensive with more visits and minutes, and following months are less intensive with average total time of 30-45 minutes and 1-2 visits per patient per month.

Example:	Average minutes PMPM	50.14 min (SD=75.07) 0.83 hour
	Average number of visit PMPM	1.50 visit (SD=1.59)

To estimate the cost of care for the program based on staff (RNs) time, we used the average care minutes (hours) PMPM instead of the number of visits in this calculation.

3. **Average monthly census:** Based on the data we collected from the CBNS pilot project, we expect that program monthly census would be approximately 140 patients given the number of RNs hours allocated to delivery of the CBNS in the pilot site.

4. **Overhead Costs:** Administrative and overhead costs for the organizations could include administrative and support personnel costs (e.g., administrator, biller, senior leadership, practice management), and other costs to support the program operation (e.g., utilities for offices, telephone/video/computer hardware for staff use, clinical supplies, EHR and other organizational licenses, malpractice and other insurance, staff CE, mileage reimbursement for staff etc.)

Example: Personnel costs - Biller (weighted for FTE per census)	$ 60,000
Senior leadership	$ 130,000
Practice management	$ 85,000
Other costs – Mileage reimbursement	$ 4,000
Clinical supplies	$ 10,000
IT support and licenses	$ 18,000
Malpractice insurance	$ 12,000
Annualized administrative and other overhead cost per census	$ 319,000

5. **Care Model Costs:** Care model costs are a function of staffing costs, care hours per patient, and patient census.

Example:	RNs cost	$70.00/hr
	Average minutes PMPM	50.14 min (SD=75.07) 0.83 hour PMPM
	Average monthly census	140 patients enrolled in the program

Care model costs = [$70 (staffing cost per hour) x 0.83 hour (care hours PMPM) x 140 (monthly patient census) x 12 month] +$78,500 (overhead cost) = $176,108

Note: $78,500 overhead cost is approximately 25% of the overall annualized administrative cost for the department. We estimated that overhead cost sharing between primary care clinic services and CBNS service in the department was 75:25.

Reimbursement Proposal for CBNS

Based on the cost to deliver the RN-led chronic care management program above, we estimate how much to charge for the CBNS service for the program to be sustainable. CBNS services delivered by RNs are not compatible with the existing physician fee schedule requirements; thus, the cost of the CBNS program cannot be paid using the existing fee-for-service (FFS) mechanism. Following CMS Alternative Payment Model Structure (https://hcp-lan.org/workproducts/apm-whitepaper.pdf), TFA Inc. proposed a below monthly bundled payment model for the RN-led chronic care management program.

Table 5.1. Payment model proposal

Service	Reimbursement	Reimbursement mechanism
1. CBNS initial intake	$345 one-time payment – assume 90 minutes for comprehensive assessment and initial care plan development.	S0280: Medical home program, comprehensive care coordination and planning, initial plan. It is recommended that the initial assessment can be billed once per 12 months. No patient out-of-pocket should be applied.
2. CBNS monthly bundled service	$195 once per month – Assumes average 60 minutes spent to deliver chronic care management per month.	S0281: Medical home program, comprehensive care coordination and planning, maintenance of plan. It is recommended that nurses be reimbursed once per month for months following completion of the patient's initial assessment and development of a care plan. No patient out-of-pocket should be applied.

3. CBNS complexity-based intensive service	$475 Add-on payment – per member with more than 5 visits per month over the last 6-month period.	HCPCS code TBD
4. Ad Hoc procedures not included in the CBNS bundle	Fee-for-Service payment for the procedure	Per HCPCS code

1. CBNS Initial assessment and care plan development

At enrollment in the CBNS program, a primary RN assigned to the patient will conduct an initial comprehensive assessment and develop a care plan that can be available to the healthcare plan. Based on the pilot data, the initial comprehensive assessment and care plan development takes approximately 90 minutes through either a home visit or a telephone visit.

Completion of the CBNS Intake Form in the EHR documenting assessment results and care plan indicates delivery of this service. Completion of the CBNS Intake Form will drop S0280 code to flag for the billing specialist via EHR.

Note: $345 is a reimbursement rate we propose to a payer based on the cost estimate. We do not have an agreement or contract for this rate with any payers at this time.

2. CBNS Monthly bundled service

Once a patient is enrolled in the CBNS program and an initial care plan is developed, the primary RN assigned to the patient will execute and manage the care plan and be reimbursed monthly for all services provided as part of the CBNS program. Services include visits in the home, community, and/or clinic, and telephone visits as needed, patient and caregiver education about disease management, medication management, care coordination, referral management, team meetings and provider follow-ups, and adjustments to the patient's care plan as needed.

Based on the pilot data, the monthly bundled services to manage their chronic conditions take approximately 30-60 minutes depending on the patients' condition and needs.

RNs document delivery of these bundled services using appropriate CBNS Forms (Follow-up, Coordination, Reassessment Forms) in the EHR. At the end of each month, multiple charges arising from documentation of multiple CBNS Forms for a patient during the month will be flattened into a single S0281 code instance, which triggers generation of a monthly claim by the billing specialist via EHR.

Note: $195 is a reimbursement rate we propose to a payer based on the cost estimate. We do not have an agreement or contract for this rate with any payers at this time.

3. CBNS complexity-based intensive service

Our pilot data indicated that there are outliers, patients who have higher acuity and/or complex care needs, requiring more time-intensive interventions. To ensure RNs' time to meet the greater care needs of these patients in the CBNS program, we propose to add a complexity-based add-on payment for patients with high needs. An add-on payment will be billed retrospectively for the patients who have more than 5 visits (2 standard deviations above the average number of visits) per patient per month during the last 6 months.

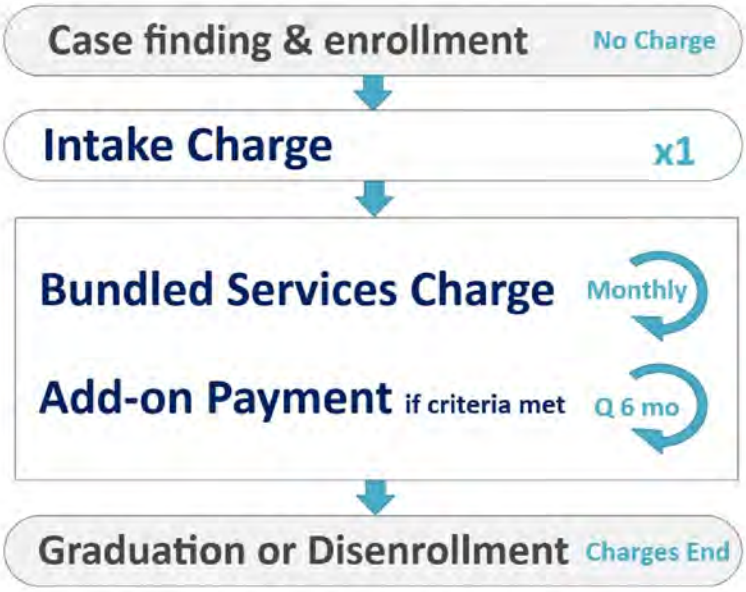
This add-on payment would be in addition to the patient's base PMPM payment for CBNS bundled services. Once every 6 months, the program will report the number of patients who received more than 5 visits per month and be reimbursed $475 per patient who received more than 5 visits per month.

Note: For the ease of reporting and estimated revenue projections, we propose an add-on payment based on the average number of visits by RNs per month instead of hours RNs spend per month. $475 add-on payment is a reimbursement mechanism and rate we propose to payers based on the cost estimate. We do not have an agreement or contract for this rate with any payers, and we have not built a mechanism to bill for this payment at this time.

4. Ad Hoc procedures not included in the CBNS bundle

Some patients enrolled in the CBNS program will need procedures or other services that would not be included in the CBNS service bundle. These services should be reimbursed separately on a fee-for-service basis through existing billing codes. These services may include, but are not be limited to, vaccinations, blood draws, and wound care.

Figure 5.1: Overview of CBNS Payment Model



Cost and Revenue Projections and Savings of the Program

Provider organizations or payers may want to know not just that the care model's payment is sufficient to cover its costs, but that the care model provides additional value to the organization or payers. The value of the model often takes on one of two savings lenses: savings to the practice and savings to the system or payers.

For the savings to the provider organizations, TFA Inc. calculated projected costs and revenue for the next few years with scenarios. In the example below, the projected cost, revenue, and operating margin for Year 1 is based on maintaining the same level of patient census (140 per month) for the CBNS program. Projected cost, revenue, and margin for Year 2 and 3 is based on a scenario to increase the census up to 375 patient per month given the anticipated needs for the CBNS in the community and hiring RNs to increase the RNs hours to meet the demands for CBNS care. This type of information is useful to obtain organizational commitment and support from the C-suite.

Table 5.2. Projected cost and revenue for the provider organization for the next 3 years

	Year 1	Year 2	Year 3	
Census	140	375	375	Notes
Annual Revenue	**$327,000**	**$878,000**	**$878,000**	*PMPM * monthly census * 12*
Annual Costs Total	**$260,500**	**$611,500**	**$611,500**	*Staffing + administrative and overhead costs*
Annual staff cost	$181,500	$487,500	$487,500	*Care Model Personnel*
Annual admin and overhead costs	$79,000	$124,000	$124,000	*Administrative personnel and overhead costs*
Annual Operating Income	**$66,500**	**$266,500**	**$266,500**	*Revenues minus costs*
Operating Margin	20%	30%	30%	

Savings to the healthcare plan/payers can include reductions in hospital admissions, ED visits, or lower utilization of other health services as a result of the services delivered by the program. To calculate the system- or payer-level healthcare cost saving of the program, data representing the total cost of care, including all care patients received in other organizations, is needed. Obtaining all claims data (including hospital admissions, ED visits, skilled nursing facility fees, procedural fees, fee for ambulatory care, cost of medications, durable medical equipment etc.) for patients who receive the service from the program often requires complex procedures and expert knowledge regarding medical claims data. In our CBNS pilot project, we secured external funding to conduct claims data analysis, but conducting this level of analysis may not be feasible without funding, time,

and expertise of healthcare economists. Our plan for all-claims data analysis is described in Step 6 Evaluation of the Program.

Lessons Learned

- Submission of claims or bills is based on the healthcare service (activities) delivered. There is no equivalent to the Relative Value Unit (RVU) used for billing providers to determine the value of services delivered by RNs. Therefore, it is critical to collect data to calculate how much RN's time is required to deliver chronic care management services to one patient per month. This data is usually not collected in the EHR or any other system in a systematic way. To estimate the cost of program, planning and collecting this data systematically is the first step. (See Step 4 for how we collected this data)
- Different stakeholders want to see different information related to the economic value of the program. Identify key stakeholders you want to obtain buy-in and explore what financial information about the program they want to see. In our program, we proposed a payment model and presented it to the leaders (e.g., CEO, CFO) on the pilot site (the provider organization) with the revenue projection and potential margins. The leaders in the provider organization plan to use the proposed payment model and results of system level cost analysis based on the all-claims data to negotiate with payers.
- Because cost of nursing practice is embedded in the operational cost of the provider organizations, it is hard to isolate the cost for RNs to deliver the services. To deliver the service, it is not only the cost of nurses' time, but it also requires some overhead costs. Engage the administrators and financial people in your organization to get the realistic cost for the RN-led program operation such as overhead costs.

Recommendations

- Familiarize yourself about payment mechanisms and related terminologies (e.g., fee-for-service, value-based-payment, CPT/HCPCS codes, RVU) to understand how healthcare services are paid, requirements and restrictions associated with them.
- Learn who (potential) payers for your program are and what their interests are. Prepare and present the data to answer questions they may have and address their pain or interest points.
- Collect data to support the payment structure you are going to propose. Although we do not want to add more documentation burden to RNs to collect the data, robust data collection is critical to create reliable and defendable data that supports the payment proposal for RN-led program. Involving the frontline nurses to find the least burdensome but consistent data collection methods is a key (See Step 4)
- To get a realistic estimate of cost of RN-led program operation, engage the administrators and financial persons in your organization, and health economists.
- Find and partner with experts who have deep knowledge and expertise in healthcare financing, cost and payment modeling, and reimbursement mechanisms.

Step 6: Evaluation of the Program

Evaluating a newly developed program is essential to examine whether it meets the needs and goals of the program, and what and how to modify it if needed. The program evaluation includes two general areas: 1) volume/amount of service delivery, and 2) impact/outcomes of the service. Data for the amount of service delivery is collected to evaluate the demand, supply, and capacity of the program. The outcomes of the service/program are evaluated in three categories: clinical outcomes, patient reported outcomes, and system level outcomes.

What data to collect to evaluate the program needs to be planned from the early stage of the project. See Step 3: Pilot and Data Collection Plan of this toolkit for how we determined what data to collect. Following section describes how we used the data to evaluate the CBNS program.

Evaluation of Service Delivery

To evaluate the demand and supply for the CBNS program and volume of services the CBNS program delivered during the 1-year pilot period, we collected data using the CBNS documentation forms by RNs and other data in the EHR.

A. Enrollment and Disenrollment

Each month, we counted the number of patients referred to the CBNS, how many were screened, and how many were outreached and enrolled. In addition, we also counted how many patients were disenrolled from the program and their reasons to capture the average patient census in the program. Below, we provide a series of reports, including 3 months of data, as examples of how we conducted the program evaluation.

Table 6.1. Sample Monthly Operational Report: Referrals/Enrollment/Disenrollment

CBNS Enrollment/Disenrollment	Month 1	Month 2	Month 3	Avg/Mo	Cumulative
Referrals Received From	**29**	**9**	**15**	**17.67**	**53**
Primary care providers in the clinic	27	9	8	14.67	44 (83%)
Community	1	0	2	1	3 (6%)
Urgent care	1	0	3	1.33	4 (8%)
Healthcare plan	0	0	1	0.33	1 (2%)
Other	0	0	1	0.33	1 (2%)
Screening for Eligibility	**29**	**9**	**15**	**17.67**	**53**
Screening in Progress	0	0	1	0.33	1 (2%)
Not appropriate for CBNS	0	0	1	0.33	1 (2%)
Appropriate for CBNS	29	9	13	17	51 (98%)

Patient Outreach Outcomes - Enrollment	**29**	**9**	**13**	**17**	**51**
Unable to contact	1	1	0	0.67	2 (4%)
Agree to enroll	27	8	12	15.67	47 (92%)
Chose not to enroll	1	0	1	0.67	2 (4%)
Disenrollment	**1**	**1**	**3**	**0.6**	**5 (11%)**
Graduated	0	0	2	0.67	2 (4%)
Disenrolled – Change in level of care	0	1	0	0.33	1 (2%)
Disenrolled – Lack of engagement/patient choice	0	0	1	0.33	1 (2%)
Disenrolled – Lost contact/moved out of area	0	0	0	0.00	0
Disenrolled – Deceased	1	0	0	0.33	1 (2%)

Based on this data, we calculate the patient panel size (census) for each month, and the average length of months patients remain in the CBNS program. These data are useful information for the program administrators to evaluate and plan for operationalization of the program.

B. CBNS Services Delivered

Each month, we extracted data from CBNS documentation forms in EHR to quantify the volume of services delivered. We counted the number and length (minutes) of visits by type (home/community visit, telephone call, or clinic visit) and nursing services delivered (Assessment, care planning, direct care management, care coordination, and others).

Table 6.2. Sample Monthly Operational Report: Number and Length of Visits by Type

	Month 1	**Month 2**	**Month 3**	**Avg/Mo**	**Cumulative**
Number of visits/services	**71**	**64**	**68**	**67.67**	**203**
Home/community visit	32	17	15	21.33	64
Telephone visit	17	21	32	23.33	70
Clinic visit	1	0	2	1	3
Non-patient-facing coordination †	21	26	19	22	66
Average time for each visit (min)	**172.1**	**178.9**	**127**	**159.33**	**478**
Home/community visit	41	49	39	43	129
Telephone visit	13	11	12	12	36
Clinic visit	53	0	50	56.33	169
Care coordination	16	16	9	13.67	41
Travel time for visit*	49.1	36.9	17	34.33	103

Total time to deliver CBNS services (# of visit x min)	**2671.4**	**1836.7**	**1495**	**2001.0**	**6003.1**
Home/community visit	1312	833	585	910	2730
Telephone visit	221	231	384	278.7	836
Clinic visit	53	0	100	51	153
Care coordination	336	416	171	307.7	923
Travel time for visit	749.4*	356.7*	255	453.7	1361.1

†Non-patient-facing coordination is when nurses coordinate care with PCP, specialist offices, hospitals, pharmacies, health plans and others, not directly with patients or their family caregivers.
*Travel time depends on the location of home/community visits. In this example of a clinic in a rural community, not all but approximately 20% of their home visits require long-distance driving.

Table 6.3. Sample Monthly Operational Report: Number of Visits/Encounters by Types of Services

CBNS Service Delivered	**Month 1**	**Month 2**	**Month 3**	**Avg/Mo (%)***	**Cumulative**
Total number of visits & coordination	**71**	**64**	**68**	**67.67**	**203**
Total count of services delivered (can have >1 service per visit)	**222**	**161**	**170**	**184.33**	**553**
Assessment					
Assessment (intake and continuous)	31	19	21	23.67 (35%)	71
Care Planning					
Initial creation or updates to care plan	29	10	16	18.33 (27%)	55
Care Management & Direct Care					
Medication management	36	53	22	37 (55%)	111
Symptom management	17	21	15	17.67 (26%)	53
Education/coaching	52	21	41	38 (56%)	114
ADL assistance	0	2	1	1 (1%)	3
Care Coordination					
Care coordination	48	29	46	41 (61%)	123
Other					
Procedures (e.g., skin care, pulse oxygenation check)	5	3	4	4 (6%)	12
Other (e.g., delivery of supply)	4	3	4	3.67 (5%)	11

*% of encounters that included the specific service. Because RNs delivered multiple services in one encounter, the total % of services delivered exceeded 100%.

We used these data to keep track of and demonstrate how many of what types of services were delivered. Administrators would like to see this type of data to estimate how much

nurses' FTE needs to be allocated to deliver the CBNS service. Payers would be interested to see this data to expect how many services (volume and contents) their members will receive for their payment, as well as to see the program's ability to collect data for audit purposes once they start to reimburse for the service.

C. CBNS Service Delivered Per Patient Per Month

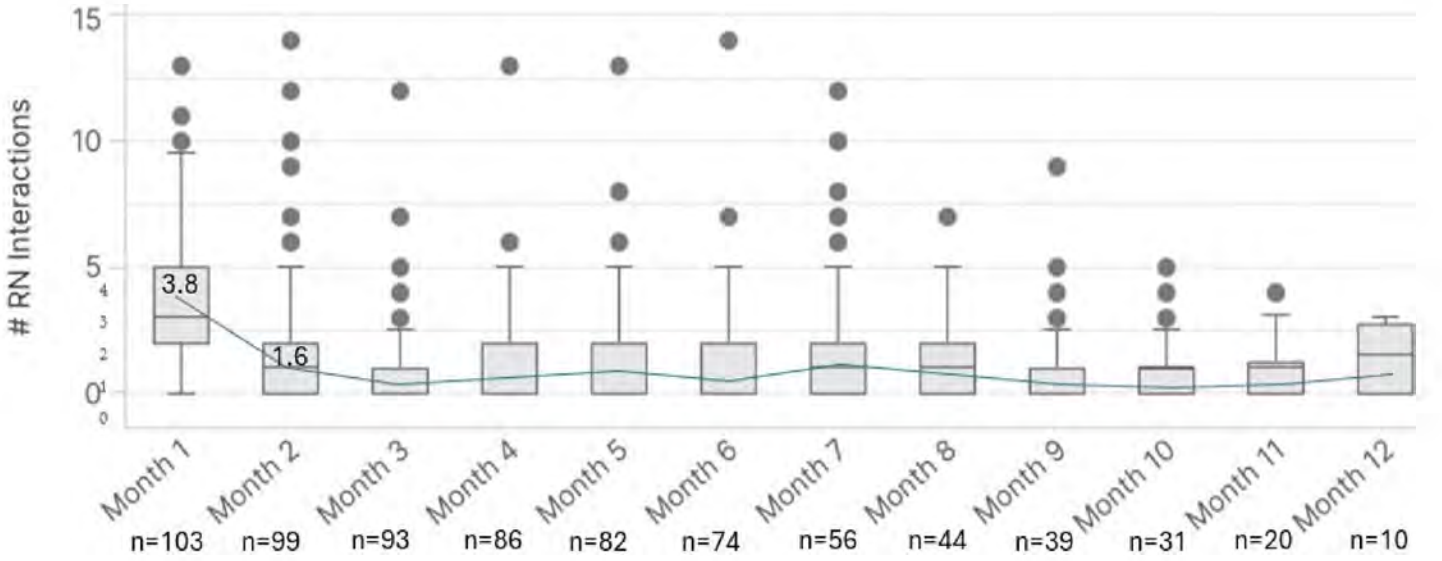
Healthcare plans and payers are interested in understanding the quantity of services their members will receive by enrolling in this program. Administrators of the program are interested in knowing how much and how long the program should offer the services. Using the data extracted for **B. CBNS Service Delivered** above, we calculated how many visits each patient received each month in the program. Based on their experiences, RNs said that most of their patients need more frequent and intense interventions during the first month of enrollment, then the frequency and intensity of care decline as they stay in the program. Therefore, collecting data to show the trend in the amount of care a patient needed/received over the course of enrollment in the CBNS program would be helpful to determine the timeframe of the program and the payment model. We reorganized the data to show the number of visits (patient-nurse encounter) per patient per enrollment month.

Table 6.4. Sample Report: Number of Visits/Encounters Per Patient Enrollment Month

Month in the program	Number of patients	Number of interactions	Mean number of interactions (range)
Month 1	103	310	3.8 (0-13)
Month 2	99	157	1.6 (0-14)
Month 3	93	102	1.1 (0-12)
Month 4	86	109	1.3 (0-13)
Month 5	82	119	1.5 (0-13)
Month 6	74	92	1.2 (0-14)
Month 7	56	93	1.7 (0-12)
Month 8	44	60	1.4 (0-7)
Month 9	39	41	1.1 (0-9)
Month 10	31	31	1.0 (0-5)
Month 11	20	22	1.1 (0-4)
Month 12	10	14	1.4 (0-3)
Total	**103**	**1150**	**1.7 (0-14)**

Note: This table shows the average number of interactions each patient had per patient enrollment month (e.g., Month 1 is patients' first month in the program, regardless of when in the pilot period they enrolled in the program). Patients were continuously enrolled throughout the pilot and remained enrolled for a variable period of time.

Figure 6.1. The Number of Patient-RN Interactions/Visits by Program Month: Boxplot



X-axis of this boxplot is the patient month in the CBNS program. Y-axis indicates the number of patient-nurse encounters/visits. Dots in this boxplot indicate individual patients whose number of visits were out of 95 percentile range. Blue line shows the mean number of visits.

We use these data (nurses' time, number of visits per patient per month, etc.) to calculate the cost and revenue modeling in Step 5.

Evaluation of Program Outcomes

The goal of the CBNS program is to assist patients living with chronic conditions(s) to manage their health in the community, resulting in better patient health, better care experience, and reduced healthcare costs. To evaluate whether the program meets these goals, we collected three sets of data: clinical outcomes (patient health), patient-reported outcomes (care experience), and system level outcomes (healthcare cost).

D. Enrolled Patient Characteristics

First, we collected demographic data of enrolled patients from the EHR to understand the characteristics of the population the program served.

Table 6.5. Demographic Characteristics of Enrolled Patients (n=103)

Participant Characteristics		Count (%)
Sex	Male	64 (62)
	Female	39 (38)
Age	20-29	4 (4)
	30-39	3 (3)
	40-49	8 (8)

	50-59	10 (10)
	60-69	26 (25)
	70-79	31 (30)
	80-89	18 (17)
	>89	3 (3)
Race	Caucasian	97 (94)
	Hispanic	3 (3)
	Black or African American	2 (2)
	Asian	1 (1)
Insurance	Medicare Fee For Service	47 (46)
	Medicaid Coordinated Care Organization	23 (22)
	Commercial	18 (17)
	Dual Eligible	7 (7)
	Medicare Advantage	6 (6)
	TRICARE	1 (1)
	Unknown	1 (1)
Living Situation	Lives with Another/Family	53 (51)
	Lives Alone	41 (40)
	Insecure Housing	9 (9)
Primary Condition	Diabetes Mellitus	85 (83)
	Chronic Obstructive Pulmonary Disease	4 (4)
	Hypertension	3 (3)
	Asthma	2 (2)
	Congestive Heart Failure	2 (2)
	Coronary Artery Disease	1 (1)
	Liver Disease	1 (1)
	Other: Atrial fibrillation, pancreatitis, Parkinson's disease, Memory Deficit, Depression	5 (5)

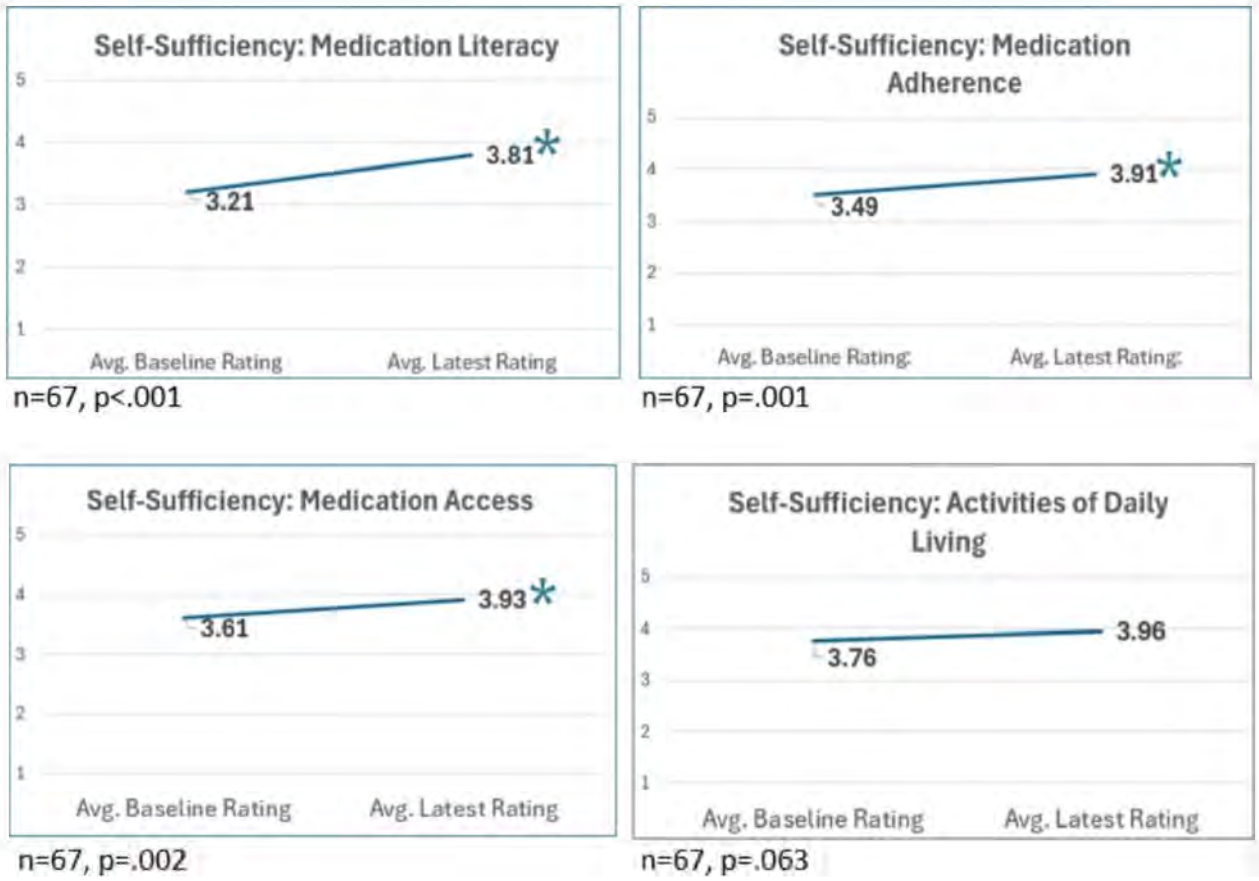
E. Clinical Outcomes of CBNS Program

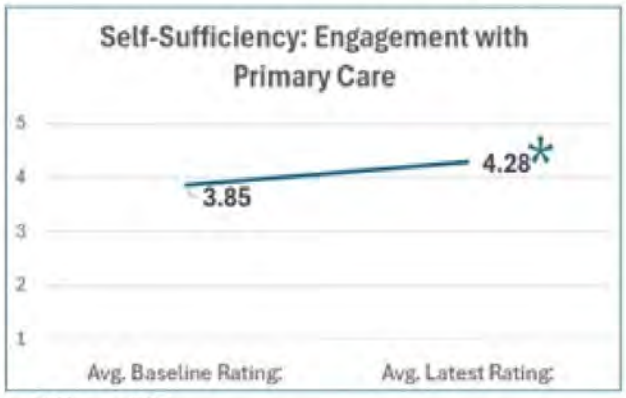
Most of the existing clinical outcomes to measure changes in patient health are disease-specific (e.g., HbA1c for diabetes, blood pressure for hypertension), and measures may not be applicable or appropriate for CBNS enrollees who may not have the specific diagnosis, multiple comorbidities, or the specific disease is well-controlled. In addition, multiple factors contribute to changes in these clinical measures other than the CBNS intervention (e.g., improvement or worsening of HbA1c could be caused by changes in the prescribed medications or other physical conditions rather than the CBNS intervention). Because the majority of CBNS enrollees have diabetes mellitus as a primary condition, we used the HbA1c as one clinical outcome measure to evaluate the impact of the CBNS intervention when it is applicable. However, the goal of CBNS intervention is to assist patients to be able

to manage their health rather than narrowly focused control of blood glucose levels. For this reason, we chose Self-Sufficiency Metrics (SSM; measure the client's ability to live without assistance to manage chronic conditions) as a key clinical outcome measure to evaluate the impact of CBNS intervention. (see Step 3 Pilot and Data Collection and Appendix B)

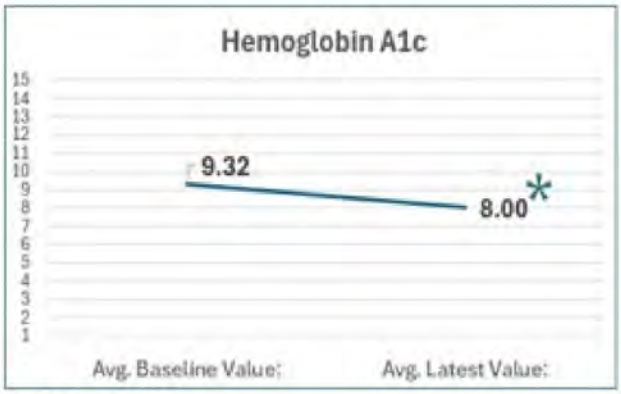
SSM were embedded in the CBNS Forms, and RNs documented the SSM score in the initial Intake Form and periodical Reassessment Form in the EHR every 3 months (see Appendix A). We compared SSM scores and HbA1c for patients with a diabetes diagnosis at the beginning of the CBNS enrollment (baseline) and their latest documented scores (after) from the EHR to report as clinical outcomes.

Figure 6.2. Sample Report: Patient Self-Sufficiency Score and Hemoglobin A1c Outcomes Comparing at the Enrollment (Baseline) and Latest Ratings





n=67, p<.001



n=70, p<.001

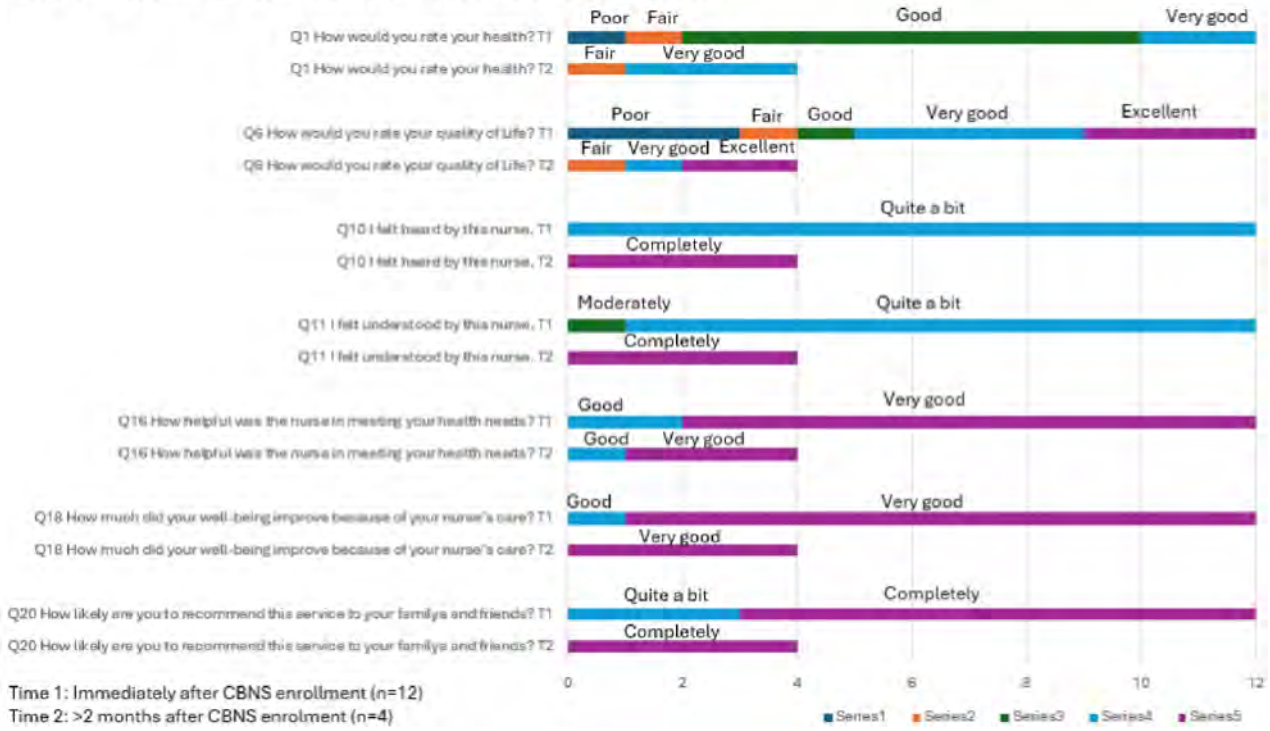
***Statistically significant change**

F. Patient Reported Outcomes of CBNS Program

To evaluate the patient experience of receiving CBNS services, we conducted a patient survey. Existing patient experience surveys designed for ambulatory settings were not specific to evaluate the CBNS program; therefore, we created a CBNS Patient Survey by selecting items from Patient-Reported Outcome Scales. Questions include patient perceptions about their health, experiences of receiving CBNS, and likelihood of recommending the CBNS to family and friends (See Appendix C).

Our original plan was RNs leave the paper survey and a return envelope to the patients at the end of their initial visit with a patient and mail out the second survey 2 months after their enrollment. However, RNs observed the reluctance of patients to complete the survey and given the low response rate, we switched to conducting the survey by telephone. Due to the logistical challenges and low response rate, we were not able to collect enough data, but preliminary small data show that patients felt heard and understood by CBNS nurses, interventions by the CBNS nurses were helpful, and they likely recommend CBNS to their family and friends.

Figure 6.3. Sample Report: Patient Survey Results



Survey responses include some qualitative comments. Ther comments were overall positive and appreciative of the care they received from the CBNS nurses.

> **Excerpt 1:** *"They're the coolest health care people I've ever met. Can I give them (score of) 100? She goes above and beyond for me. … I've already recommended it to people! They're both just really knowledgeable in what they do and really care about their patients. I spent a whole year wondering if I was going to lose my teeth, if I was going to die, if I was using insulin the right…. I had misunderstood and my A1c jumped all the way to 13. Then (the nurse) told me how to use it so I understood and now it's down to 9. If it wouldn't have been for those three nurses, I'd probably still be super high. They 100% made sure I was going to live."*
>
> **Excerpt 2:** *"They made themselves available. They're good at giving me the care that I think is what I need…. I was kind of surprised when they called 6 months later looked at the results of my exam. They gave me a number I could call to get a hold of them. I was surprised they were following me."*
>
> **Excerpt 3:** *"I'm glad the doctor sent her to me. She's really very good. She even said she could come to me if I needed, because I told her I don't really like driving. She's really in my corner. She believes in me, made me feel like I was on the right track."*
>
> **Excerpt 4:** *"(The nurse) was very helpful and gave me good advice. I really liked [the nurse]. She explained everything. She was a very good listener and explained things well. I didn't feel like she was in a rush. She took her time."*

G. System Level Outcomes of CBNS Program

To evaluate the system-level impact of the CBNS program, we sought data to examine whether the CBNS service results in a change in patients' health service utilization patterns (e.g., reduced number of hospital admissions, ED visits) and a reduction of the total healthcare expenditure. Because CBNS enrollees may be hospitalized or go to ED outside of the network, these data are difficult to obtain from the healthcare organization's database where the CBNS program is located. For this reason, we seek data from Oregon Health Authority's (our state department of health) All Payer All Claims (APAC) Database.

Using data from an existing large database is advantageous as it is comprehensive including data that is not available at the organizational level. However, there are some challenges in using external data sources including 1) 1.5-2-year time lag until the data becomes available, 2) the cost to pay for the data extraction, and 3) the need to have data analysts who are familiar with claims data elements in the database and how the database is structured. Because the data we requested to evaluate the CBNS outcome will not be available until 2026, we will describe our analysis plan below in lieu of sharing actual data analysis.

Sample Analytic Plan: Impact of CBNS Program on Patterns of Health Service Utilization and Total Cost of Care

Aims: The aim of this analysis is to evaluate the impact of the CBNS on healthcare cost and health service utilization patterns of the population.

Population:

- Patients who enrolled in the CBNS program during the pilot period (Intervention group)
- Matched cohort who has a healthcare profile similar to the CBNS enrollees during the same time period (Comparison group).

Outcome data we request (for both groups):

- Total cost of care (TCC: healthcare expenditure) per patient
    - Including paid amount by different types of claims (inpatient hospital, ED, outpatient, professional, pharmacy, others)
- Health services utilization (HSU) per patient, including frequency of inpatient admissions, readmissions, emergency department visits, and facility stays, and length of stay in the inpatient and facility settings
    - Including location of service, length of stay in hospital, ED, and nursing facility, and all types of health services except dental care.

Data elements in the APAC dataset are structured and organized as administrative healthcare data. Selecting appropriate data elements needed for TCC and HSU analysis required knowledge and expertise about the structure, terminology, and how they are coded. In our project, we contracted with TFA analytics Inc. which has

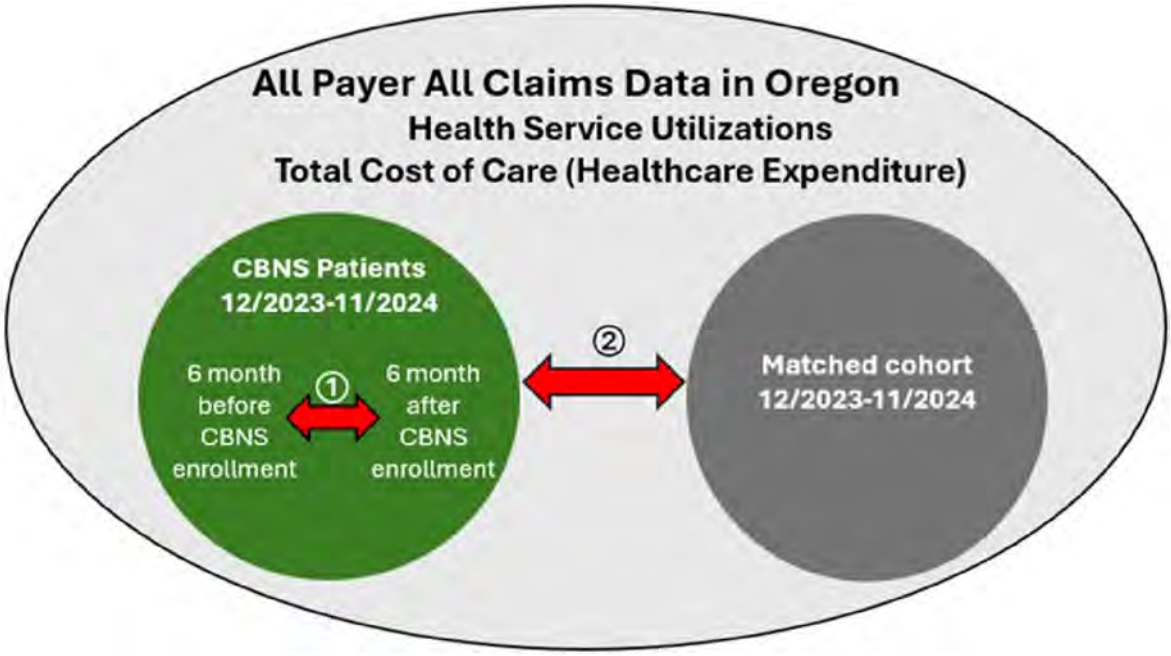
experience and expertise in using APAC database and actuaries to guide our selection of data elements, data request and extraction process, and analysis.

We submit identifying information of patients who enrolled in the CBNS during the pilot period to extract their HSU and TCC data from the dataset.

To form a matched cohort to compare, we propose a propensity score yielding a one-to-many matched control group approach. We submit a request to select a matched cohort from the APAC database based on individual characteristics of CBNS enrollees (e.g., age group, race, gender, and diagnosis), and request to extract their HSU and TCC data for the matching time period from the database.

Analysis Plan: We will compare the total cost of care (TCC) and health service utilizations (HSU) between 1) 6 months prior to CBNS enrollment and 6 months after the CBNS enrollment (pre-post analysis), and 2) patients who enrolled in the CBNS program and a matched cohort patient who did not enroll in the CBNS program (comparison analysis).

Figure 6.4. Analysis comparing before and after CBNS and CBNS and matched cohort



Expected Outcomes: Our hypotheses

Our hypotheses are

- Health Service Utilization (hospital admissions, ED visits, length of stay in a healthcare facility) during 6 months after enrollment in the CBNS program remains the same or declines compared to 6 months before enrollment in the CBNS program, despite the natural progression of chronic conditions.

- Total Cost of Care (including all costs of inpatient, outpatient, professional fee, pharmacy, and other) during 6 months after enrollment in the CBNS program is lower compared to 6 months before enrollment in the CBNS program, despite the natural progression of chronic conditions.
- Patients enrolled in the CBNS program have lower Health Service Utilization (hospital admissions, ED visits, length of stay in a healthcare facility) compared to the matched cohort patients who did not enroll in the CBNS Program.
- Patients enrolled in the CBNS program have a lower Total Cost of Care (including all costs of inpatient, outpatient, professional fee, pharmacy, and others) compared to the matched cohort patients who did not enroll in the CBNS Program.

Lessons Learned
• Different stakeholders have different expectations and interests in what they want to know from the program evaluations. Administrators and payers want to see data about the quantity of the services in addition to the impact and outcomes of the program. • Program administrators want to know the volume of the services delivered to assess demand and capacity of the program. Payers want to know how much service their members receive if they enroll in the program. • Many existing healthcare outcome measures are either disease- (e.g., HbA1c, blood pressure, CRP level) or site-specific (e.g., patient satisfaction about care received in hospital, outpatient clinics), not adequate to measure the outcomes of the chronic care management program that encompasses multiple chronic conditions and care delivered outside of one healthcare facility. • Selection of outcome measures needs to be intentional to measure what change the program was developed for, and think what is the best way to capture it. For example, if the goal of the program is to assist patients to be able to manage their health as best as they can, how can we know that happened? Patients' behavior change, patients say so, or is patient health better? • Methods for outcome data collection need to be effortless (short and easy) for people who provide the data. Many patients and healthcare providers have busy lives and experience survey fatigue. Adequate response rate is difficult to achieve. • To evaluate the impact of the program beyond the program site, obtaining data from an external comprehensive big dataset (e.g., APAC dataset) is beneficial and necessary. However, large datasets such as claims data have a complex structure and access is tightly managed. In addition, there is a 1.5-2-year time lag for the data to be available. There is a fee to access the data or extract data from the dataset.

Recommendations

- Explore and identify what different stakeholders are interested in about the program from the early phase of the program development and build mechanisms for measuring them in the program.
- Make a plan for what data to report to whom. Creating templates (e.g., tables, graphs) of how to show the data to different stakeholders before collecting and analyzing the data is helpful clarifying what data to collect and how to analyze the data.
- Select outcome measures thoughtfully. Use of commonly used outcome measures (e.g., HbA1c, blood pressure, patient reported outcomes of depression, quality of life, satisfaction) may be beneficial to compare the findings with other programs, but they may not be measuring the actual outcomes of the program intervention.
- Make the patient survey as easy and effortless as possible to participate and complete. Approaching patients shortly after the encounter is better because patients' recollection about the encounter/visit by clinicians is less than 1 week.
- Explore datasets that contain the outcome data you are looking for internally and externally. If you are looking for the program outcomes outside of one organization (e.g., total cost of care, health service utilizations including outside of your own network), look for state or national datasets that collect comprehensive claims data.
- Claims data is usually structured and organized using codes, categories, and terminologies specific to the claim data form. Including experts who are knowledgeable about these codes, terminologies, and the structures of the dataset in the team is strongly recommended.
- Be aware of the time lag until the data you need becomes available for analysis, as well as the potential cost to access data.

Understanding Healthcare Payment Structure and Working with Payers

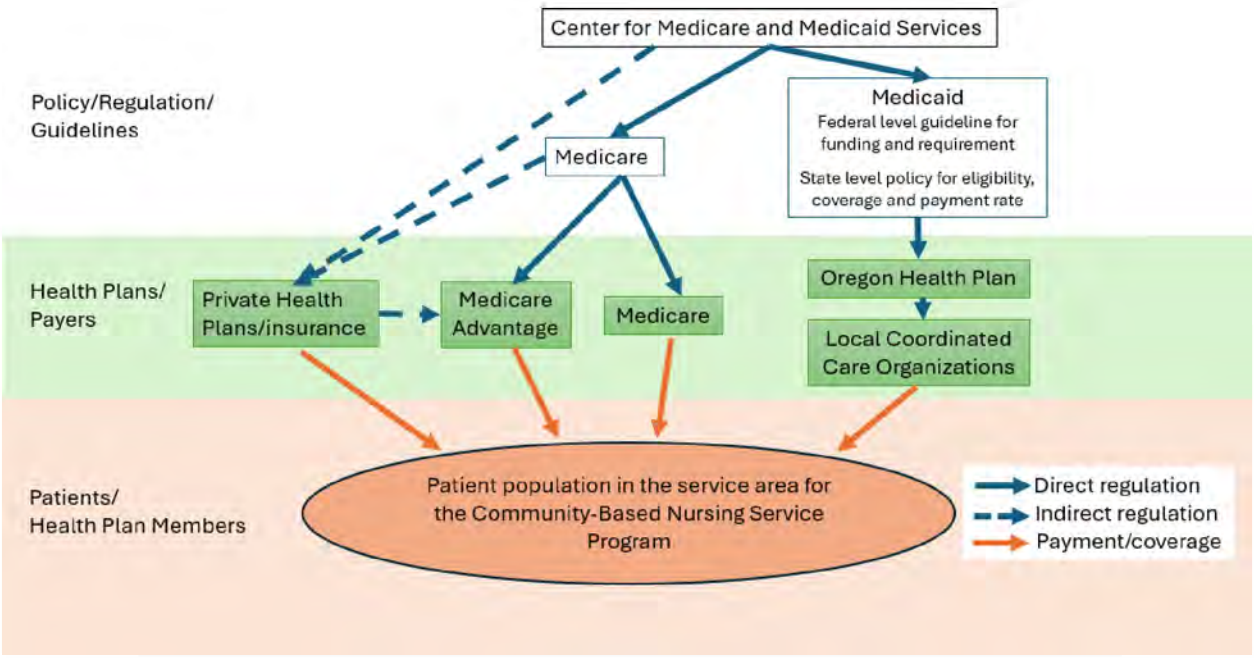
To develop an RN-led chronic care management program that is financially sustainable, payment mechanisms for the program must align with payers' interests, and the organization must establish an agreement with payers for reimbursement for the program services. An in-depth understanding of the landscape of healthcare payment mechanisms is crucial for this purpose. Historically, nursing services are paid as part of a healthcare organization's operational overhead cost, rather than as direct payment for services delivered by RNs. Because nurses are not seen as revenue generators, nurses are often not at the table of healthcare finance conversations and may not be familiar with issues related to healthcare payment. To develop a payment model for RN-led chronic care management programs that could be accepted by the healthcare industry, we had to learn the existing healthcare payment mechanisms, regulations, key entities, and lingo to understand healthcare financing structures. In this section, we share our efforts to understand the healthcare payment structure and engage and collaborate with payers and healthcare systems to design a reimbursable RN-led program.

First, we had to learn and build our knowledge base related to existing payment mechanisms as a prerequisite to building reimbursement mechanisms for Registered Nurse services. Healthcare is a large, complex industry. Payment mechanisms for healthcare services are regulated by federal and state policies and contracts between health plans/payers, providers/provider organizations, and consumers/health plan members/patients. There are many rules, procedures, and tools to manage healthcare billing and payment. We reviewed related literature and attended various national and local meetings where healthcare payment for patients outside of hospitals was discussed. Through these readings and meetings, we gained knowledge about existing payment structures and mechanisms, rules and regulations, current trends and issues of payment models, and key stakeholders and their interests and concerns. Then we surveyed who would be the potential local payers for the CBNS program at the pilot site and explored how to engage them in the development of the payment model for the CBNS program. Below, we share some information we accumulated and used to understand and decide our approach in designing a payment mechanism for the CBNS program. The information below is not intended to be a thorough description of the healthcare economy in the US. Rather, we summarize key points we learned and considered in designing a proposed payment model for an RN-led chronic care management program.

Payer Types and Regulations

The CBNS program was developed and delivered in rural communities in Oregon. There are different types of payers for the patient population in the CBNS service area, including commercial health plans, Medicare/Medicare Advantage, and Coordinated Care Organizations (CCOs: Medicaid sponsored health plans in Oregon). To identify target payers for our CBNS program and align our payment model to their interests, we created a map showing all potential payers in the service area and related regulations. (See Figure 7.1.)

Figure 7.1. Payers for Patients Living in the CBNS Service Area and Regulations



The Center for Medicare and Medicaid Services (CMS) provides the federal-level funding and regulations for payment requirements for Medicare and Medicaid. The CMS's regulations include who can bill and what can be billed under **Medicare**. Specific conditions CMS requires to pay under Medicare include providers submitting claims, meeting coverage criteria for services, and providing documented patient consent for the service. Registered Nurses are not included among the providers who can submit claims. Requesting a change to add RNs to the billing providers in the CMS regulation requires approval from Congress, and it is not realistic to make it happen in next few years. Although each payer group has its own rules and restrictions, they mostly follow the same or similar regulations the Center for Medicare and Medicaid Services (CMS) uses.

Under **Medicaid**, while CMS provides federal-level guidelines for funding and requirements, states retain the flexibility to define eligibility, benefits, and administer programs under a plan approved by the state. In Oregon, where the CBNS pilot takes place, the state Medicaid plan is called Oregon Health Plan and is administered through 16 Coordinated Care Organizations (CCOs) as health plan organizations. About 20% of the CBNS population was covered by one local CCO. Under the Oregon Health Plan, this CCO has the flexibility to pay for the health services its members receive and was interested in exploring innovative ways to pay for programs that would increase accessibility for chronic care for their members. We partnered with this CCO to design payment mechanisms we propose for the CBNS program. (See following sections for details.)

In 2025, Oregon passed HB2789, which allows registered nurses to bill Medicaid-funded CCOs for their care management services. With this new law being implemented, there is a possibility that CBNS nurses will be able to directly bill CCOs for chronic care management services delivered to CCO members (Local Coordinated Care Organizations indicated in the green square on the right in Figure 7.1.). This is an example of how state governments or commercial healthcare plans can create their own rules regarding who can bill and what can be billed that may differ from federal CMS rules. For this reason, we chose a local CCO as a target payer to propose the payment model for the pilot CBNS program.

Private health plans do not need to follow CMS requirements and procedures, but they often use CMS requirements as a template. Approximately 70% of CBNS patients were covered by healthcare plans (including Medicare Advantage offered by private insurance companies) other than Medicaid or traditional Medicare. Because private health plans are not constrained by CMS regulations, they have the flexibility to decide to pay for special benefits for their members if these services will further members' health and well-being. During the CBNS pilot, we reached out to some private health plans exploring the possibility of developing a new payment structure for the CBNS program. These plans wanted to see the return of investment data before exploring potential payment mechanisms. We continue communicating, yet do not have tangible engagement with these plans.

Payment Models

Fee-for-Service (FFS) Model: The main payment model for healthcare services has been fee-for-service (FFS), where providers bill and are paid for services they perform (e.g., tests, office visits, procedures). To support this payment model, **Current Procedural Terminology (CPT) codes** are created and maintained by the American Medical Association and integrated into the EHR for billing and reimbursement of procedures delivered. Most CPT codes are for medical, surgical, and diagnostic services. A few CPT codes exist for care

management services delivered by clinical staff (e.g., RNs), but there are restrictions that services need to be delivered as part of ("incident to") medical encounters under the direct supervision of the billing provider, such as physicians. If RNs deliver care management services "off campus" where the billing providers are not located, this CPT code cannot be used. (See Appendix F for a list of CPT codes associated with RN care management) According to the CMS regulation, RNs are not billing providers. The FFS model is criticized for incentivizing a higher volume of services that lead to increased healthcare costs.

Value-Based-Payment (VBP) Model: Due to the rise of healthcare costs and the criticism for the FFS model, there is a trend to shift from FFS to the Value-Based Payment (VBP) model. In VBP models, providers are paid and rewarded for the quality of the service and resulting improved outcomes instead of the volume of service they delivered. **Alternative Payment Models (APM)** is another term describing specific payment strategies (e.g., bundled payment, per-member per-month [PMPM] payment, accountable care organizations) as part of a value-based payment framework. While many organizations (including the CMS and commercial payers) are actively promoting a shift to VBP, it is still in an early phase of exploring strategies and mechanisms to meet the goal of delivery of high-value care with healthcare cost containment.

Our Approach

Based on existing healthcare payment models, mechanisms, and current trends, we decided to design a payment model for the CBNS program targeting a local CCO who was interested in collaborating with us and exploring a new APM for their members with serious illnesses and complex care needs.

Relationship Building and Alignment with Payers

The CCO was one of the key payers for the healthcare organization that was the CBNS pilot site. The nurse executive/Vice President of the pilot site had an established payor-provider organization relationship with the CCO. The nurse executive shared the planning of the CBNS project with the key stakeholders in the CCO from the early stages of the project and solicited their interest in partnering in this project. She continued to talk about the project on various occasions and kept them informed about the progress we were making throughout the process. In addition to the nurse executive continued to inform the CCO, the research team met with them several times to seek their inputs (their needs, their patients' needs, what types of services and what outcomes they want to see to pay for the services) and share the data and the draft of ideas for payment throughout the process (see Step 1-6).

Our original plan was to develop a payment model for CBNS, and pilot test the actual payment process with the CCO during the pilot project period. The nurse executive explained to the research team how the payment contract between payers and provider organizations works, and steps and strategies to get to the point of contracting for the service (even as a pilot) while considering existing payer-provider organization contracts for other services. An important lesson we learned was that contracting for healthcare payment for a new program potentially impacts other payment contracts, and the steps need to be aligned and orchestrated with the regular contracting cycle and procedures. Furthermore, the nurse executive was clear that the CCO would not consider contracting until we demonstrate that we have a mechanism to capture data regarding services delivered and to submit claims in a manner that is consistent with the usual billing-payment process, rather than as a special route, to avoid administrative burden on the payers. To align the development of a new payment model and billing mechanisms for the CBNS with the existing contract and mechanisms related to the CCO, the nurse executive played the critical role as a gatekeeper and the advocate for the CBNS Program facing the CCO, streamlining and strategizing the communications and procedures between the pilot site and the CCO. The research team created a brief business case (including estimated cost of CBNS care, reimbursement proposal, and projected outcomes and savings: See Step 5 and 6 in this toolkit) for the nurse executive. The nurse executive shared this business case with the CCO after the infrastructure to deliver, document, and bill for the CBNS Program was completed. Because she has been informing the CCO about the goals and structure of the CBNS Program, and progress of the project along the way, there was no surprise or major concerns from the CCO when she shared the business case. The CCO is currently examining the business case and considering how to adopt it in their payment model.

Preparing the Healthcare Organization for a New Payment Model

Although the pilot site has been delivering the community-based nursing services that became the foundation of the CBNS Program, refining the CBNS as a program and building the infrastructure that payers would agree to pay for required a well-coordinated effort across many departments in the organization. The nurse executive took a subtle but strategic approach from the beginning of the project with a goal to socialize the idea of an eventually billable RN-led CBNS Program on multiple levels: a frontline practicing nurse level, a clinic's administrative level, local leadership level, and a corporate level. She engaged nurses and clinical teams to discuss and understand how the program would affect their patient care, practice, and staffing, and gained their buy-in and participation in the program. She socialized the concept, its merits and implications, and progress of the CBNS program with a diverse range of audiences (in administrative meetings, leadership meetings, corporate meetings, and internal and external board meetings) repeatedly.

Depending on the audience and interest of each key stakeholder, she delineated the program in a way that relates to their interest and by speaking their language. For example, she talked with a Chief Financial Officer about the financial bottom line of the new program, not necessarily how nurses deliver the services. With the Chief Executive Officer, she would highlight the critical contributions of the CBNS Program for the organization as a valuable healthcare organization in the local community. With an administrative director of ambulatory care, she discussed allocation of resources and the operational impact of the CBNS program to engage them and secure the resources and support to implement the necessary changes in EHR and billing structure. These continuous efforts to engage stakeholders and socialize the CBNS Program in multiple departments and organizational levels were crucial. With these efforts, by the time their support or decision-making is needed, all stakeholders in the organization were well-informed, familiar with, and supportive of moving forward with this program.

This project was a collaboration between a university-based research team (to assess, collect data to formalize the CBNS practice, and analyze data to design a payment model) and a group of RNs in a healthcare organization, where the RNs in the primary care clinics were delivering services that became the foundation of the CBNS program. Because the research team was not the internal members and had no weight in the operation of the healthcare organization, how to engage and work with the leadership and administration in the organization relied on the nurse executive and RNs. Practicing RNs in the clinics who participated in the project were critical drivers of the project and real experts who know their patient population, clinical situations, and how their clinics work. However, they were carrying out the full-time responsibility of patient care as primary care clinic nurses in addition to the service for the CBNS program. Expecting them to allocate their time to lead and conduct the program development, implementation, and dissemination to other stakeholders in the organization was not feasible. We were very fortunate to have the nurse leader in the senior leadership position (i.e., the nurse executive) who is a visionary and has intimate knowledge and experiences about the organizational priority, structures, and procedures, and strategies for how to work with payers.

Partnership and Collaboration

Securing a payment contract for a newly developed program takes a great deal of organized efforts within the provider organization and with payers. It is particularly challenging when there is no precedent or sample models to emulate, such as payment for RN-led programs. To overcome these challenges, strong nursing leadership advocating and promoting better understanding of nursing practice and the value of nursing in the organization and to payers is essential. In this project, the partnership with the research team based in an academic organization was beneficial to use their expertise in program development and analysis to

generate evidence to support the program. Thinking outside of the box, seeking and engaging partners who have different skillsets could enhance the program or program development. In our project, the inclusion of team members who have expertise in informatics and actuarial analysis strengthened the product. Forming and working with team members who have different expertise, backgrounds, and perspectives is not easy, and sometimes it creates conflicts. Set a clear and shared goal (i.e., the north star) what the project is aiming for and discuss how each member could contribute to striving for the goal with their unique expertise, then communicate it to people who would touch or touched by the project was helpful approach in our project.

Lessons Learned
• The new payment model needs to fit and function in the existing larger healthcare industry. For that reason, you need to learn about healthcare payment models, mechanisms, procedures, and tools used in the current healthcare industry. • It is critical to have fundamental knowledge about rules, regulations, key entities, and terminologies in the field to understand and communicate with stakeholders in healthcare finance. • Learn the scope and restrictions of existing models and find a way to adapt to the program. For example, the traditional FFS model is built mainly for medical procedures and is difficult to revise to pay for non-medical services provided by RNs. APM, such as a bundled payment, is more flexible and may be a good fit to pay for longitudinal services rather than encounter- or procedure-based services. • Contracting for a new payment model does not happen in isolation. Consider potential implications of a new contract for the existing relationship between payer, provider organization, and patient/member. Existing relationships, institutional knowledge, and experiences are valuable assets to forge collaboration and working with the organizations as well as payers. • Having a business case to pitch a new payment model for the program alone is not enough to bring healthcare administrators and payers to the table. Engage them and socialize the idea of the newly developed program along the way, so that they know what the program is about, are familiar with its goals and implications to their work and feel ready to engage in the decision-making when the program is presented.

Recommendations

- Do your homework to understand the basics of the healthcare economy and payment mechanisms by reading, attending conferences, and networking with people who are involved in building, executing, and/or evaluating the healthcare billing and reimbursement.
- Engage with payers to learn their interests, pain points, and ideas for the services they want to include in their plan. Know what their expectations (i.e., service eligibility, outcome measures, procedures for billing and payment etc.) are to consider a payment contract for the program.
- Socialize the new program with payers and keep them informed over the course of development and operationalization, so that it is no surprise, and they feel well-prepared to discuss a contract when it is ready.
- Gain insight from organization administrators and leaders in your organization to learn about the current state of the billing practice and explore their interest and exchange ideas for innovative ways for billing to support their financial bottom line.
- Socialize and engage stakeholders at all organizational levels to foster their understanding and support for the program. Explaining the program using the language of each audience's interest and regular reminders and updates about the program are an effective approach to gaining organizational support.
- Nursing leadership articulating and advocating for the professional nursing practice, which is the core of the program, is imperative. Nurses on all levels and positions (from frontline practicing nurses to nurse managers, CNOs, and senior nurse executives) can and should lead from where they are. Nurses in leadership positions, such as CNOs and senior executives, play a particularly critical role in articulating and convincing healthcare organizations to understand and support nursing professional contributions and their financial values in healthcare.
- Leverage the existing relationships, expertise, and institutional knowledge within the organization, and build partnerships with various individuals and groups who have different expertise needed for the success of the program. For example, the practice-academic partnership, involvement of informaticists, actuaries, payers, and billing personnel in the organizations were critical to design a new payment model for the CBNS program that is likely to be accepted and function in the healthcare industry.

Appendix

Appendix A - CBNS Documentation Forms

Appendix B - Self-Sufficiency Metrics

Appendix C – CBNS Patient Survey

Appendix D – EHR information Management Workflow

Appendix E – CBNS EHR reconfiguration poster

Appendix F – List of CPT codes

CBNS Initial Intake Form Template*

Former dot phrase for CBNS intake form

CBNS Intake

- CBNS RN assigned: [Select from clinician list with NPI number]
- Interaction with: □ Patient facing □ Not patient facing
- Location of Service Delivered: □ Home □ Community □ Clinic □ Telephone □ Hospital □ Other
- Persons with patient during intake: [Free text]
- Preferred Language: □ English □ Spanish □ Arabic □ Cantonese □ Hmong …
- Patient provided verbal consent to participate in CBNS Program: □ Yes □ No
- CBNS Enrollment Date: [__DATE__]
- CBNS Referral and Onboarding Notes: [Free Text]

Assessment

- Vital Signs: Temp [___] Heart rate [_____] Respiratory rate [_____] BP [____] Pulse oximetry [_] Pain rate [__]
- Chronic Conditions to be addressed via CBNS:
  □ Asthma □ CAD □ CHF □ CKD □ COPD □ DM □ HTN
  □ Liver disease □ Other [__Specify__]
- Disease-specific assessment: <Link to disease specific assessment forms including diet, exercise, lab results, medications, patient reported symptoms and concerns>

• Self-Sufficiency Assessment:

	In crisis 1	Vulnerable 2	Safe/stable 3	Independent 4	Empowered 5	Notes Free Text
Daily functions/ADL						
Medication Access						
Medication literacy						
Medication adherence						
Engagement with PCP						

- Life Challenges: Other Social Factors Associated with Health (check all that are applicable)
  - [ ] Food Instability [ ] Housing [ ] Social Support
  - [ ] Sedentary lifestyle [ ] Disability [ ] Transportation
  - [ ] Pain Management [ ] Income [ ] Employment
  - [ ] Mental Health [ ] Substance Use [ ] Safety
  - [ ] Difficulty coordinating medical appointments
  - [ ] Barriers prevent patient from following through on routine care
  - [ ] Involvement w/ criminal justice

- Patient Story [Free Text]

- Patient Values, Goals, and Priorities [Free Text]

- Summary and additional notes on assessment (Optional) [Free Text]

Care Plan and CBNS Interventions

- CBNS Care Needs and Intervention (Notes include care provided at the site and planned interventions):
  - [ ] Symptoms management: [Free Text]
  - [ ] Medication Management: [Free Text]
  - [ ] Education: [Free Text]
  - [ ] Care Coordination[Free Text]
  - [ ] Assistance with ADLs: [Free Text]
  - [ ] Other: [Free Text]

Billable Procedures

[ ] Wound care [ ] Lab draw [ ] Urine specimen collection [ ] Vaccination
[ ] Bladder catheter maintenance [ ] Pulse oxygenation check [ ] DME
[ ] Other: [Specify]
Notes: [Free Text]

Follow Up Plan

Next Planned CBNS Visit: [Free Text]
PCP Follow up appointment: [Free Text]

RN minutes spent during this interaction (not including travel time: [_____] minutes

Charges [ ] Charge S0280

Sign [Sign off the form]

CBNS Follow-Up Form Template*

Former dot phrase for CBNS follow-up form

Follow-up

- CBNS RN assigned: [Select from clinician list with NPI number]
- Interaction with: □ Patient facing □ Not patient facing
- Location of Service Delivered: □ Home □ Community □ Clinic □ Telephone □ Hospital □ Other
- Persons with patient during visit: [Free text]
- Date of last CBNS visit: [Auto populated]

Re-assessment

- Vital Signs: Temp [___] Heart Rate [_____] Respiratory Rate [____] BP [____] Pulse oximetry [___] Pain Rate [_]
- Chronic Conditions addressed via CBNS:
  - □ Asthma □ CAD □ CHF □ CKD □ COPD □ DM □ HTN
  - □ Liver disease □ Other [Specify]
- Other assessment: [Link to disease specific assessment forms]
  Diet: [Free Text]
  Activity/Exercise: [Free Text]
  Lab Results: [Free Text]
  Patient Reported Values: Blood sugar [ ] Blood pressure [ ] Body weights [ ]
  Medication Notes: [Free Text]
  Patient Reported Symptoms and Concerns: [Free Text]
- Patient Story: [Free Text]
- Life Challenges/Barriers and Plans: [Free Text]
- Patient Values, Goals, Priorities, and Progress Towards the Goal: [Free Text]

Nursing Interventions/Care Planning/Next Steps:

CBNS Care Needs and Intervention (Notes include care provided at the site and planned interventions):

[ ] Symptoms management: [Free Text]
[ ] Medication Management: [Free Text]
[ ] Education: [Free Text]
[ ] Care Coordination: [Free Text]
[ ] Assistance with ADLs: [Free Text]
[ ] Other: [Free Text]

Billable Procedures

[ ] Wound care [ ] Lab draw [ ] Urine specimen collection [ ] Vaccination
[ ] Bladder catheter maintenance [ ] Pulse oxygenation check [ ] DME
[ ] Other: [Specify]
Notes: : [Free Text]

Follow Up Plan

Next Planned CBNS Visit: [Free Text]
PCP Follow up appointment: [Free Text]

RN minutes spent during this interaction (not including travel time: [_____] minutes

Charges [ ] Charge S0281

Sign [Sign off the form]

CBNS Care Coordination Form Template*

Former dot phrase for CBNS follow-up form

Care Coordination

- CBNS RN assigned: [Select from clinician list with NPI number]
- Interaction with: □ Patient facing □ Not patient facing
- Location of Service Delivered: □ Home □ Community □ Clinic □ Telephone □ Hospital □ Other
- Care Coordination with: □ Patient or Informal Caregiver □ PCP □ Pharmacy □ Extended care team, specialists □ Community organization □ Other
- Care Coordination Notes: [Free Text]

RN minutes spent during this interaction (not including travel time: [_____] minutes

Charges [ ] Charge S0281

Sign [Sign off the form]

CBNS Reassessment/Discharge Form Template*

Former dot phrase for CBNS follow-up form

- CBNS RN assigned: [Select from clinician list with NPI number]
- Interaction with: □ Patient facing □ Not patient facing
- Location of Service Delivered: □ Home □ Community □ Clinic □ Telephone □ Hospital □ Other
- Persons with patient during visit: [Free text]
- Date of last CBNS visit: [Auto populated]
- CBNS Enrollment Date: [Auto populated]
- CBNS Referral and Onboarding Notes: [Auto populated]

Reassessment

- Vital Signs: Temp [___] Heart Rate [_____] Respiratory Rate [____] BP [____] Pulse oximetry [___] Pain Rate [ ]
- Chronic Conditions addressed via CBNS:
  - □ Asthma □ CAD □ CHF □ CKD □ COPD □ DM □ HTN
  - □ Liver disease □ Other [Specify]
- [Link to disease-specific assessment forms as needed]

• Self-Sufficiency Assessment: (Last SS assessment date [Auto populated]

	In crisis 1	Vulnerable 2	Safe/stable 3	Independent 4	Empowered 5	Notes Free Text
Daily functions/ADL						
Medication Access						
Medication literacy						
Medication adherence						
Engagement with PCP						

• Life Challenges: Other Social Factors Associated with Health (check all that are applicable)

[ ] Food Instability [ ] Housing [ ] Social Support
[ ] Sedentary lifestyle [ ] Disability [ ] Transportation
[ ] Pain Management [ ] Income [ ] Employment
[ ] Mental Health [ ] Substance Use [ ] Safety

[ ] Difficulty coordinating medical appointments
[ ] Barriers prevent patient from following through on routine care
[ ] Involvement w/ criminal justice

Reassessment Outcomes

□ Need continue CBNS Support, continue enrollment
□ Graduate – Patient self manage care
□ Disenrolled – Lack of engagement
□ Disenrolled – Deceased
□ Disenrolled – Lost to follow up
□ Disenrolled – Change in insurance
□ Disenrolled – Change in level/type of care needs
□ Disenrolled – Moved out of service area or changed primary care organization
□ Disenrolled – Patient choice
□ Disenrolled – Unsafe conditions for staff
□ Patient has continued needs for CBNS but is temporarily unavailable

Reasons for continuation or disenrollment note: [_____]

Follow Up Plan if applicable
Next Planned CBNS Visit: [Free Text]
PCP Follow up appointment: [Free Text]

RN minutes spent during this interaction (not including travel time: [_____] minutes

Charges [ ] Charge S0281

Sign [Sign off the form]

SELF-SUFFICIENCY MATRIX

This scale asks you to assess a client's capacity for self-sufficiency. Please read each option for each domain and indicate the value that best reflects how you currently feel about your client's capacity for self-sufficiency. Please complete this at intake and the time for reassessment (every 6 months).

CLIENT GOAL	DOMAIN	1: IN CRISIS	2: VULNERABLE	3: SAFE/STABLE	4: INDEPENDENT	5: EMPOWERED	N/A
☐	Medication Adherence	Does not take meds as prescribed and does not communicate with provider about med needs.	Attempts to take meds as prescribed. Does not proactively communicate with providers about med needs.	Typically takes meds as prescribed. Inconsistently communicates with providers about med needs.	Takes meds as prescribed. Typically, proactively communicates with providers about the med needs.	Consistently takes meds as prescribed. Proactively communicates with providers about med needs.	N/A
☐	Medication Literacy	Does not know the names, purposes, and frequency of taking meds.	Knows the names of meds, but not the purpose or frequency.	Knows the names, purpose, and frequency of critical meds, some side effects, and knows how to manage them.	Knows the names, purpose, and frequency of all meds. Knows some side effects and knows how to manage them.	Understands the purpose and frequency of meds. Knows all side effects and how to manage them.	N/A
☐	Access to Medications	Does not have access to medication.	Has barriers, but typically can overcome.	May have barriers, but typically can overcome.	Has access to meds with rare barriers to overcome.	Consistently has access to meds.	N/A
☐	Activities of Daily Living	Unable to meet basic needs of daily living (hygiene, food, ADLs).	Able to meet a few but not all basic needs of daily living without assistance.	Able to meet most but not all daily living needs without assistance.	Able to meet all basic needs of daily living without assistance	Able to meet beyond basic needs of daily living for self/family.	N/A
☐	Engagement with Primary Care	Use ED only for care and/or no PCP.	Frequent ED use with no or limited engagement with PCP.	May have a lack of trust with healthcare providers, but is willing to see a PCP.	Has PCP; returns to clinic regularly for care.	Has a trusting relationship with PCP and utilizes ED appropriately.	N/A

Adapted and modified from OHSU Self-Sufficiency Matrix by the CBNS team.

HUD SSM can be found at: https://files.hudexchange.info/resources/documents/SSMatrix_UsingHMISBenchmarkProgress_Arizona.pdf

PATIENT EXPERIENCE SURVEY

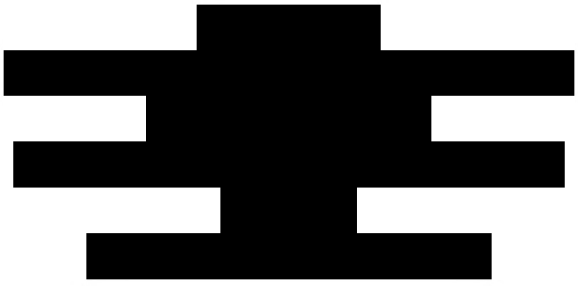
Mr./Ms. _____

We ask you to complete this survey to share your experience of receiving care from the nurse who handed this survey to you. We ask you to send the completed survey to Oregon Health & Science University (OHSU) using an attached envelope, and a team in OHSU will combine your response with other patients who also received care from these nurses. Your nurses will see the combined results but not going to see how you responded to the survey.

Responding to this survey is voluntary. If you consent to participate in this survey, please complete the survey and send it to OHSU using the attached self-addressed envelope.

Instruction

- This survey should be completed by the patient indicated above.
- You can ask a family member or friend for help with this survey or ask them to complete the survey for you.
- When we say “the nurse,” we mean a registered nurse who handed you this survey.
- Please return the completed survey in the provided pre-paid envelope to



If you have any questions about this survey, please contact [redacted].

I. About your health

The following questions ask about your health. Please circle a number that describes how you feel about your health today.

1	In general, how would you rate your health?	Excellent 5	Very good 4	Good 3	Fair 2	Poor 1
2	How would you rate your physical health?	Excellent 5	Very good 4	Good 3	Fair 2	Poor 1
3	To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?	Completely 5	Mostly 4	Moderately 3	A little 2	Not at all 1
4	How would you rate your mental health including your mood and your ability to think?	Excellent 5	Very good 4	Good 3	Fair 2	Poor 1
5	How would you rate your satisfaction with social activities and relationships?	Excellent 5	Very good 4	Good 3	Fair 2	Poor 1
6	In general, how would you rate your quality of life?	Excellent 5	Very good 4	Good 3	Fair 2	Poor 1

II. Your experiences of care with your nurse

The following questions ask about the care you have received from this nurse today. Please circle a number that describes your experience best.

		No effort was made 0	A little effort was made 1	Some effort was made 2	A lot of effort was made 3	Every effort was made 4
7	How much effort was made to help you understand your health issues?	0	1	2	3	4
8	How much effort was made to listen to the things that matter most to you about your health issues?	0	1	2	3	4
9	How much effort was made to include what matters most to you in choosing what to do next?	0	1	2	3	4

The following questions ask about how you felt the care you have received from this nurse today. Please circle a number that describes your experience best.

		Not at all 0	Slightly 1	Moderately 2	Quite a bit 3	Completely 4
10	I felt heard by this nurse	0	1	2	3	4
11	I felt understood by this nurse	0	1	2	3	4
12	I felt this nurse put my best interests first when making recommendations about my care	0	1	2	3	4
13	I felt this nurse saw me as a person, not just someone with a medical problem	0	1	2	3	4
14	I felt this nurse understood what is important to me in my life	0	1	2	3	4

		Very poor 1	Poor 2	Fair 3	Good 4	Very good 5
15	How well did the plan of care meet your needs?	1	2	3	4	5
16	How helpful was the nurse in meeting your health needs?	1	2	3	4	5
17	How well did the nurse explain things in a way that was easy to understand?	1	2	3	4	5
18	How much did your well-being improve because of your nurse's care?	1	2	3	4	5
19	What was your overall rating of care received from this nurse?	1	2	3	4	5

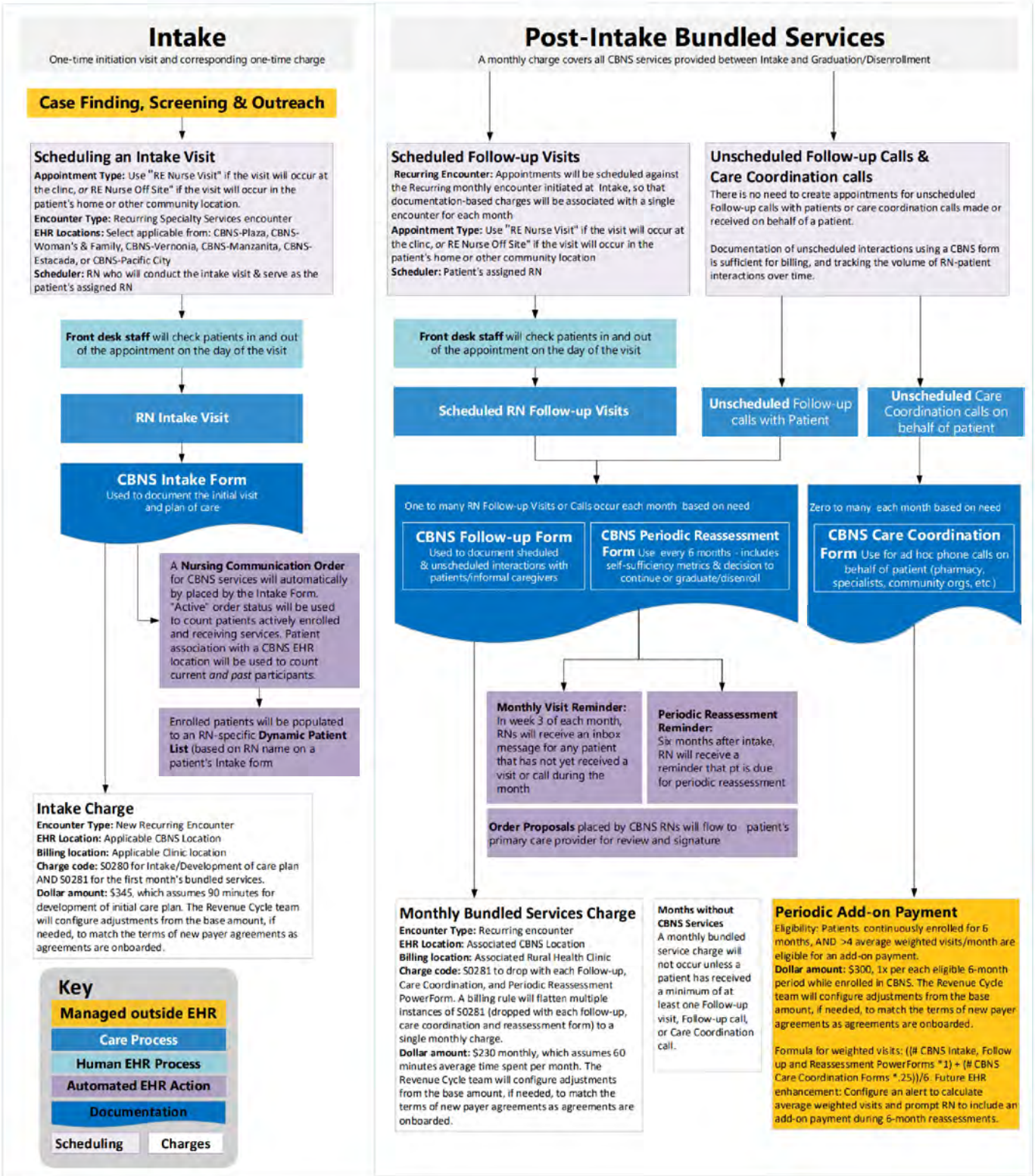
Please show how you would recommend the care you received from this nurse to your family and friends by choosing the numbers from 0 to 4.

		Not at all 0	Slightly 1	Moderately 2	Quite a bit 3	Completely 4
20	Based on your experience with the nurse, how likely are you to recommend this program/service to your friends and family?					

EHR Information Management Workflow

Community Based Nursing Services (CBNS)

Information Management Overview, last updated 2/14/2025



Reconfiguring a clinic Electronic Health Record to support an RN-led Chronic Care Management Program

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AMERICAN NURSES FOUNDATION | Reimagining Nursing

Purpose: To describe the process and lessons learned in enhancing an ambulatory electronic health record (EHR) to support a registered nurse (RN)-led chronic care management program.

Background: Approximately 80% of older adults manage multiple chronic conditions in the home and community settings. Yet, EHR is not designed to support longitudinal chronic care management practice. We embarked upon a project to reconfigure EHR to support RN-led chronic care management program in rural Oregon.

Key Lessons Learned:

- IT build teams need a program to be well-defined and enhancements well-specified before initiating a build.
- Low-fidelity prototyping is a useful technique to pilot and engage RNs in development of final designs.
- Make sure key stakeholders in the organization that influence prioritization decisions are well-informed about the immediate and long-term objectives of the project
- Need to build and coordinate work within and across teams with different focus: e.g., IT team for documentation, orders, rules, billing, Charge Master, scheduling, location/department.
- Design a program workflow that encompasses both EHR and non-EHR components of the RN-led program.

Acknowledgement: This project is supported by the American Nurses Foundation Reimagining Nursing Initiative. We thank nurses, IT teams, and leaders in Adventist Health for their collaboration and contributions.

Information gaps & Enhancement strategies

Gap: Program Enrollment

- Created new EHR Location/Department and Order for RN-led program
- Recurring Appointments & Encounters, Dynamic Worklist to create patient panel

Gap: RN Documentation

- Created structured Intake, Follow-up, Care Coordination & Reassessment notes
- Nursing practice foci: assessment, care plan, care management, care coordination

Gap: Patient Outcomes

- Added measures to evaluate the impact of nursing intervention (Self-Sufficiency)
- Linked to and use existing metrics (HgA1c, health service utilization)

Gap: Reporting

- EHR Location and Order to capture dis/enrollment for productivity report
- Track # and types of Interactions w/ patient to estimate cost of service

Gap: Workflow Alignment

- Inbox reminder if an enrolled patient has not had RN interaction in 3+ weeks
- Inbox reminder if an enrolled patient is due for a 6-month Reassessment

Gap: RN Billing

- RN NPI, add billing codes to Charge Master, bundling service charge
- Negotiate with payer for pricing & customized use of three CPT codes

Conclusions: It is feasible to reconfigure a traditional EHR system to support the needs of clinic-based, nurse-led care management programs. Documentation forms are now in use. Next steps: Gather program and patient outcome data in an automated way, and utilize data to secure reimbursement from multiple payers, and refine the program over time.

Contact: womacda@ohsu.edu or izumis@ohsu.edu

Healthcare Common Procedure Coding System (HCPCS) codes (including CPT codes) potentially related to Registered Nurses' chronic care management practice

Code	Description	Notes
Chronic Care Management (CCM)		
99426	**Principal care management services (PCM)** for a single high-risk disease, with the following required elements: one complex chronic condition expected to last at least 3 months, and that places the patient at significant risk of hospitalization, acute exacerbation/decompensation, functional decline, or death, the condition requires development, monitoring, or revision of disease-specific care plan, the condition requires frequent adjustments in the medication regimen and/or the management of the condition is unusually complex due to comorbidities, ongoing communication and care coordination between relevant practitioners furnishing care; first 30 minutes of **clinical staff time directed by physician or other qualified health care professional**, per calendar month.	
99427	**Principal care management services (PCM)** for a single high-risk disease, with the following required elements: one complex chronic condition expected to last at least 3 months, and that places the patient at significant risk of hospitalization, acute exacerbation/decompensation, functional decline, or death, the condition requires development, monitoring, or revision of disease-specific care plan, the condition requires frequent adjustments in the medication regimen and/or the management of the condition is unusually complex due to comorbidities, ongoing communication and care coordination between relevant practitioners furnishing care; each additional 30 minutes of **clinical staff time directed by a physician or other qualified health care professional**, per calendar month (List separately in addition to code for primary procedure)	
99490	**Chronic care management services (CCM)** with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions that place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, comprehensive care plan established, implemented, revised, or monitored; first 20 minutes of **clinical staff time directed by a physician** or other qualified health care professional, per calendar month.	
99439	**Chronic care management services (CCM)** with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions that place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, comprehensive care plan established, implemented, revised, or monitored; each additional 20 minutes of **clinical staff time directed by a physician or other qualified health care professional**, per calendar month (List separately in addition to code for primary procedure)	

99487	**Complex chronic care management services (CCCM)** with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions that place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, comprehensive care plan established, implemented, revised, or monitored, moderate or high complexity medical decision making; first 60 minutes of **clinical staff time directed by a physician or other qualified health care professional**, per calendar month.	
99489	**Complex chronic care management services (CCCM)** with the following required elements: multiple (two or more) chronic conditions expected to last at least 12 months, or until the death of the patient, chronic conditions that place the patient at significant risk of death, acute exacerbation/decompensation, or functional decline, comprehensive care plan established, implemented, revised, or monitored, moderate or high complexity medical decision making; each additional 30 minutes of **clinical staff time directed by a physician or other qualified health care professional**, per calendar month (List separately in addition to code for primary procedure)	
99484	**Care management services for behavioral health conditions**, at least 20 minutes of **clinical staff time directed by a physician or other qualified health care professional**, per calendar month, with the following required elements: initial assessment or follow-up monitoring, including the use of applicable validated rating scales, behavioral health care planning in relation to behavioral/psychiatric health problems, including revision for patients who are not progressing or whose status changes, facilitating and coordinating treatment such as psychotherapy, pharmacotherapy, counseling and/or psychiatric consultation, and continuity of care with a designated member of the care team.	Limited to Behavioral Health
G0556	**Advanced Primary Care Management Services** (Level 1) for patients with one or fewer chronic conditions. Combining elements of existing care management (PCM, TCM, and CCM) to help manage a patient's care chronic conditions that puts them at risk of hospitalization, physical or cognitive decline, or death**. Clinical staff directed by physician or non-physician practitioner** (NP, PA, CNS) who are responsible for all of patient's primary care services.	New in 2025. Proposed value: 0.17 RVUs (approximately $15 per month).
G0557	**Advanced Primary Care Management Services** (Level 2) for patients with two or more chronic conditions. Combining elements of existing care management (PCM, TCM, and CCM) to help manage a patient's care chronic conditions that puts them at risk of hospitalization, physical or cognitive decline, or death. **Clinical staff directed by physician or non-physician practitioner** (NP, PA, CNS) who are responsible for all of patient's primary care services.	New in 2025. Proposed value: 0.77 RVUs (approximately $50 per month).

G0558	**Advanced Primary Care Management Services** (Level 3) for patients with multiple chronic conditions who also qualify as Medicare beneficiaries. Combining elements of existing care management (PCM, TCM, and CCM) to help manage a patient's care chronic conditions that puts them at risk of hospitalization, physical or cognitive decline, or death. **Clinical staff directed by physician or non-physician practitioner** (NP, PA, CNS) who are responsible for all of patient's primary care services.	New in 2025. Proposed value: 1.67 RVUs (approximately $110 per month).
Education		
98960	**Education and training** for patient self-management by a **qualified, nonphysician health care professional** using a standardized curriculum, face-to-face with the patient (could include caregiver/family) each 30 minutes; individual patient	Could be RNs if they are qualified to educate patient using a standardized curriculum (e.g., diabetes education).
98961	**Education and training** for patient self-management by **a qualified, nonphysician health care professional** using a standardized curriculum, face-to-face with the patient (could include caregiver/family) each 30 minutes; 2-4 patients	Could be RNs if they are qualified to educate patient using a standardized curriculum (e.g., diabetes education).
98962	**Education and training** for patient self-management by **a qualified, nonphysician health care professional** using a standardized curriculum, face-to-face with the patient (could include caregiver/family) each 30 minutes; 5-8 patients	Could be RNs if they are qualified to educate patient using a standardized curriculum (e.g., diabetes education).
S9445	**Patient education,** not otherwise classified, **non-physician provider** (e.g., **nurses**, dietitians, pharmacists, diabetes educators, health coaches), individual, per session	S code is a temporary code used by commercial payers. The specific coverage and billing policies vary between payers.
97550-97552	**Caregiver training**. Initial 30 min (or additional minutes) for face-to-face caregiver training without the patient present to teach care givers strategies and techniques to facilitate a patient's functional performance **delivered by PT, OT and SLPs** (and can bill).	New in 2024 Not by RNs.
G0539 - G0543	**Caregiver training** in behavior management/modification, care strategies to reduce complications for caregivers of patients with a mental or physical health diagnosis, administered by physician or other qualified healthcare professional **(NP, PA, PT, OT, and SLT)**	New in 2025 Not by RNs.
Medical Home		
S0280	**Medical home program, comprehensive care coordination and planning, initial plan**. It is used for initial planning, assessment, and annual reassessments in a medical home or health home program, particularly for conditions like HIV/AIDS or high-risk pregnancies. The specific coverage and billing policies can vary significantly between payers, so it's crucial to check with the specific insurance provider for reimbursement details.	S code is a temporary code used by commercial payers. The specific coverage and billing policies vary between payers.

S0281	**Medical home program, comprehensive care coordination and planning**, maintenance of plan	S code is a temporary code used by commercial payers. The specific coverage and billing policies vary between payers.
Others		
99211	**Office or other outpatient visit** for the evaluation and management of an established patient that may not require the presence of a physician. It represents a minimal-level service, often performed by ancillary staff like a nurse or medical assistant, where the presenting problems are minimal and usually involves about 5 minutes of the provider's time. This code can be used for services like medication injections, follow-up visits for stable chronic conditions, or dressing changes where the staff performs a clinical evaluation and provides management, such as reviewing instructions or monitoring vitals.	Limited to the service in office, and needs to be "incident to" an office visit with providers.
Healthcare Common Procedure Coding System (HCPCS) is a standardized coding system to process healthcare claims. HCPCS Level I is Current Procedural Terminology (CPT) codes. HCPCS Level II (such as S or G codes) is used to identify services not included in CPT codes. They are usually temporary codes used by commercial payers. The specific coverage and billing policies vary between payers.		