

Cambridge Health Alliance Complex Care Management Program Program Evaluation Report

Final report for DSTI 2.0

Prepared by The Institute for Community Health

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Executive Summary

The goals of Cambridge Health Alliance's (CHA) Complex Care Management (CCM) program are to improve patients' health outcomes and their experience of care, improve the workforce experience of care and eliminate avoidable medical expense to increase healthcare value and achieve the Quadruple Aim. The CCM program screens and enrolls patients at CHA with the goal of identifying a high-risk population. Nurse managers, social workers and community health workers then support patients and primary care staff to help complex patients get the right care in the right place at the right time. This report draws upon internal CCM program records, electronic medical record data, interviews and surveys with patients, and primary care workforce survey data to examine the extent to which the CCM program has achieved anticipated outcomes across the quadruple aim.

Though relatively early in its evolution, we find that the CCM program at CHA has demonstrated some of the anticipated outcomes across the quadruple aim. Patient satisfaction with care has increased, patients report improved coordination of care and there is some evidence of increased patient engagement. The proportion of patients experiencing depression decreased. Although enrollment in CCM does not appear to affect primary care utilization for CCM patients overall, primary care utilization has increased for the subset of patients with historically low primary care utilization (≤ 2 visits) in the year prior to enrollment. Primary care staff report feeling supported in caring for their complex patients and that support for complex patients frees them up to better care for other patients, suggesting the benefits of CCM may extend beyond patients enrolled in CCM.

We also find evidence that these short to medium term outcomes may be leading to reductions in high-cost utilization within CHA. The average number of emergency department visits decreased among patients enrolled in CCM from 3.0 during the year prior to enrollment to 1.9 for the year after enrollment. Over the same time frame, the average number of inpatient stays decreased 0.9 to 0.7, respectively. Decreases in ED and in-patient admissions would be associated with reductions of \$2.2 million for the 1090 patients we examined if CHA received the average reimbursement for these visits. However, because these data do not reflect events outside of CHA and lack a control group, more rigorous studies will lend confidence to the assessment of the impact of CCM on costs.

As the CCM program looks toward the future, it faces several next steps. The CCM program has continuously worked to refine its enrollment process to better define and capture appropriate patients. While this evaluation finds evidence that CCM patients are more complex than CHA patients, a number of enrollees have limited high-cost utilization at CHA prior to enrollment. These lower utilizing patients may reflect CCM's decision to enroll two groups of patients (that are not mutually exclusive): socially complex patients and patients with 'rising risk' of utilization - that is, individuals who do not have but are at high risk of developing high-cost utilization patterns. Defining and distinguishing these 'rising risk' patients from individuals who have minimal need for CCM poses an ongoing challenge and performance improvement activity for CCM. Similarly, as CHA focuses on both its mission of serving the underserved and its goal of being a sustainable accountable care organization, identifying alternative systems to better address patients with high social complexity who may not be at high risk of avoidable high-cost utilization may be a useful strategy.

As the CCM program matures, it will benefit from continued monitoring and evaluation that focuses on demonstrating a return on investment. As CHA gains access to a more robust set of claims data, CCM will have the opportunity to examine its impact on health care costs, and on fulfilling its mission of contributing to the success and sustainability of CHA as an accountable care organization.

Background and Purpose

The goals of Cambridge Health Alliance's (CHA) Complex Care Management (CCM) program are to improve patients' health outcomes and their experience of care, improve the workforce experience of care and eliminate avoidable medical expense (or increase healthcare value) thus working towards the Quadruple Aim.¹ The program focuses on clinically and socially complex primary care patients. High-risk patients often face challenges in healthcare settings where care coordination and clinical integration is either limited or non-existent resulting in fragmented care. Effective care management ensures that high-risk patients get the right care, in the right place, at the right time. Care management concurrently engages community-based wraparound services to better support patients in achieving better health. As part of CHA's advancing adoption of alternative payment models and actively assuming and managing financial and medical risk, CCM is an essential component of CHA's transformation into an accountable care organization (ACO).

CHA is a safety net health system located outside of Boston. The network includes 12 medium-sized community health centers, 3 school-based clinics, 2 hospitals, 3 Emergency Departments (EDs), and community specialty clinics. As of 2017, over 114,000 patients receive primary care at CHA. Over 80% of CHA's revenues are from public payers (mostly Medicaid) and there is a high prevalence of patients with behavioral health conditions. In support of its safety net mission to care for the underserved, CHA has permitted complex care managers to work toward improving the care of socially complex – but not necessarily expensive – patients.

The CCM program has made significant strides in developing a robust program, and it continues to strategically evolve. Since its inception, the program has constantly adapted and refined its structure to meet the needs of the organization. The CCM leadership is dedicated to continuously learning from their experience. A previous evaluation completed in 2015 examined the utilization of a cohort of 687 patient enrolled between 2012 and 2014. It demonstrated a statistically significant reduction in ED visits from 12 months pre-CCM to 12 months post-CCM enrollment (from a mean of 2.5 visits per year pre to a mean of 1.8 visits per year post, $p < 0.0001$). For this two-year time period, CHA estimated that it achieved a cost avoided of approximately \$809,645 for a subset of 77 patients for which CHA had sufficient pre and post care management intervention claims data (12 month pre and 12 month post data for 42 patients and 6 month pre and 6 month post data for 34 patients).

Since the prior evaluation assessed outcomes for patients enrolled before 2014, the CCM program has adapted the program in several key ways that are expected to change both processes and outcomes. The key adaptations include:

- Continuous improvement regarding patient selection -CCM leadership has continually refined information gleaned from high-risk payer lists that employ predictive analytic tools driven by claims data in order to identify the highest risk patients.
- Implementation of the Patient Activation Measure (PAM) – Studies demonstrate that more activated patients report better health outcomes and greater satisfaction with their care. The CCM team is now utilizing the PAM tool to assess for and incorporate patient engagement levels into management.
- Addition of Medical Director of Care Integration –CHA appointed a part time medical director to oversee and provide advice to care managers that support evidence based

¹ Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Annals of Family Medicine*, Nov-Dec 2014, 12(6):573-6

practice in medical management of chronic conditions. The medical director also supports the education of CHA's medical staff to optimally employ the CCM team.

- Development of Performance Dashboards – With the assistance of a dedicated data analyst, CCM now compiles process and outcome data that helps managers develop the infrastructure necessary for enhanced program development. This data is shared with complex care managers, medical directors, and other healthcare leaders so that CHA can form a shared understanding about how the program is performing.
- Development of CHA's Community Collaborative – In 2016, CHA leveraged existing relationships with local visiting nurse associations and community-based Aging Service Access Points to form CHA's Community Collaborative. The Collaborative meets quarterly and has created a work group that meets frequently to discuss care integration strategies that include but are not limited to developing referral protocols, documentation standards, and other approaches for care continuity of shared patients.
- Palliative Care Assessment, Screening and Referral – Consistent with the Community Collaborative spirit, in 2015 CHA formed a partnership with a palliative and hospice care provider. CCM staff now routinely identify and refer patients who may benefit from palliative consultation and who may, at some point in their treatment course, more easily transition to hospice care, if appropriate.
- Addition of Emergency Department CCM staff – In 2016, CHA recognized that care managers in the ED would create opportunities to better address the needs of patients with high ED utilization. The ED care manager enables the development of supportive discharge plans for patients who might otherwise be admitted to an inpatient service due to a lack of wraparound supports.
- Integration of Hospital-to-Home Care Transition Teams– in 2017, the CCM program expanded to include Community Health Workers (CHWs) adept at facilitating transitions from acute care settings to home. This system improves patient care by enhancing connection to community-based resources for patients with complex psychosocial needs and enables higher acuity patients to more easily access complex care management.

Given these changes, CCM leadership partnered with the Institute for Community Health (ICH), a nonprofit evaluation and consulting organization, to examine the extent to which the revised program achieved its anticipated outcomes across the quadruple aim. The full impact of these programmatic changes -several of which occurred after the evaluation timeframe in this report - may not be reflected in this report. Nonetheless, the report provides insight into progress made toward anticipated outcomes.

Program Description

The CCM program consists of 7 complex care teams comprised of a nurse and a social work care manager and a CHW. CCM patients generally enter the program through primary care staff referrals or the High-Risk Screening process. To begin the High-Risk Screening process, CHA pulls claims-based data from Optum, a predictive analytics tool. The patient list is then narrowed down to those patients who meet any of the following criteria: ≥ 6 +ED visits in the prior year; ≥ 2 inpatient stays in the past year; $\geq \$25,000$ in medical costs in past year (excluding pharmacy costs), $\geq \$35,000$ in predicted future medical cost), or $\geq 50\%$ predicted risk of inpatient admission in the coming 12 months. Based on this data, patients are flagged for screening with physician led primary care teams at each clinic. Providers then make recommendations about which patients to formally refer to CCM. In this way, CHA applies a population health strategy in annually screening the 1-2% of the primary care panel who are predicted to be high-risk. Subsequently, care managers outreach to

patients to engage and enroll them in the program. An alternative entry point is from primary care staff who can also make patient referrals directly for those patients they believe may benefit from the CCM intervention. A significant majority of CCM patients enroll in CCM via this direct staff referral mechanism. Since these patients are not previously identified as “high-risk” based on cost, utilization and predictive analytics, direct referrals are formally triaged for eligibility using a home-grown tool that is embedded in the electronic medical record (EMR).

Upon patient consent to enroll in CCM, patient needs are assessed using a modified Humboldt assessment and stratification tool.² The results of the assessment tool inform the care plan, a key part of the CCM process. Having adopted the principles of the Johns Hopkins Guided Care model,³ the care plans are developed using a collaborative, patient-centered approach that involves the primary care team, patient and family. Care plans are updated with any significant change and at least every 6 months. They are given to patients and are accessible to all members of the patient’s care team via the EMR to enhance care coordination.

Care managers support patients in a variety of ways, but their main activities include patient navigation, goal setting, motivational interviewing, disease management, care coordination, and essential support during care transitions. Should a patient require hospitalization or an ED visit, care managers reach out to patients within seven days post-discharge to help ensure a smooth transition to the outpatient setting and provide supports aiming to avoid future avoidable ED visits or admissions. Since care managers are embedded in specific primary care sites, they work closely with the providers during the recruitment process and throughout patients’ tenure in the program.

A key element of the program is the flexibility and the approach of care managers. In order to engage a hard to reach patient population, care managers employ persistent outreach efforts. They can meet patients in their homes and communities, as well as at clinical sites, at a variety of times. This helps to engage patients who have challenges leaving their homes or keeping appointments.

Evaluation Methods

Logic model development and evaluation planning

CCM leadership partnered with ICH to develop a plan for conducting a comprehensive evaluation of CCM implementation at CHA. As part of this process, a core group facilitated by representatives from ICH and select members of CCM leadership created a program logic model. They then created a process and outcomes evaluation plan for measuring progress on key activities as well as patient-level and staff-level outcomes.

Logic models create a visual roadmap of the sequence of outcomes expected to logically result from an intervention or initiative if implemented as intended. The logic model developed through the CCM evaluation planning process visually documents ICH’s and CCM leadership’s shared understanding of key CCM activities and the anticipated sequence of outcomes expected to be achieved through those activities.

The CCM logic model (Appendix A) highlights the initiative’s key assumptions, activity categories, and expected outcomes. (Note that the logic model is numbered for ease of referencing each outcome, and the numbers do not necessarily correspond to the order in which outcomes are

² Stanford Domain Assessment. http://orpca.org/files/Stanford_Domain_Assessment.pdf

³ Chad D., Giddens, J., Frey, K. et al. 2009. Guided Care: A New Nurse-Physician Partnership in Chronic Care. Springer, New York

expected to be achieved.) Discussions with CCM leadership around the desired long-term goals of the program centered primarily around the quadruple aim⁴ of improved patient/population health, improved patient experience, improved workforce experience of care, and reduced organizational-level costs. This set of long-term goals provided a framework for conceptualizing the shorter- and more intermediate-level outcomes depicted in the model, which were ultimately grouped/color-coded into two main streams: anticipated patient-level outcomes (green) and anticipated staff-level outcomes (purple).

Anticipated program outcomes

Patient outcomes

As a result of care management intervention, it is anticipated that patients enrolled in CCM will receive the support necessary to increase their commitment to be engaged in their own health care and understanding of their own health care needs, strengthening self-efficacy. In addition, enrolled patients are expected to more appropriately engage with primary care. Once these short term outcomes are achieved, the anticipated intermediate term outcomes will follow. Patients are then expected to engage in developing their own care plan, experience themselves as part of their care team, and more appropriately utilize primary and specialty ambulatory services. Following from increased engagement and use of ambulatory care, patients are expected to experience the long term outcomes of increased satisfaction with care, improved health care outcomes (e.g. depression) and reduction in high-cost utilization such as ED and inpatient stays.

Staff outcomes

As the CCM program provides care management for the most complex patients on primary care staff's panels, the CCM program is anticipated to improve primary care staff experience by providing support for some of their complex patients. This will ideally lead primary care clinic staff to better care for their entire patient population.

Data collection and analysis

Process evaluation

Over the implementation period, program leadership kept record of key activities through program records (e.g., enrollment, discharge, caseload, care plan completion reports, patient activation measures). In addition, program staff entered process data into the EMR, including triage and assessment scores. Electronic medical record data provided information to describe the patient population enrolled. The triage, assessment and electronic medical record data are described in detail below.

Triage Tool: The Triage Tool is a tool developed by CCM leadership (Appendix B). It is applied by a licensed nurse or social worker to separate patients with low to moderate risk who can be effectively managed by primary care from the high-risk patients that are appropriate for CCM. The tool achieves this purpose by evaluating patients' clinical history, service utilization, income, disability and literacy status as well as psychosocial challenges more broadly. It aims to understand the following: 1. Does the patient have high or rising-risk conditions, 2. Is the cumulative stress burden significant enough to warrant professional assistance? and 3. Are the health conditions likely to be impacted by care management interventions?

⁴Bodenheimer T, Sinsky C. From triple to quadruple aim: care of the patient requires care of the provider. *Annals of Family Medicine*, Nov-Dec 2014, 12(6):573-6.

Modified Humboldt Assessment: Following enrollment, staff complete a modified assessment and stratification tool⁵ with their care manager (Appendix C). The modified Humboldt assessment provides an indication of the level of care management needs across four domains.: 1) Social support (housing status, engagement in employment or leisure activities, and level and quality of social support); 2) Medical neighborhood (access to care, experience with care, and coordination of care); 3) Self-management and mental health (mental health status and symptoms, substance use, and adherence/resistance to treatment); 4) Medical status (chronicity, symptom severity, utilization patterns).

Patient Activation Measure: In March of 2015, CCM began administering the Patient Activation Measure (PAM-10)⁶ as a way to assess patients' activation levels (Appendix D). The PAM is a 10 question, validated tool that categorizes patients into four levels of activation.

EMR patient-level data set: ICH and CCM leadership worked with CHA's information technology department to create a comprehensive patient-level data set. This data set drew from the Epic electronic medical record and CCM data management files and reports to create a cohort of 1190 patients enrolled in CCM enrolled for at least 60 days between July 1, 2014 and January 31, 2016. It contains demographic and clinical data including emergency department and inpatient visits that occurred at CHA; it contains no information on events occurring outside of CHA. Clinical data includes diagnoses identified on the problem list, medications, CCM tools (Triage Tool, modified Humboldt Assessment Tool) and validated screeners for depression (Patient Health Questionnaire-9), overall health status (Short Form 1), risky alcohol consumption (National Institute on Alcohol Abuse and Alcoholism – 1), and illicit drug use (National Institute for Drug Abuse -1) (Appendix E). If patients were enrolled more than once during this time period, we used their first enrollment. Patients were excluded from the analysis for the reasons below, resulting in 1090 patients in the final analytic cohort.

- 45 patients died during the first 12 months of the follow-up period.
- 54 patients had fewer than 2 contacts with CCM during the first 6 months of enrollment.
- 1 patient was excluded due to an excessive amount of Emergency Department utilization.

In order to compare CCM patients to other CHA patients, ICH obtained demographic and clinical data on the CHA primary care population. Demographic data was drawn from CHA dashboards and clinical data was drawn from a dataset that included adult patients who had at least one primary care visit between March 1, 2014 and Feb 28, 2015.

Outcome evaluation

The outcome evaluation drew from a number of data sources including the EMR patient-level data set, surveys and questionnaires, and qualitative interviews with patients. These data sources and associated analysis methods are described in detail below.

EMR patient-level data set: The EMR dataset is described above. The outcomes evaluation focuses on making comparisons between two time periods, baseline and follow-up. The baseline period was defined as the 12 months prior to enrollment and the follow-up period was defined as the enrollment date through January 31, 2017. Since patients could have between 12 months and 19 months of available follow-up data depending on their enrollment date, we focused on the first 12

⁵ Stanford Domain Assessment. http://orpc.org/files/Stanford_Domain_Assessment.pdf

⁶ Hibbard JH *et al.* Health Serv Res. 2004 Aug; 39(4): 1005–1026.

months of the follow-up period for all utilization outcomes.

Patient Activation Measure: The PAM is described above. It is administered verbally by care managers shortly after enrollment and is expected to be repeated every 6 months.

Qualitative Interviews: As part of an ongoing qualitative examination, ICH conducted in-depth interviews with randomly selected patients (N=15) to understand their perspective on the impact of the CCM program on their health. Data collection is ongoing and full systematic formal analysis is pending. Patients were invited to participate if they enrolled in CCM after April 2015, were involved in CCM for at least 60 days, spoke English as their language of care, and had been discharged prior to November 2016. Patients were offered a \$50 gift card. Interviews were conducted in-person or on the phone and were transcribed. Though formal analysis is pending final data collection, which is currently ongoing, we include preliminary findings and representative quotes.

Patient Satisfaction Survey: Each year, the CCM program implements a patient survey with active patients who were enrolled in CCM at least 60 days (Appendix F). The survey was developed by CCM to examine patients' satisfaction with the program and care at CHA. Between December 2015 and January 2016, 580 CCM patients were invited to complete the survey via mailing and by CCM program staff during visits; 75 responded for a response rate of 13%. The responses are structured on a four point Likert scale from strongly agree to strongly disagree.

Primary Care Workforce Survey: The Primary Care Workforce Survey is an online, confidential survey administered by ICH on a yearly basis across all 12 primary care sites of the CHA. CCM questions were added to the survey in Year 3 of its administration yielding data from Year 3 (January - March 2015), Year 4 (January - February 2016) and Year 5 (January 2017).

Primary Care Staff members who interact with complex patients (case workers, clinical RNs, community health workers, mental health care partners, primary care providers and specialists, and residents) are asked to answer questions regarding complex patients. The survey achieves response rates of 70-80% annually. CCM questions were answered by 192 individuals in year 3, 217 in year 4, and 221 in year 5. The survey items use a Likert response scale and responses were dichotomized into Strongly Agree/Agree vs. Disagree/Strongly Disagree during analysis.

Results: Process Evaluation

CCM Caseload and Enrollment

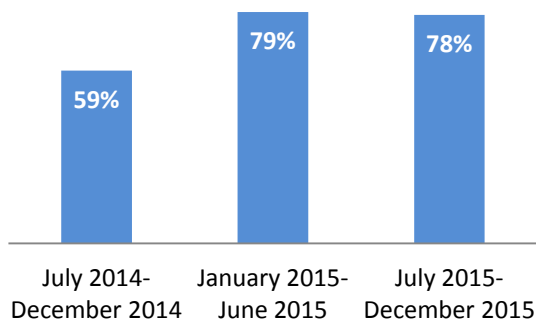
The goal for the CCM caseload was 650 patients until June 2015 and increased to 700 patients in July 2016. Caseload is influenced by new enrollments and discharges and can fluctuate due to, the availability of high risk screening lists, staff transitions and new initiatives such as enrolling patients who frequent the ED. Caseloads ranged from 510 to 720 during the period between January 2015 and June 2016; the monthly mean was 617. Between July 1, 2014 and January 31, 2016, there were 1,487 unique patient enrollments into CCM. The number of enrollments per month varied a great deal (range: 40-169) and accounted for between 8% and 26% of the caseload each month.

Triage and Assessment

The triage tool assesses if the patient is a good fit for the CCM prior to enrollment. 72% (782) of CCM patients had a completed triage tool recorded in EPIC associated with their enrollment. There was improvement in the use of the triage tool over the period of interest. Fifty nine percent of enrollees had a documented tool in 2014, increasing to almost 80% in 2015 (Figure 1).

Following enrollment, CCM patients complete the modified Humboldt assessment, which assesses a patient's care management needs. Forty-seven percent (508) of CCM participants were screened soon after their enrollment date.

Figure 1. Percent of CCM patients with completed triage tools



CCM Length of Enrollment and Encounters

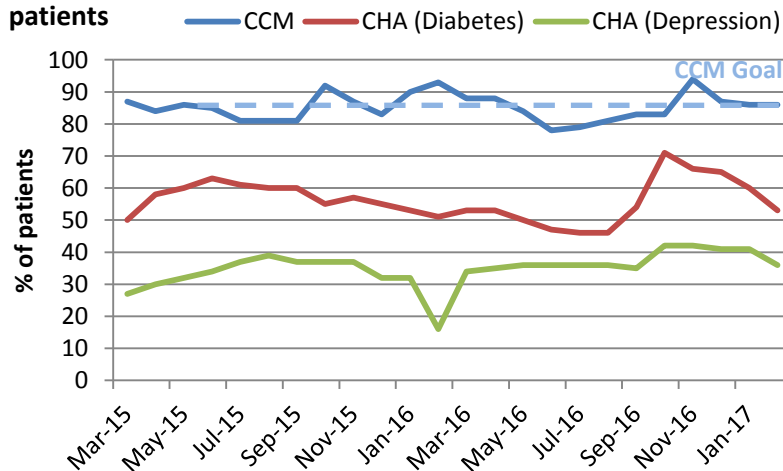
On average, patients were enrolled in CCM for 10 months (median); the length of enrollment ranged from 2 to >24 months. CCM had over 18,000 contacts in the year after enrollment for this cohort of 1090. There was a wide range of variability in the number of contacts per patient – for example, patients enrolled at least 6 months had 11 contacts during their first six months of

enrollment (median) with a range of 2 to 85. The number of contacts is highest in the first month of enrollment with a median of 4 (range 0- 21). After the first month of enrollment, the median decreases to 2 contacts per month and remains at 2 through month 12 of enrollment. CCM tracks four different types of patient encounters: office visits, home/community visits, phone calls and brief encounters, which are collateral contacts made on behalf of a patient. Most patient encounters made by care managers are phone calls (75%), followed by office visits (10%), and brief notes (10%) and home/community visits (5%).

Care plan completion

Care plans are a cornerstone of the CCM process and are developed collaboratively with patient. CCM developed a goal for care plans to be developed within the first month of enrollment and then updated at least every 6 months for 85% of patients. Between July 2015 and June 2016, monthly care plan completion rates ranged from 81%-93% for CCM patients (Figure 2). CHA aim s to complete and update care plans every 6 months for a high-risk

Figure 2. Care plan completion rates for CCM patients and CHA patients



population (e.g., patients with uncontrolled diabetes and severe depression). Between May 2015 and Jan 2017, monthly care plan completion rates for CHA uncontrolled diabetics and severely depressed patients ranged from 46-71% and 16-42%, respectively - lower than among CCM patients.

Patient Characteristics

A key activity of CCM is identifying and enrolling high-risk patients. A description of CCM patient characteristics sheds light on this process. Comparison to the CHA outpatient population furthers our understanding of the complexity of CCM patients as compared to the CHA population.

Demographics:

Age and Gender: CCM patients were nearly evenly split between genders with slightly more females than the CHA population (47% vs. 43%). The average age of the cohort was 51, lower than other health systems. 80% of patients were younger than 65 years of age. 20% of patients were 65 or older-double the proportion for the CHA outpatient population.

Race/Ethnicity: About half of CCM patients (54%) identified as White while the remainder identified as Black (20%), Hispanic (15%), Asian (3%) or Other (8%). In comparison with the overall CHA outpatient population, CCM enrolled a higher percentage of patients who identified as White, Black or of another race, and a lower percentage of patients who identified as Asian or Hispanic.

Language: The predominant language of care was English (71%), followed by Spanish (9%), Haitian Creole (8%), and Portuguese (8%). In comparison with the overall CHA outpatient population, CCM enrolled a higher percentage of patients whose language of care was Haitian Creole, and a lower percentage of patients who spoke English. Although CHA offers a robust team of medical interpreters, the slightly high volume of Haitian Creole speakers may be a result of having a Haitian Creole speaking member on the CCM team. Other team members are fluent in Portuguese and Spanish.

ACO status: It should be noted here that CHA makes complex care management services available to all patients regardless of ACO status. Thus, 58% of patients were enrolled in risk-based insurance plans (Medicare, commercial HMOs, and two large Medicaid insurers), in comparison with an estimated 45% in the overall outpatient CHA population.

Previous Enrollments: 92% were first time enrollees in the program. 8% (n=89) had previously been enrolled in CCM one time and <1% (n=3) had two prior enrollments. Multiple enrollments are

Demographic Characteristics of CCM patients compared to CHA patients		
	CCM (n=1090) %	CHA %
Gender		
Male	53	57
Female	47	43
Age Groups		
18 or younger	6	22
19 to 64 years old	74	68
65 or older	20	10
Race/ethnicity		
White	54	41
Black	20	16
Hispanic	15	19
Asian	3	8
Other	8	15
Language of Care		
English	71	75
Haitian Creole	9	3
Spanish	9	9
Portuguese	8	9
Other	4	4
ACO Status		
Yes-risk-based coverage	58	45
No-not risk-based	42	55
Previous Enrollment in CCM		
One or more	8	n/a
None	92	

anticipated since many of the CCM patients have disease burdens and unstable life circumstances that put them at risk for poorly managed health conditions.

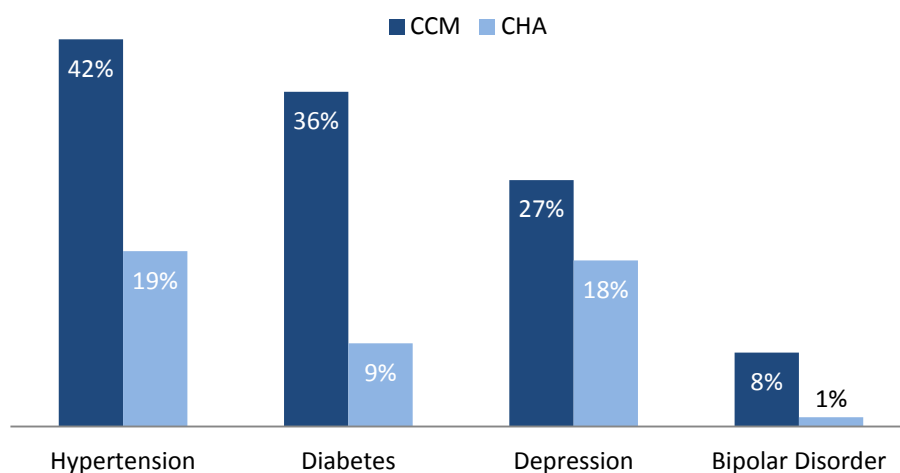
Clinical Characteristics:

Diagnoses: CCM patients had a high burden of chronic conditions. The most common documented

Diagnosis Groupers of CCM patients (n=1090)		
	%	n
Hypertension	42%	457
Diabetes	36%	395
Depression	27%	291
Alcohol Dependence	19%	203
Pain disorder	16%	178
Asthma	15%	166
Coronary Artery Disease	14%	149
Chronic Obstructive Pulmonary Disease	11%	118
Congestive Heart Failure	11%	120
Psychosis	8%	92
Bipolar Disorder	8%	84
Liver Disease	7%	72
Dementia	3%	30
End Stage Kidney Disease	1%	14
Metastatic Cancer	1%	11

diagnoses included hypertension, diabetes, depression and alcohol dependence. Sixty four percent of CCM patients were diagnosed with two or more of the 15 most common conditions included in the table below, 24% had just one of the listed diagnoses and 11% had none. The actual disease prevalence is likely to be higher since documentation of diagnosis is often delayed and for ease of presentation, we only present the top 15 diagnostic groups. Participants in CCM have a higher burden of illness than the overall CHA outpatient population. For example, 36% of CCM participants have a diagnosis of diabetes; which is higher than the 9% in the general CHA population. Similarly, rates of hypertension, depression, and bipolar disorder are significantly higher among CCM patients (see Figure 3).

Figure 3. Proportion of CCM and CHA patients with diagnoses



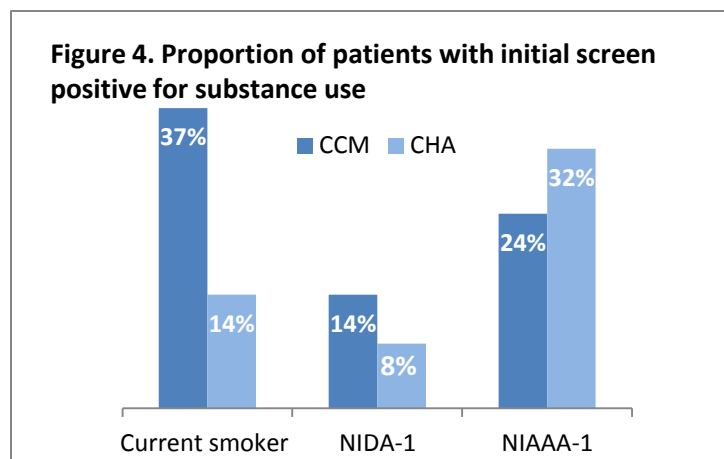
Self rated overall health: At the time of this cohort, CHA was not yet routinely screening all patients for self rated overall health (CHA began screening routinely in 2016). Thus, only 104 patients in our cohort were asked to rate their health. Of these, 73% rated their health as 'Fair' or 'Poor'. In comparison, of the two thirds of CHA adult primary care patients who were screened in 2016, 21% rated their health as 'Fair' or 'Poor'.

Medications: As expected, medication use was common among this sample. CCM patients most

Medication Groupers of CCM patients (n=1090)		
	%	n
Anti-hypertensive	58%	629
Anti-hyperlipidemic	39%	430
Antidepressant	38%	413
ACE inhibitors	26%	288
Narcotics	25%	271
Antipsychotic	20%	217
Insulin	19%	212
Asthma	18%	196
Anticoagulants	8%	85
Corticosteroids	8%	84

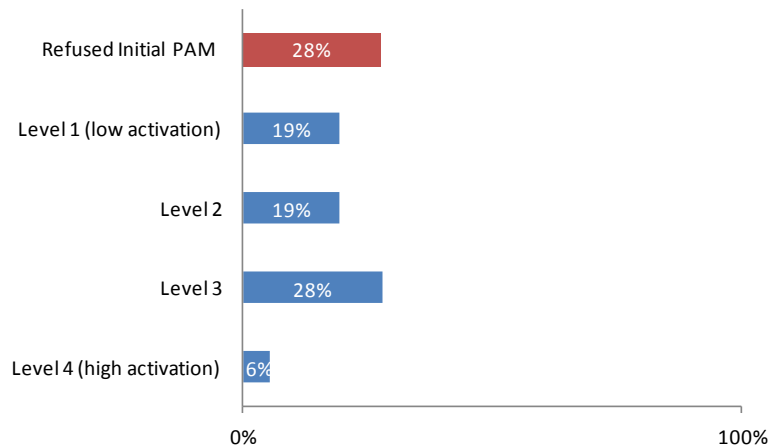
commonly were prescribed anti-hypertensive medications (58%) followed by anti-hyperlipidemic medications (39%). A quarter of all CCM patients were prescribed narcotics at least once (13% were prescribed narcotics for at least 90 days), and a fifth of CCM patients were taking anti-psychotic medication. Most CCM patients, 69%, were prescribed two or more of these medication groups with a range of 0 to 8.

Substance Use: CCM patients were more likely to report smoking and using an illegal drug or prescription drug use for non-medical purposes than other CHA patients (Figure 4). Thirty seven percent of CCM participants were current smokers, whereas 14% of CHA adult primary care patients reported current smoking. Among the 179 CCM patients screened with the NIDA-1, 14% reported illicit or prescription drug use for non medical purposes in the last year while only 8% of CHA adult primary care patients reported such use. Of the 70 CCM patient screened for risk alcohol consumption with the NIAAA-1, fewer reported risky alcohol consumption (24%) than among CHA adult primary care patients (32%).



Patient activation: The PAM categorizes patients into four levels of activation, with Level 1 indicating low activation and Level 4 indicating high activation. Among the 436 patients who were offered a PAM after enrollment, 28% refused to complete the tool (Figure 5). Nineteen percent were categorized as having low activation and only 6% were in the highest level of activation. CCM leadership understands the refusal as an indicator of willingness to engage with the health system.

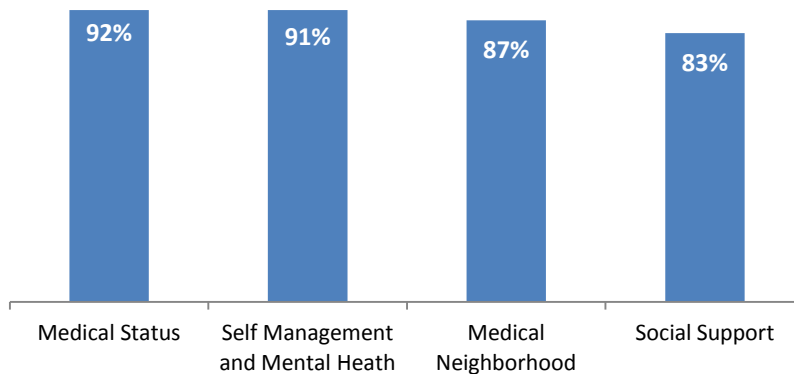
Figure 5: Initial PAM Completion and Activation Levels (n=439)



Care management needs: The Triage tool assesses appropriateness for CCM. A score of 15 or above indicates that the patient is appropriate for the CCM program though there are circumstances when patients who score lower than 15 are enrolled in CCM. 79% of the CCM screened patients scored 15 or higher. The average score was 20 and the range was 1 to 48.

The modified Humboldt Assessment is used by the team to identify which areas of care

Figure 6. Types of care management needs among CCM patients



management needs may be required by care managers. A score of two or higher on any of the four domains indicates an area for possible intervention by the care manager. More than 80% of patients scored higher than two on each of the four domains with medical status and self-management and mental health being the areas of highest need (Figure 6).

Utilization: CCM leadership and ICH defined a high-cost utilization pattern as any inpatient stay and/or at least two ED visits during a 12-month period. In the year prior to enrollment 57% of patients met criteria for high-cost utilization patterns. Sixty nine percent of patients had either an ED or inpatient stay in the year prior to enrollment. CCM leadership and ICH defined low utilization of primary care as ≤ 2 primary care visits in the year prior to enrollment. Forty-three percent of patients met this criteria for low primary care utilization and 28% had no primary care visits in the year prior to enrollment. This data reflects visits occurring at CHA only and does not account for visits outside of CHA.

Results: Outcome Evaluation

Patient outcomes

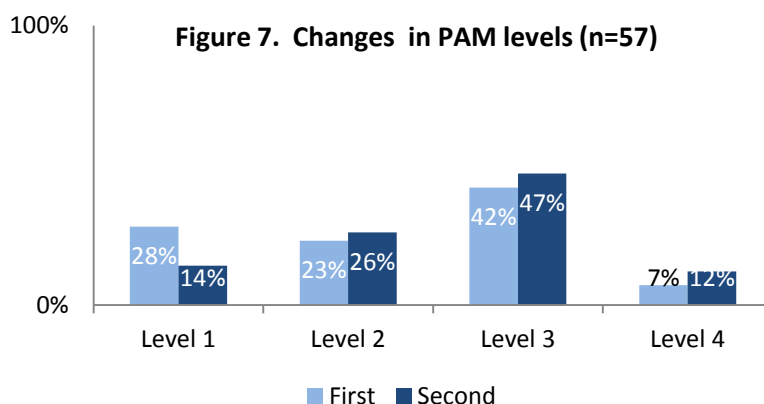
Patient outcomes were assessed by analyzing EMR data, patient satisfaction survey data and through qualitative interviews. Outcomes include measures of patient engagement, patient experience of care, health status and utilization.

Patient Outcome (numbered according to logic model)	Data source
1. Complex patients: • Increase their commitment to be engaged in their own care • Increase their understanding of their own health care needs	EMR patient-level data set CCM program files
2. A greater number of complex patients are more appropriately engaged with primary care	CCM program files
3. Complex patients: • are engaged in developing their care plan and working towards goals • experience themselves as part of their care team and active in their care	CCM program files Patient Satisfaction Survey
4. Complex patients make more appropriate use of ambulatory, specialty, and preventative services	EMR patient-level data set
5. Complex patients • are more engaged in and satisfied with their care • health outcomes improve (e.g. A1C improves, depression controlled)	Patient Satisfaction Survey Qualitative Interviews EMR patient-level data set
6. Health care costs are appropriately aligned for complex patients	EMR patient-level data set

Patient engagement: We assess patient engagement in care by examining 1. PAM scores and PAM completion rates, and 2. Patient satisfaction survey responses related to engagement. In addition, we examine discharge follow up rates as a measure of engagement with primary care.

PAM completion rates and scores: Of the 40% (436) of the CCM patients who were offered the PAM at or after enrollment, 72% (316) completed it and 28% refused or failed to answer the all the questions. 75 patients were offered a second PAM. Of these, 81% (61) completed the PAM.

The PAM categorizes patients into four levels of activation, with Level 1 indicating low activation



and Level 4 indicating high activation. Among 57 patients who had a PAM in both the baseline and the follow-up period, PAM scores shifted toward higher activation. The proportion of patients in the lowest activation category (Level 1) fell by 50% to merely 14% and the proportion of patients in the higher activation categories increased (Figure 7).

Patient Satisfaction Survey: Patients who responded to this survey were enrolled in care management for at least 60 days. In general, they reported that they were engaged in their care. Of the 75 patients who responded,

- 87% strongly agreed or agreed that they understood their health problems;
- 90% strongly agreed or agreed that they knew what each of their medications was for;
- 90% strongly agreed or agreed that they could do the activities that their doctor or care manager told them to do at home.

Engagement with Primary Care: After discharge from the ED, patients are encouraged to call or visit their primary care office within 7 days – follow up in this time frame is defined as appropriate discharge follow up. CCM aims for an 80% follow up rate within 7 days of discharge as an indicator of good engagement with primary care. Since CCM started tracking this measure in January of 2016, monthly follow up rates for CCM patients have ranged from 45-69%, higher than among non-CCM patients whose monthly follow-up rates have ranged 34-42%.

Patient Experience of Care

We examined complementary sources of data to understand CCM patients' experience of care, drawing from the Patient Satisfaction Survey and in-depth qualitative interviews with 7 patients. Survey responses demonstrated improved experience of care as a result of the CCM program. Of the 72 patients who responded to the survey,

- 100% would recommend the program to friends and family
- 96% strongly agreed or agreed that they were more satisfied with their health care because of their care manager.
- 97% strongly agreed or agreed that they felt like a full member of their health care team.
- 98% strongly agreed or agreed that the staff at their doctor's office work together to care for them.

"Before, I used to see different doctors, and I was getting different opinions. . Now, they all work (as) one"

"She always called me to encourage me to do the best thing and she's the one who encouraged me to go get treatment at 20 Central Street. . . she told me "You need that kind of help."

Qualitative interview respondents (N=15) shared several mechanisms by which CCM managers improved their care. CCM managers were seen as facilitating connection to care at CHA and to community resources. This was accomplished by providing information and referrals, as well as providing encouragement to seek this care. Care managers were also seen as care coordinators –as care coordinators, they helped patients remember their appointments, and facilitated team work and communication between multiple providers. Finally, CCM managers provided needed social support, taking the time to listen and offer encouragement. Representative quotes and complex care management impact stories below demonstrate the ways in which care managers fulfill these roles

CCM role identified by patients (N=15)	Representative Quotes
Facilitating connection to CHA care and community resources	<i>"She was basically my in-between person that I would call (to ask) do you know...what's going to be going on with my case?"</i> <i>"..if I need anything, she would look into the community and see what she could do for me"</i>
Coordinating care	<i>"I was so bad at not making appointments. She would make sure that I had a printout and make sure that I knew that I had appointments. And she would contact me. Or I could contact her, if I needed a referral"</i>
Providing social support and encouragement	<i>"When I was talking to her, like one-on-one about like personal stuff, that was helpful. Because at that time, I was like in a really bad place, so. And that was the purpose of me meeting with her."</i> <i>"Every time I relapsed, I was ending up in the hospital. She used to come visit me. She always gave me a good perspective on life."</i> <i>"She gave me encouragement. 'You can do it.' That's weighed a lot, motivate[d] me to do well."</i>

While patients identified the above roles as helpful, they also identified ongoing challenges in meeting their health needs. These challenges included lack of motivation to follow up on recommendations and a desire for additional support from the care manager (e.g., in the role of a patient advocate).

"I thought she would be, like, more of an advocate for me. Like, if I didn't feel comfortable with telling the doctor something, I can have her address it in a different way, you know what I mean? Instead of a doctor disagreeing or agreeing with me, just put a suggestion in saying "I think that this girl needs more care with this or more care with this." I wish they did that with me."

Complex Care Management Impact Stories

A gentleman in his late 50s with a history of severe head injury was referred to CCM due to multiple visits to the ED and missed appointments with primary care and medical specialties. At the time of his referral, he was homeless, depressed, abusing substances, and visiting the ED with complaints of generalized pain, anxiety and depression. He had difficulty trusting people yet was reaching out for help by going to the ED. The CCM manager started by checking in with him regularly by phone and developing a trusting relationship. The patient soon began checking in weekly by phone to review his appointment schedule and any progress with the goals he set for himself. After losing two friends as a result of substance abuse problems, he entered a detox program and moved to a sober living environment. He later reconnected with the State Head Injury Program, a program that had helped him in prior years. In order to make appointments easier for him, the care manager transferred his PCP to a practice within walking distance of his new home. The care manager attended the first two appointments with his new PCP to bridge the transfer. With the support of the new PCP and her team, the patient has since followed up with dental and mental health appointments. At a recent meeting, the patient expressed that he feels happier than he has in a very long time. With positive reinforcement, consistent support from his medical team at CHA in collaboration with the State Head Injury Program, he has successfully met the goals he set for himself, including no visits to the ED since his referral to CCM.

An elderly woman with uncontrolled diabetes, chronic depression and family stressors was referred to CCM. She was carrying the weight for her family, putting their needs first and her own health suffered. Her sons were facing jail time and alcohol abuse. The patient was going to the ED about once a month and had imaging, surgery and two inpatient stays at an outside hospital. She was not caring for her diabetes, her mobility was limited, and she was isolated in her home. The CHW reached out, built rapport with her and helped to develop a care plan. The CHW and nurse care manager then began working with the patient's PCP to tackle the patient's healthcare needs. They listened to what her goals were, validated her struggles and developed an actionable plan with steps towards her goals. The CHW helped her get a much-needed Patient Care Assistant and food stamps, and connected her with a day program. The nurse manager worked on educating her about her medications, disease processes and fall prevention. In the subsequent six months, she went to the ED only twice and had no inpatient stays. She knew her team cares about her and called them first, rather than going to the ED. Most importantly she felt empowered to take care of her own health and made great strides toward a healthier life.

Health Outcomes

We examined changes in depression using PHQ-9 scores. Of the 271 patients who had a PHQ-9 prior to enrollment and within 6 months after enrollment, the proportion who screened positive (PHQ-9 score ≥ 10) decreased from 56 to 49%. Of the 211 patients who had a PHQ-9 prior to enrollment between 6 and 12 months after enrollment, the proportion who screened positive (≥ 10) decreased from 58 to 54%.

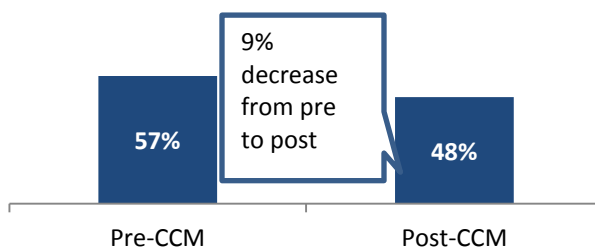
Utilization

In the intermediate term, CCM patients are expected to make more appropriate use of primary care services. This is expected to lead to reductions in high-cost utilization such as emergency department and inpatient stays in the long term, thus leading to lower health care costs.

Primary Care Utilization

The median number (5) of primary care visits (including nursing, pharmacist, and provider visits) remained the same from pre-CCM to post-CCM. Because the CCM program aims to increase

Figure 8. Reduction in high-cost utilization pattern



primary care utilization for patients who do not engage with primary care, we examined primary care utilization for patients with minimal primary care visits (≤ 2) prior to CCM enrollment. 51% of these patients with minimal primary care visits made 3 or more visits to their primary care doctor after CCM enrollment, thus increasing their engagement with primary care.

Inpatient and Emergency Department Utilization

CCM leadership and ICH defined a high level of high-cost utilization pattern (hereafter referred to as 'high-cost utilization') as any inpatient stay and/or at least two emergency department visits during a 12-month period. The proportion of patients with high-cost utilization decreased by 9% from pre-CCM (57%) to post-CCM (48%), a statistically significant decrease ($p < 0.001$) (see Figure

8).⁷ This data reflects CHA utilization only, and does not account for utilization outside of CHA ('outmigration').

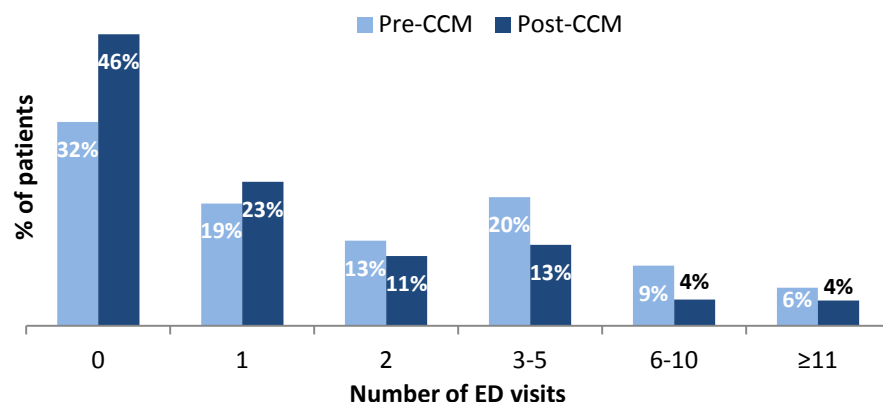
While the general shift was a reduction in high-cost utilization (Figure 7), closer examination demonstrates 3 patterns of utilization changes: 216 patients (20%) of patients shifted from high to low cost utilization, 70% had no change in utilization pattern, and 115 patients (11%) shifted from low to high cost utilization pattern. Patients who demonstrated a decreased utilization pattern after CCM were more likely to be female, non-white, non-English speaking, be insured by a risk-based insurance product, and to have a triage score of >15.

Emergency Department Utilization: Examination of utilization within CHA demonstrates that ED utilization patterns overall demonstrated reductions after CCM enrollment (Figure 9). The proportion of individuals with 2 or more ED visits decreased from 47% to 33% while the proportion of individuals with 0 to 1 visits increased from 51% to 69%.

Notably, there was a 14% increase in the proportion of patients with no ED visits. The average

Characteristics of CCM patients with changes in utilization patterns		
	Baseline High to Follow-up Low (n=216)	Baseline Low to Follow-up High (n=115)
Gender	%	%
Male	46	57
Female	54	43
Age Groups		
18 or younger	4	4
19 to 64 years old	74	73
65 or older	22	23
Race/ethnicity		
White	46	63
Black	21	16
Hispanic	20	10
Asian	4	2
Other	10	10
Language of Care		
English	63	74
Haitian Creole	11	5
Spanish	8	7
Portuguese	14	7
Other	5	7
ACO Status		
Yes-risk-based coverage	47	38
No-not risk-based	53	62
Triage Category	N=198	N=94
15 or more	84	74
Less than 15	16	26

Figure 9. ED utilization before and after CCM

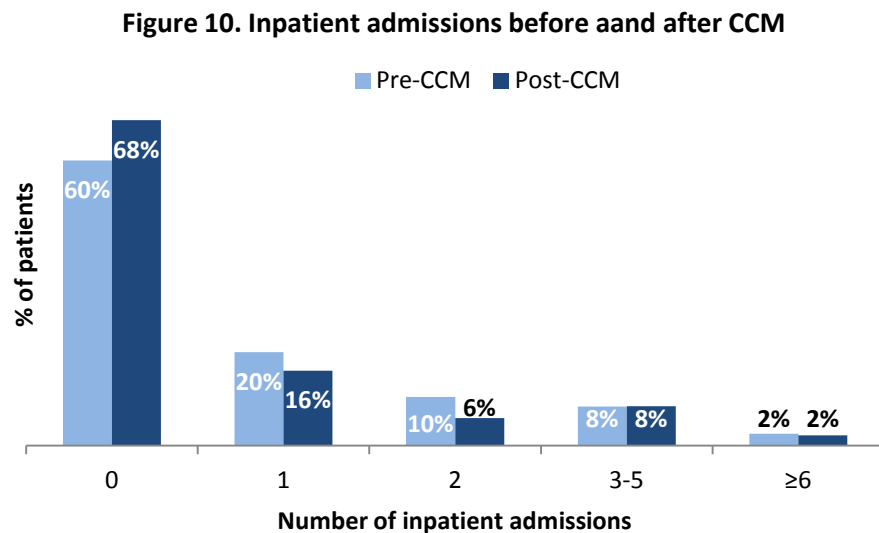


number of ED visits decreased from 3.0 to 1.9 per year, a mean reduction of 1.1 visits per person. There were 1242 fewer ED visits for this cohort of 1090 after CCM enrollment. This decrease would be associated with a reduction of \$604K for the 1090 patients if CHA received the average reimbursement of \$486

⁷ The McNemar's test was used to examine the in distribution of patients in the high and low utilization categories from pre-CCM enrollment to post-CCM enrollment to account for paired samples.

for these visits.⁸ These data reflect CHA utilization only and do not account for care received outside of CHA.

Inpatient Utilization: Examination of CHA inpatient utilization patterns also demonstrates decreases after CCM enrollment (Figure 10). The proportion of patients with 1 or more inpatient

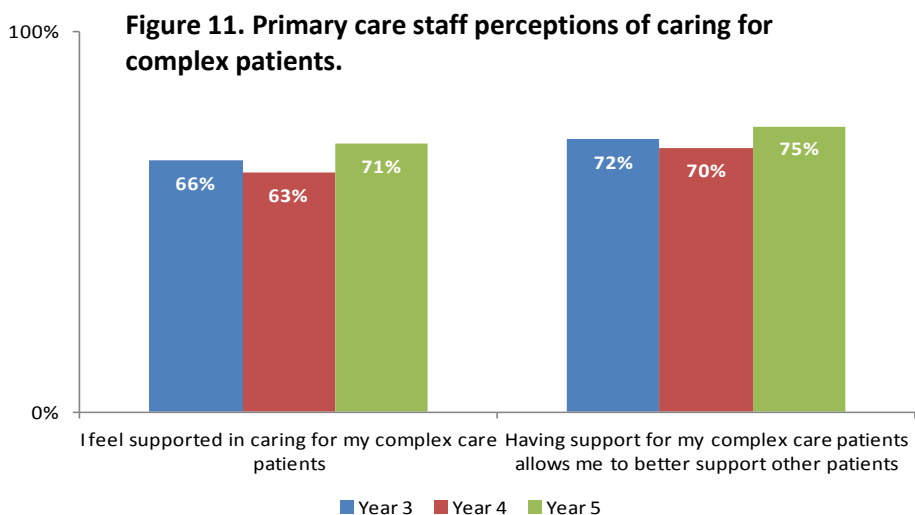


stays decreased from 40% to 32%, while there was an increase of 8% in the proportion of individuals with no inpatient stays. The average number of inpatient visits decreased from 0.9 to 0.7 per year. There were 164 fewer inpatient visits for this cohort of 1090 after CCM enrollment as compared to before CCM. This decrease would be associated with a

reduction of a total of \$1.6 million for the 1090 patients if CHA received the average reimbursement of \$9,050 for inpatient non-psychiatric admissions, \$10,132 for inpatient psychiatric admissions and \$1,916 for observation admissions.⁹

Workforce Outcomes

In each year, more than two thirds of staff reported feeling supported in caring for complex patients and that having support for their complex patients allowed them to better care for other patients. There was a small upward trend in the past year though this did not reach significance (Figure 11).



⁸ Average reimbursement for discharges from May 2016-October 2016 with payments as of the end of May, 2017 obtained from CHA's Chief Revenue Officer.

Conclusion

Though relatively early in its evolution, the CCM program at CHA has demonstrated some of the anticipated outcomes across the quadruple aim. Patient satisfaction with care has increased, patients report improved coordination of care and there is some evidence of increased patient engagement. The proportion of patients experiencing depression decreased. Although enrollment in CCM does not appear to affect primary care utilization for CCM patients overall, primary care utilization has increased for the subset of patients with historically low primary care utilization (≤ 2 visits in the year prior to enrollment). Primary care staff report feeling supported in caring for their complex patients and that support for complex patients frees them to better care for other patients, suggesting the benefits of CCM may extend beyond patients enrolled in CCM.

Using data on utilization at CHA, we find evidence that these short to medium term outcomes may be leading to reductions in high cost utilization. The average number of emergency department and inpatient visits decreased among patients enrolled in CCM from 3.0 to 1.9 per year and 0.9 to 0.7 per year, respectively. These decreases would be associated with reductions of \$2.2 million for the 1090 patients we examined if CHA received the average reimbursement for these visits.

While promising, these data must be regarded with caution. Many of the surveys and assessments involved a small proportion of CCM patients, and may reflect biased samples (e.g. more engaged, less sick patients). Data on utilization include events that occurred at CHA only, thus raising the possibility that patients received care elsewhere that was not accounted for in this analysis – both in the pre-CCM and post-CCM periods. However, an earlier assessment of claims-based data demonstrated reduction in costs for a small sample of CCM patients, suggesting that reductions in utilization persist even when events external to CHA are considered. Nonetheless, this reduction will need to be confirmed in a larger population as claims-based data becomes available. Finally, reductions in high-cost utilization may reflect regression to the mean or death (which CHA may not always be aware of), rather than the effect of the CCM program. Further analyses using control groups will help lend confidence to the assessment of whether the CCM program is leading to reductions in utilization and costs.

As CHA looks toward the future in supporting its complex patients, it faces several next steps. The CCM program continuously works to refine its enrollment process to better define and capture the highest risk 5-10% of patients. At the time of this data collection, some of the enrollment and assessment processes were heterogeneously applied; continued attention to streamlining and improving this process may help CCM better define and serve its patient population. While comparison of the CCM population with the general CHA population demonstrates that CCM patients are more complex (older, more non-English speakers, more chronic conditions), other data point to potential opportunities for improvement. While possibly being a function of outmigration, nearly one-third of CCM patients had neither an ED visit nor an inpatient stay at CHA in the year prior to CCM enrollment. These patients with low utilization similarly may reflect CCM's decision to incorporate other factors besides cost into its enrollment process. This recognizes the value in enrolling two groups of patients (that are not mutually exclusive): socially complex patients and patients with 'rising risk' of utilization - that is, individuals who do not have, but are at high risk of developing, high-cost utilization patterns. By enrolling 'rising risk' patients in CCM, CHA hopes to prevent downstream utilization. However, defining and distinguishing these 'rising risk' patients from individuals who have minimal need for CCM poses an ongoing challenge and performance improvement activity for CCM.

Supporting CHA's mission of caring for underserved populations, CCM enrolls socially complex patients who may not have significant high-cost utilization. Socially complex patients are often referred by PCPs who request support for complex social circumstances. However, these patients may not have high cost-utilization patterns. As CHA works to fulfill both its mission of serving the underserved and its goal of being a sustainable ACO, identifying systems to better support patients with high social complexity who may not be at high risk of avoidable high cost utilization may be a useful strategy.

Reflecting its developmental nature, CCM continues to adapt its systems of care. Many of these adaptations would be expected to have impact on patients enrolled after those reflected in this report. Thus ongoing monitoring and evaluation will help CHA understand the true impact of CCM on its ACO goals and performance. In particular, as the CCM program matures, it is beginning to look toward demonstrating return on investment. Lack of access to claims data has limited its ability to draw firm conclusions about its impact on care received outside of CHA and about cost – savings associated with its program. As CHA continues its journey to becoming an ACO and gains access to a more robust set of claims data, CCM will have the opportunity to examine its impact on health care costs and therefore on fulfilling its mission of contributing to the success and sustainability of CHA as an ACO.

Appendices

Appendix A: Logic Model

Appendix B: Triage Tool

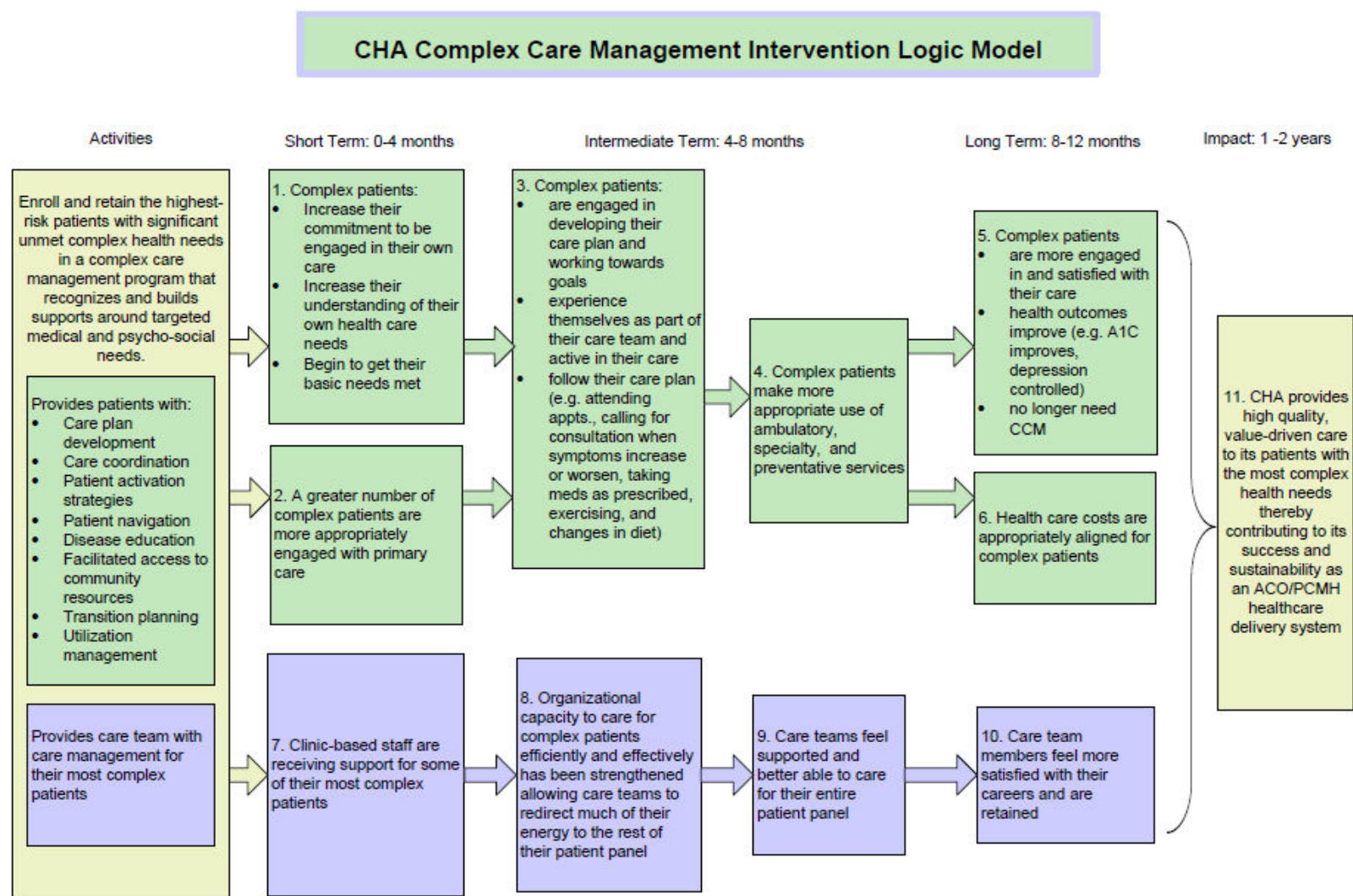
Appendix C: Modified Humboldt Assessment

Appendix D: Patient Activation Measure

Appendix E: Clinical Screening Forms

Appendix F: Patient Satisfaction Survey

Appendix A: Logic Model



Complex Care Management Assessment and Care Plan

Developed by [name and title] Complex Care Manager Date[MM/DD/YYYY}

Social Support Domain

TOTAL SCORE =

Home Environment - Success Matrix: Safe and consistent living situation

- 0 Stable housing; able to maintain independent living
- 1 Stable housing with support of others (family, facility, other)
- 2 Unstable housing (no support, living in shelter, etc)
- 3 No satisfactory housing; immediate change necessary

Job & Leisure - Success Matrix: Economic stability and participation in leisure activities

- 0 Has job and participates in leisure activities
- 1 Has job; no participation in leisure activities
- 2 Unemployed now for at least 6 months and participates in leisure activities
- 3 Unemployed now for at least 6 months and no participation in leisure activities

Social Support Success Matrix: Social and living situation that allows support for chronic and acute health needs

- 0 Assistance readily available
- 1 Assistance generally available; possible delays
- 2 Limited assistance available
- 3 No assistance available at any time

Social Relationships Success Matrix: Social skills that will lead to connectedness/personal relationships

- 0 No social disturbance
- 1 Mild social dysfunction; interpersonal issues
- 2 Moderate social dysfunction such as not able to initiate or maintain
- 3 Severe social dysfunction; disruptive or in isolation

Social Support Risk Success Matrix: Financial resources to meet basic needs, appropriate and consistent living arrangements, personal support with optimized relationships for the foreseeable future

- 0 No risk for of need for changes in living situation, social relationships and support or job/leisure
- 1 Mild risk
- 2 Risk of need in the foreseeable future
- 3 Risk now -> intervene

All areas with a 2 or greater should be flagged for possible goal development further assessment and interventions

Medical Neighborhood - Medical Home & Access to Services Domain

Total Score:

Access to Care - Success Matrix: Medical and mental health insurance benefits, access to "close" provider, translation services, providers willing to see client

- 0 Adequate access to care
- 1 Some limitations; refer to barriers above
- 2 Difficulties in accessing care; refer to barriers above
- 3 No adequate access to care; refer to barriers above

Experience with Provider(s) - Success Matrix: Collaborative, mutually acceptable doctor-patient relationship; Client satisfied with care; Engaged in treatment plan/interventions

- 0 No problems with health care providers

- 1 Negative experience with providers (either personally or family member)
- 2 Dissatisfaction or distrust; multiple providers for same condition
- 3 Repeated major conflicts with providers/staff, distrust of MDs; Frequent ER visits/admits; preferred provider out of plan

Appendix C: Modified Humboldt Assessment

Getting Needed Services - Success Matrix: Capable of getting appt, minimized appt conflicts and number of visits; Able to buy/get meds, equipment, needed services; Appropriate referrals

- 0 Practitioners and health care settings readily accessible; money for Rx and medical equipment
- 1 Some difficulties in getting appts / needed services
- 2 Routine difficulties in coordinating/getting appts / services
- 3 Inability to coordinate / get appts / needed services

Coordination of Care - Success Matrix: All providers involved in care and are aware of and coordinating services they are providing with others working with the patient. Record system interconnectivity

- 0 Complete provider communications with good coordination of care
- 1 Limited provider communication and coordination of care; Has PCP that coordinates medical and mental health services
- 2 Poor provider communication and coordination of care; no routine PCP
- 3 No communication and coordination of care among providers; evidence of ER use for non-urgent health needs

Medical Home, Medical Services Risk - Success Matrix: Stable access and support for health needs from trusted providers; widespread communication among providers for the foreseeable future

- 0 No risk of impediments to coordinated physical and mental health
- 1 Mild risk of barriers to care, ie. as insurance problems, distance to services, limited provider communication/coordination
- 2 Moderate risk of barriers to care, eg. potential loss of insurance, inconsistent providers, communication barriers, poor care coordination
- 3 Severe risk of barriers, eg. no insurance, challenges to communication, discord processes that lead to poor coordination

All areas with a 21 or greater should be flagged for possible goal development, further assessment and interventions

Self Management and Mental Health Domain

TOTAL SCORE =

Engagement / Coping / "Change Talk" - Success Matrix: Stress reduction and problem solving skills; reduced substance use; treatment that controls mental health symptoms. Willingness and demonstrated change behaviors

- 0 Ability to manage stresses/life and health challenges
- 1 Restricted coping skills, such as need for control, illness denial, irritability
- 2 Impaired coping skills such as, non-productive complaining or substance abuse but without serious impact on medical condition, mental health or social situation
- 3 Minimal coping skills -> destructive behaviors, such as substance dependence, psychiatric illness, self-mutilation, suicide attempts

Adherence/Resistance to Treatment - Success Matrix: Documented engagement associated with health stabilization and/or outcome improvement

- 0 Interested in receiving treatment and willing to actively participate/cooperate
- 1 Some ambivalence but willing to cooperate with treatment
- 2 Considerable discord; hostility or indifference to providers and/or treatments
- 3 Active resistance to important medical care

Mental Health History - Success Matrix: Screening and follow-up for potential recurrent psychiatric symptoms in place; support structure for mental condition treatment and follow-up by appropriate providers in place

- 0 No history of mental health problems/conditions
- 1 History of mental health problems/conditions now resolved; no effects on daily function

- 2 Mental health conditions with clear affects on daily function (needing medications, therapy, day treatment, etc.)
- 3 Psychiatric admissions and or persistent effect on daily function

Mental Health Symptoms PHQ-9 Score: - Success Matrix: Mental health symptoms improvement/stabilization; appropriate mental health provider involvement; social/environmental support in place; mental health symptoms do not interfere with general medical treatment/outcomes

- 0 No mental health symptoms
- 1 Mild symptoms (problems with concentration/felling tense, etc.) that do not interfere with current function
- 2 Moderate mental symptoms (anxiety, signs of depression, mild cognitive impairment) that interfere with functioning
- 3 Severe psychiatric symptoms and or behavioral disturbances (violence, self-inflicted harm, delirium, criminal behavior, psychosis, mania)

Self Management & Mental Health Risk - Success Matrix: Stabilized mental conditions; ready access and availability of services; health improvement associated with consistent treatment adherence; reduction in client "crises" (personal, social, health)

- 0 No mental health concerns
- 1 Risk of mild worsening of mental health symptoms such as stress, anxiety, feeling blue, substance abuse
- 2 Moderate risk of mental health disorder requiring additional mental health care; moderate risk for treatment resistance/non-adherence
- 3 Severe risk for psychiatric disorder requiring frequent ED visits and/or inept admissions; risk of treatment refusal for serious disorder

All areas with a 21 or greater should be flagged for possible goal development, further assessment and interventions

Medical Status and Health Trajectory Domain

TOTAL SCORE:

Chronicity - Success Matrix: Patient understands illnesses, participates in treatments; patient personally engages in illness stabilization

- 0 Less than 3 months of physical symptoms/dysfunction; acute health condition
- 1 More than 3 months/dysfunction or several periods of less than 3 months
- 2 A chronic disease
- 3 Several chronic diseases

Symptoms Severity / Condition Factors - Success Matrix: Stabilized illness parameters with appropriate support for continued treatment in place; activated illness progression prevention measures; rehabilitation for functional impairment and appropriate level of personal/equipment support and residential care;

- 0 No physical symptoms or symptoms resolve with treatment
- 1 Mild symptoms which do not interfere with current functioning
- 2 Moderate symptoms which interfere with current functioning
- 3 Severe symptoms leading to inability to perform many functional activities

Diagnostic / Therapeutic Challenges - Success Matrix: Clinical services available to the patient that control symptoms and prevent disease progression likely to be consistently delivered for the foreseeable future

- 0 Clear diagnoses and or uncomplicated treatments
- 1 Clear differential diagnoses and/or diagnosis expected with clear treatments
- 2 Difficult to diagnose and treat; physical cause/origin and treatment expected
- 3 Difficult to diagnose or treat; other issues than physical causes interfering with diagnostic and therapeutic process

Utilization Factors - Success Matrix: Clinical services available to patient; adherence to preventative screening measures. Patient actively participates in wellness activities to

- 0 No unscheduled/elective admission; no ED use (past 12 months)

1 Elective admission (1); no ED use or < 2 visits in 12 months

2 Multiple elective and/or emergent admissions >2 &< 4; ED visits >2 &< 4 in 12 months

3 Frequent elective and/or emergent admissions > 4;
multiple ED visits > 4 in 12 months

All areas with a 2 or greater should be flagged for possible goal development, further assessment and interventions

Appendix D: Patient Activation Measure



Name	
ID	
Date	

Below are statements people sometimes make when they talk about their health. Please indicate how much you agree or disagree with each statement as it applies to you personally.

Circle the answer that is most true for you today. If the statement does not apply, select N/A.

1.	When all is said and done, I am the person who is responsible for taking care of my health.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
2.	Taking an active role in my own health care is the most important thing that affects my health.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
3.	I know what each of my prescribed medications do.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
4.	I am confident that I can tell whether I need to go to the doctor or whether I can take care of a health problem myself.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
5.	I am confident that I can tell a doctor concerns I have even when he or she does not ask.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
6.	I am confident that I can follow through on medical treatments I may need to do at home.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
7.	I have been able to maintain (keep up with) lifestyle changes, like eating right or exercising.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
8.	I know how to prevent problems with my health.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
9.	I am confident I can figure out solutions when new problems arise with my health.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A
10.	I am confident that I can maintain lifestyle changes, like eating right and exercising, even during times of stress.	Strongly Disagree	Disagree	Agree	Strongly Agree	N/A

Appendix E: Clinical Screening Forms



Adult Wellbeing Questionnaire

Use "✓" to indicate your answer.

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3

3. Feeling nervous, anxious or on edge	0	1	2	3
4. Not being able to stop or control worrying	0	1	2	3

One Standard Drink:

12 fl oz of regular beer = 8-9 fl oz of malt liquor (shown in a 12 oz glass) = 5 fl oz of table wine = 1.5 fl oz shot of 80-proof spirits ("hard liquor"—whiskey, gin, rum, vodka, tequila, etc.)


 about 5% alcohol


 about 7% alcohol


 about 12% alcohol


 about 40% alcohol

The percent of "pure" alcohol, expressed here as alcohol by volume (alc/vol), varies by beverage.

In the past year:	0	1	2	3	4
5. <u>For Females:</u> How many times have you had <u>4 or more</u> drinks containing alcohol in a day? <u>For Males:</u> How many times have you had <u>5 or more</u> drinks containing alcohol in a day?	Never	Less than once a month	Monthly	Weekly	Daily or almost daily
6. How many times have you used an illegal drug or used a prescription medication for non-medical reasons?	Never	Less than once a month	Monthly	Weekly	Daily or almost daily
7. In general, how would you rate your health?	Excellent	Very Good	Good	Fair	Poor

Appendix E: Clinical Screening Forms

PHQ-9 PATIENT HEALTH QUESTIONNAIRE

Patient Name _____ Date _____

Over the last 2 weeks, how often have you been bothered by any of the following problems? (Use "✓" to indicate your answer.)

	NOT AT ALL	SEVERAL DAYS	MORE THAN HALF THE DAYS	NEARLY EVERY DAY
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless.	0	1	2	3
3. Trouble falling asleep, staying asleep, or sleeping too much.	0	1	2	3
4. Feeling tired or having low energy.	0	1	2	3
5. Poor appetite or overeating.	0	1	2	3
6. Feeling bad about yourself – or that you are a failure or have let yourself or your family down.	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television.	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed. Or the opposite – being so fidgety or restless that you have been moving around a lot more than usual.	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way.	0	1	2	3

add columns: _____ + _____ + _____

(Healthcare professional: For interpretation of TOTAL, please refer to accompanying scoring card.)

TOTAL: _____

10. If you checked off any problems, how *difficult* have these problems made it for you to do your work, take care of things at home, or get along with people?

Not difficult at all _____

Somewhat difficult _____

Very difficult _____

Extremely difficult _____



For Office Use Only:
If new or recurrent episode:
Do you want to set initial date?
[] Yes [] No

[] Entered into EPIC

HM Modifier
[] PHQ9 every 4 weeks
[] PHQ9 every 3 months
[] PHQ9 every 6 months
[] PHQ9 yearly
[] Remove PHQ9 modifier
(return to annual AWQ only)

Appendix F: Patient Satisfaction Survey

CARE MANAGEMENT PATIENT SURVEY

We hope you have had an excellent experience with us!

To help us serve you better, please complete this survey and mail it or return it to your Care Manager. Thank you!

When we discuss Care Management below, we are talking about our work to get you CHA or community services to improve your health and well-being.

Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
I would recommend Care Management at Cambridge Health Alliance to friends and family.				
The person who is most responsible for my health is me.				
I can do the activities my doctor and care manager tell me to do at home.				
I understand my health problems.				
I am more satisfied with my health care because of my Care Manager.				
My actions and behavior are the most important things that affect my health.				
I know what each of my medications is for.				
I know when to call my doctor about my health problems.				
The staff at my doctor's office works together to care for me.				
I feel like a full member of my health care team.				
Comments:				

If you have any questions about this survey, please contact Michael McGregor at 617 881 7288. Thank you.



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