Community HealthChoices Evaluation Plan

Project Narrative

Version 1.3

November 1, 2016

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Community HealthChoices Evaluation Plan
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PROJECT NARRATIVE

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Community HealthChoices Evaluation Plan
Health Policy Institute
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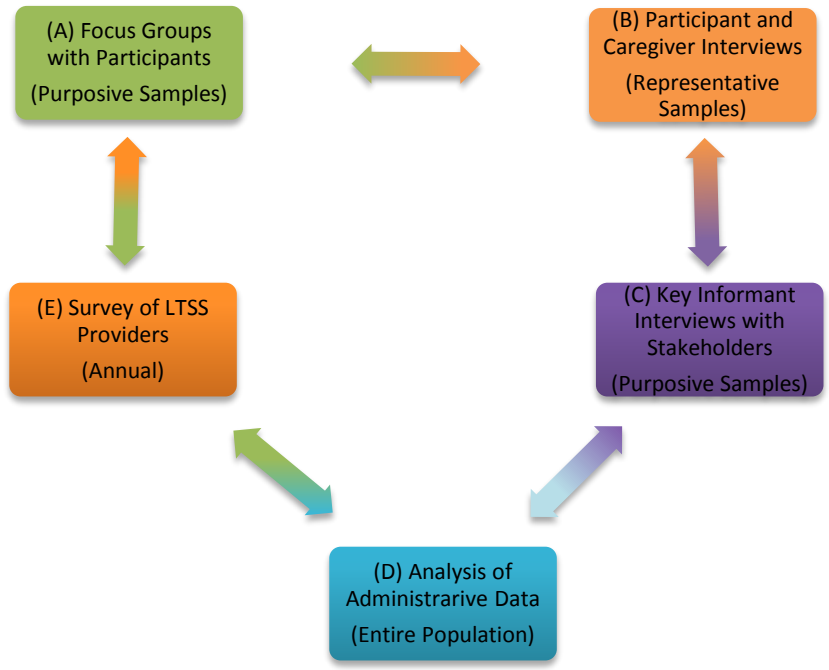
EXECUTIVE SUMMARY

Overview. The University of Pittsburgh will conduct a comprehensive, scientifically rigorous, multi-year evaluation of Pennsylvania's new Medicaid Long-Term Services and Supports (LTSS) program, Community HealthChoices (CHC). The evaluation will provide an independent assessment of the implementation and outcomes of the program to complement other oversight and quality assurance activities conducted by the Department of Human Services (DHS). The evaluation will address the following broad research questions with respect to all target groups:

1. Does CHC result in greater access to home and community-based LTSS and shift the balance of care away from institutionalized settings for people who prefer to live in the community?
2. Does CHC improve coordination of LTSS, physical health care and behavioral health care?
3. Does CHC improve the quality of care and quality of life of participants and family caregivers?
4. Does CHC lead to innovation in the delivery of physical health care and LTSS?
5. Does CHC reduce unnecessary utilization of services and reduce the growth in aggregate costs?

To address these research questions, we will conduct a multi-method study that incorporates data from a wide range of sources. Figure 1 summarizes the major sources of information that will be used for the evaluation. Each source of information informs the others. For example, focus groups with participants will

Figure 1. Sources of Information for the Evaluation



help design the interviews with participants and caregivers and also aid in interpreting administrative data.

A high priority has been placed on gathering direct input from participants and caregivers. In the early stage of the evaluation, we will conduct focus groups (A) with small groups of participants to help design structured interviews with larger, representative samples (B) from all target populations. These interviews will gather information on the participants' personal experience with care provided through the CHC managed care organizations (MCOs), track whether participant needs are being met, and assess the quality of life and well-being for participants and family caregivers. These interviews will primarily use closed-ended, categorical questions; however, there will be open-ended questions for participants to express themselves. Participants (or proxy informants) will be interviewed in-person or on the phone twice a year for three years in order to observe the long-term impact of the transition to CHC. Interviews will be conducted in English and Spanish.

We will use qualitative methods to interview a broad array of key informants (C) to capture feedback on the program implementation from a variety of perspectives. This includes consumers, providers (e.g., home care agencies, nursing facilities, long-term care ombudsmen, service coordinators), and advocates. The interviews will be open-ended, so that stakeholders are able to share any concerns or priorities in their own words. We plan to use an expedited approach to analyze these interviews in order to provide early insight into the implementation of CHC to DHS. Preliminary findings on the early experience of providers and participants will be available during the first year of the program (2017). Interviews will continue through all three phases of the CHC implementation.

The evaluation will analyze extensive administrative data (D), enrollment, utilization and cost data from Pennsylvania Medicaid programs[1] and from Medicare. The evaluation will also incorporate data from a variety of sources, including the MCOs, nursing facilities, person-centered service plans, and level of care assessments. The University of Pittsburgh has extensive experience in securely storing and analyzing Medicaid data. The data will be used to examine the implementation, process, and outcomes of CHC[2]. This analysis will be ongoing.

Finally, we will conduct an annual online survey of LTSS providers. This survey will be conducted statewide beginning in the summer of 2017 to capture the perspective of providers on program implementation. The topics for the survey will be informed with stakeholder input and by the KII, and will tentatively include staffing and leadership turnover, size, mergers and acquisition, network formation, satisfaction, coordination with other agencies and providers, and use of health information technology.

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[1] Available data files include enrollment, physical health, LTSS, and behavioral health claims.

[2] Determination that an individual is nursing facility care clinically eligible (NFCE) is currently conducted using the Level of Care Determination. A revised "Clinical Eligibility Determination (CED)" tool will be implemented in 2017.

Approach. CHC will be implemented in three phases, across three different regions of the state, starting in 2017. The phased implementation of CHC will allow the evaluation to make comparisons across different regions, e.g., using the second and third phase regions as comparison groups for the first phase. This region-to-region analysis will use comparisons between different groups to draw conclusions about CHC's impact on participant experience, cost and service use. Causal analysis will allow the evaluation to definitively and accurately attribute credit to CHC if the program is able to achieve goals such as increasing access to community-based LTSS or reducing hospitalization rates. Observational analyses, based primarily on the Key Informant Interviews, will provide an in-depth picture of the implementation and processes of CHC in different regions, and to identify important changes such as innovative approaches to care coordination, and new collaborations among LTSS providers.

The evaluation has both formative and summative components. The formative (implementation) evaluation will be designed to capture relevant aspects of the implementation and process, using indicators that will be quickly apparent as a result of ongoing monitoring, such as service plan disruption and the time it takes to determine beneficiary eligibility for CHC. The summative (outcome) evaluation will address outcomes and impact, answering questions such as whether CHC has measurably improved the health of beneficiaries and reduced adverse events, and whether the program achieved high-level goals such as allowing more beneficiaries to remain in the community rather than an institution and lowering overall costs. Table 1 provides a summary of the major program goals and primary study aims linked to each goal.

Oversight and Communication. The University of Pittsburgh evaluation team is working in close consultation with the Office of Long-Term Living (OLTL) Evaluation Working Group ("Working Group"). The evaluation team will meet regularly with the Working Group throughout the duration of the project, providing quarterly and annual reports on our findings. In addition, members of the evaluation team will make public presentations and provide updates to the MLTSS Sub-MAAC as appropriate. Every aspect of the evaluation plan is reviewed by the University of Pittsburgh Institutional Review Board.

Evaluation Plan. The complete Evaluation Plan provides a narrative overview of how the University of Pittsburgh proposes to structure and implement the CHC program evaluation. The narrative describes the timeline of the evaluation, primary research questions, data collection methods and analytic strategies. The Evaluation Plan is available on the CHC website, and will be updated as needed during the course of the project.

Table 1. Summary of Program Goals and Study Aims

Major Program Goals	Primary Study Aims	Focus*
1. Enhance Opportunities for Community Based Living	• To study the effect of CHC on the use of HCBS.	O
	• To study the effect of CHC preventing or delaying institutionalization.	O
	• To study the effect of CHC on facilitating return to the community.	O
2. Improve Service Coordination	• To describe the early experience of providers and consumers during the transition to CHC.	I
	• To describe the approach taken by MCOs to train and orient providers as they move away from FFS payment.	I
	• To describe coordination among different types of care, including physical health, LTSS and behavioral health.	I, O
	• To describe integration of care between Medicare and Medicaid.	I, O
3. Enhance Quality and Accountability	• To study the effect of CHC on quality of life and well-being for participants and family caregivers.	O
	• To describe the implementation of quality of care requirements for providers.	I
	• To describe quality of care across the spectrum of acute and LTSS providers under CHC.	O
4. Advance Program Innovation	• To describe the model of care used by physical health providers.	I, O
	• To describe models for care coordination.	I, O
	• To describe changes in LTSS providers and service provision.	I, O
	• To describe changes in use of technology.	I, O
	• To describe the impact of CHC on employment opportunities.	I, O
	• To describe the impact of CHC on the type of housing.	I, O
5. Increase Efficiency and Effectiveness	• To study the effect of CHC on cost of care.	O
	• To study the effect of CHC on utilization patterns.	O

*I = Implementation; O = Outcome.

OVERVIEW

The University of Pittsburgh will conduct a multi-method, multi-year evaluation of Community HealthChoices (CHC) to examine the implementation and impact of Pennsylvania's transition to managed long-term services and supports (LTSS). The evaluation will have three major data collection and analysis methods (see Figure 1): qualitative research using focus groups (A) and key informant Interviews (C); interviews with representative samples of program participants and caregivers (B), and analysis of administrative data (D). These data will be used to examine the implementation, process and outcomes of CHC for all target populations.

An important feature of the planned evaluation is the opportunity to capitalize on the phased implementation of the program in order to construct comparison groups and conduct causal as well as observational analyses. This will allow us to conduct a causal analysis and draw conclusions about the impact of the program on participant experience, cost and use compared to a valid counterfactual. Observational analyses will help us to develop an in-depth understanding of implementation and processes of CHC.

In consultation with the Office of Long-Term Living (OLTL) Evaluation Working Group (subsequently referred to as the Working Group), we have conceptualized the evaluation as having both formative and summative components. The formative evaluation will be designed to capture relevant aspects of the implementation. The summative evaluation will address outcomes and impact. The formative evaluation (addressing program implementation) will rely mainly on the Key Informant Interviews (KII) as the data source, while the process and outcome evaluation (summative) will rely primarily on Administrative Data (AD) and the Participant and Caregiver Experience (PCE) surveys.

The following sections describe the (A) major program goals and primary research questions, (B) data collection methods and analytic strategies, (C) timeline, communication and deliverables, and (D) governance. Table 1 summarizes the major program goals and associated research questions. Subsequent reports will provide further detail on the operational plans, including participant interview instruments. For the purposes of the evaluation, we refer to calendar year 2016 as the 'Planning' period, followed by Years 1, 2, 3, etc., which coincide with the implementation of CHC.

A. MAJOR PROGRAM GOALS AND PRIMARY RESEARCH QUESTIONS

This section provides an overview of our approach to the implementation and outcome components of the evaluation and our approach to each of the five major program goals.

Implementation.
We have adapted the replicating effective programs (REP) framework from the implementation science literature to guide our approach to analyzing the implementation process.[3] Key elements from the REP framework that are relevant to our implementation evaluation are: the importance of involving the affected community, orientation activities, training, technical assistance, ongoing support, feedback and refinement of the programs. The REP framework distinguishes between the pre-implementation, implementation and maintenance stages. Our approach follows this schema with data collection in each region over time: before, during and after the planned implementation of each Phase. Figure 1 represents the connections between different parties that are impacted by CHC. The arrows represent a variety of relationships: contractual, payment, service authorization and delivery. The overarching research question that guides the evaluation of the implementation can therefore be understood as:

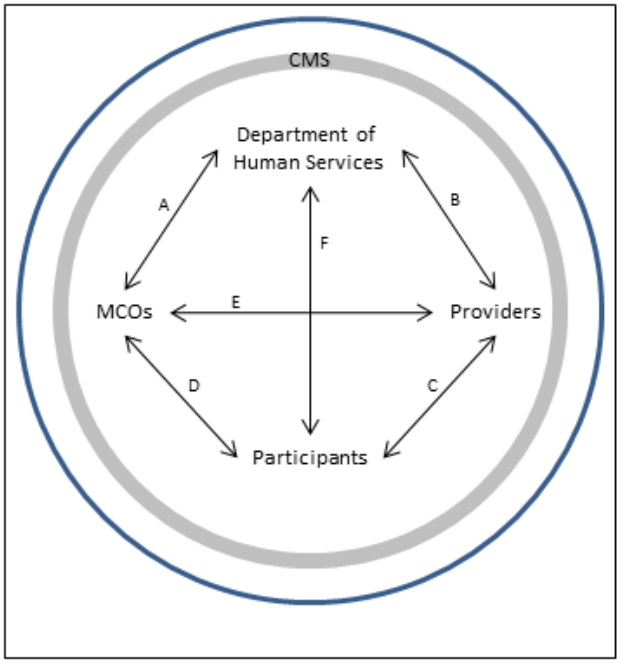

Figure 1. Relationships between parties affected by CHC.

- How has the implementation of CHC affected the relationships (A-F) represented on Figure 1 over time?

The key elements of the REP framework can be applied to the relationships in the graphic in order to develop the interview questions for the KII (see Table T3, and described below). As noted, the primary data source for tracking the early implementation experience will be the KII. Interviews with KII will address each of the relationships represented on the graphic. We will draw on administrative data as it becomes available, however, in early 2017, the direct approach will be to interview providers, local and state government officials, advocacy organizations and participants directly.

Outcomes.
Table 2 summarizes the major process and outcome oriented program goals as identified by the Commonwealth and lists study aims and primary research questions associated with each goal. The primary research questions will be elaborated in greater detail in this evaluation plan and in subsequent operational materials developed by the University of Pittsburgh in collaboration with the Evaluation Working Group. We note that for some topic areas, there is sufficient

[3] Kilbourne, A, Neumann, M, Pincus, H, Bauer, M, and Stall R. "Implementing evidence-based interventions in health care: Application of the replicating effective programs framework." Implementation Science. 2007. 2:42.

theoretical or empirical support to advance directional hypotheses. However, for other topics, our approach is exploratory and descriptive. The following sections describe our approach to addressing the major program goals by defining the primary research questions associated with each goal. In addition, we describe the primary (but not exclusive) data that will be used to address each research question. Section B of this plan describes the data sources and analytic plans in greater detail.

Table 2. Outcome Research Questions and Data Sources Associated with Each Study Aim.

Major Program Goals	Study Aims	Primary Research Questions (Directional Hypotheses or Descriptive)	Data Sources
1. Enhance Opportunities for Community Based Living	To study the effect of CHC on the access to HCBS.	HCBS use will increase among CHC participants, relative to comparable individuals in areas that have not yet implemented CHC.	AD, PCE
	To study the effect of CHC preventing or delaying institutionalization.	CHC participants will have lower rates of institutionalization, relative to comparable individuals in areas that have not yet implemented CHC.	AD, PCE
	To study the effect of CHC on facilitating return to the community.	CHC participants will be more likely to return to the community after a hospitalization or facility based post-acute care, relative to comparable individuals in areas that have not yet implemented CHC. CHC participants who are long-stay residents will be more likely to return to the community, relative to comparable individuals in areas that have not yet implemented CHC.	AD, PCE
2. Improve Service Coordination	To describe coordination among different types of care.	CHC facilitate improved care coordination between acute, ambulatory, behavioral and LTSS providers.	KII, PCE, AD
	To describe integration of care between Medicare and Medicaid.	CHC leads to improved care coordination for dual eligibles without LTSS needs.	KII, PCE, AD
3. Enhance Quality and Accountability	To study the effect of CHC on quality of life and well-being for participants and family caregivers.	CHC participants will have higher quality of life and well-being, relative to comparable individuals in areas that have not yet implemented CHC. Informal caregivers of CHC participants will have higher quality of life and well-being, relative to comparable individuals in areas that have not yet implemented CHC.	PCE
	To describe quality of care across the spectrum of acute and LTSS providers.	What is the association between CHC and quality of care across the spectrum of acute and LTSS providers?	AD, PCE
4. Advance Program Innovation	To describe the model of care used by physical health providers.	CHC leads to incorporation of innovations such as person-centered care goals into primary care. Participants will receive physical health care from multidisciplinary teams.	KII, PCE
	To describe models for care coordination.	CHC leads to new models of care coordination (e.g., that span chronic and LTSS needs)	KII, PCE
	To describe changes in LTSS providers and service provision.	Is CHC leading to new types of LTSS providers or new combinations of housing and LTSS services?	KII
	To describe changes in use of technology.	Is CHC leading to increased use of technology among LTSS providers? (e.g., telehealth, electronic medical records, visit verification)	KII
	To describe the impact of CHC on employment opportunities.	Is CHC leading to new forms of employment for participants? Are there new types of community supports for employment?	KII, PCE
	To describe the impact of CHC on the type of housing.	Is CHC leading to new combinations of housing and services? Is CHC expanding the opportunities for participants to remain in the community?	KII, AD, PCE
5. Increase Efficiency and Effectiveness	To study the effect of CHC on cost of care.	Monthly and annual cost of care for CHC participants will be the same or lower than comparable individuals in areas that have not yet implemented CHC.	AD
	To study the effect of CHC on utilization patterns.	Aggregate care utilization measures for CHC participants will be the same or lower than comparable individuals in areas that have not yet implemented CHC. HCBS use will be higher, and hospitalizations lower, among CHC participants relative to comparable individuals in areas that have not yet implemented CHC.	AD

KII = Key Informant Interviews; PCE = Participant and Caregiver Experience; AD = Administrative Data

Goal 1. Enhance Opportunities for Community Based Living. This goal will be addressed primarily through analysis of administrative data, and secondarily through participant interviews. The primary research question is whether people with need for LTSS service experience improved access to the services and supports they need to live independently. There are three closely related questions under this goal. **First**, is CHC increasing access to home and community based services (HCBS)?[4] As described below, access will be measured both in terms of use and unmet need. **Second**, does this delay or prevent permanent placement in nursing home or other facility based LTSS settings? **Third**, does CHC improve the likelihood of returning to the community for people receiving post-acute care (PAC) or permanently living in nursing facilities? For many people the entry point to facility based LTSS is often triggered by hospitalization followed by facility based PAC. Does CHC facilitate returning to the community safely and quickly? People currently living in facilities permanently who would prefer to live in a community setting often need a range of potentially expensive and complex, non-traditional services to facilitate that transition. Consistent with the goals of the Money Follows the Person (MFP) demonstration, under CHC, the managed care organizations (MCOs) will have a financial incentive to relocate people who can be served safely and effectively in the community.

To address these questions, we will use linked Medicaid and Medicare claims data to examine utilization of LTSS services in the community, hospitalization rates and use of post-acute care. For example, we will determine whether the number, percentage and per person use of LTSS in the community has increased among CHC participants compared with individuals who are eligible for LTSS under the waiver programs. We will be able to examine change over time from before the program is implemented (among people living in the Phase I region), and compare the experience of people living in the Phase I region to people living in Phase II and Phase III areas.

In states that have implemented MFP, there is evidence that nursing home residents have been able to successfully transition to the community, leading to a shift in the balance of LTSS from facility to community settings in terms of people served and expenditures. [5] One study found that people who transition under MFP experience higher rates of preventable hospitalizations. [6] CHC is expected to continue to follow the principles of MFP. We will use Nursing Home Minimum Data Set (MDS) data to examine changes in the length of stay of nursing home residents as well as the composition of the population of nursing home residents to determine whether CHC leads to fewer low-acuity long-term residents. By assembling a panel of MDS data from as early as 2014-2015, we will be able to use each nursing home as its own control as the CHC program is implemented across the state and examine this trend over time and across regions.

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[4] See Table 11 for a typology of HCBS services.

[5] Irvin, CV, Denny-Brown, N., Bohl, A., Schurrer, J., Lim, W., Lester, E., and Peebles, V. "Final Report: Money Follows the Person 2013 Annual Evaluation Report" February 25, 2015. Cambridge: Mathematica Policy Research.

[6] Wysocki, A., Kane, R.L., Dowd, B., Golberstein, E., Lum, T., and Shippee, T. "Hospitalization of Elderly Medicaid Long-Term Care Users Who Transition from Nursing Homes." J Am Geriatr Soc 62:71-87, 2014.

The second major data source is participant and caregiver interviews. Administrative data only capture the evidence of care after it has been provided; therefore it is crucial to address the question of access to care from the perspective of program participants and their caregivers. Physical disability and cognitive impairment, regardless of etiology, can lead to inability to accomplish basic and instrumental activities of daily living (ADL, IADL). These needs may be met through reliance on paid and unpaid (typically family) caregivers. However, for many people, needs can go unaddressed or under-addressed for a long time. Thus, to address whether CHC increases access to LTSS, we will conduct in-person interviews with participants to measure self-reported unmet need.

Goal 2. Improve Service Coordination. One of the major rationales for pursuing a policy of using managed care to deliver LTSS under an integrated Medicaid and Medicare financing model is to improve care coordination and service coordination. These terms are often used somewhat synonymously. We will define care coordination as it applies to physical health care services – primary care, acute care, and so on. We will use service coordination as it applies to LTSS, in keeping with the current categories of providers. Under CHC, the MCOs are expected to both improve care coordination and integrate care coordination with service coordination. The actual model of care is not known in advance; each MCO has the flexibility to design its own approach. For example, they may use in-house care coordination staff (sometimes referred to as care management) to oversee physical health care, or they may enter into risk contracts with medical group practices or accountable care organizations (ACOs), placing providers in charge of coordinating across settings and services. Likewise, they may use in-house service coordinators or they may sub-contract that responsibility to community based organizations or other third parties (e.g., the incumbent service coordination entities or Area Agencies on Aging [AAA]). Under CHC, the responsibility for this activity falls under the MCO, although it may be delegated. However, in the current fee-for-service and waiver programs, different entities have different levels of responsibility (sometimes overlapping or contradictory). Thus, the evaluation will be directed toward describing these different approaches and, ideally, documenting progress towards consistent, integrated plans for individuals who need them.

The primary research questions are whether CHC leads to improvements in coordination ***within*** the domains of physical health care and LTSS, and whether it improves coordination ***between*** these domains, as well as with behavioral health care services. The challenge for the evaluation is that although these changes to the process of care may result in improved outcomes, documenting the processes themselves requires direct interviews with payors and providers. Thus, our primary data source will be key informant interviews with MCOs and providers. The plan, described in detail below, is designed to examine changes to the system from a range of provider perspectives. By interviewing key informants over time from both program and comparison regions, we expect to capture differences in these crucial processes. As noted below, we will conduct some key informant interviews in the context of site visits as a way to gain further insight into how this process works.

Secondarily, we will examine administrative data for evidence of improved care and service coordination. Under CHC, MCOs are required to develop person-centered care plans in an electronic format. Currently, waiver participants are required to have care plans that describe the type, amount, and schedule of services they receive. Under CHC, we will look for evidence that these plans incorporate participant preferences as well as integrate physical health, behavioral health and LTSS. These data have both quantitative and qualitative aspects – for example, we can examine the proportion of participants who have service plans in place, the timeliness of those services plans, and whether claims data reveals a pattern of services consistent with the plan (e.g., people with previous claims for psychiatric services have plans that document coordination with behavioral health care). The judgment of whether the plans are truly individualized is inherently subjective. The extent to which this is feasible depends on the type and format of information being collected, e.g., open-ended text fields, structured assessments of preferences, or evidence of rich description of personal goals as opposed to "cookie-cutter" care plans.

As part of our evaluation of the early implementation experience, we will examine whether service plans are impacted by the transition. For example, even though MCOs are not permitted to decrease in-home services during the 180-day transition period, changes in billing procedures, service authorization, and communication problems may lead to gaps or disruptions in daily care. We will also examine whether MCOs provide education, training and technical support to providers as they transition away from the current FFS payment system.

Goal 3. Enhance Quality and Accountability. CHC is expected to improve quality of care and accountability across a wide range of provider types and perspectives. The primary research questions are whether quality of life and well-being improves for participants and caregivers and whether the quality of care is improved across the range of acute and LTSS providers. The first question will be addressed through direct interviews with participants and caregivers. The second question will be addressed through analysis of administrative claims data.

The experience of participants and their caregivers is of paramount importance. Given the personal, intimate nature of LTSS, the primary indicator of the quality of the services being provided is the satisfaction and quality of life of the people receiving those services. People with physical disabilities and cognitive impairment are at risk for social isolation, loss of social engagement, lack of empowerment, loss of choice or control over their daily lives, and, ultimately, loss of dignity, identity and selfhood. These aspects of quality of life can be affected by the care and services people receive and the setting in which those services are delivered. However, the impact of those services can only be reported on reliably by the participants themselves. The movement for person-centered care planning in LTSS (both in facility and home and community based settings) is a corrective for traditional service planning that was based around the schedules of providers, rather than the lives of care receivers.

Closely related is the impact on caregivers. People with physical and cognitive impairment rely heavily on family and often non-relatives, to provide substantial amounts of unpaid assistance. The absence of a caregiver is a major risk factor for institutionalization. Thus, if CHC is to

achieve the primary goal of reducing permanent relocation to nursing facilities or other facilities, the program will have to improve the quality of life and well-being of caregivers. As with participants themselves, the key indicators of the strength of the caregiving system are subjective reports of their level of contribution, and reports of burden, stress, and psychological well-being (e.g., symptoms of depression and anxiety). There are many effective programs and interventions that have been developed specifically for caregivers; determining whether caregivers have accessed and used these programs requires collecting data from them directly.

The CHC program is hypothesized to have a positive impact on the quality of care across the spectrum of acute and LTSS providers. To the extent that CHC has a positive effect on prevention and chronic disease care in the target populations, we would expect to see lower rates of preventable and all-cause hospitalization, readmissions, emergency department use, and other indicators of quality. While quality indicators for the general acute care conditions have been developed and have been available for some time, efforts to define quality of care for the community dwelling LTSS population are more recent. The main reason for this is that home and community based service (HCBS) providers have not historically been required to submit the same type of detailed claims data as acute and ambulatory providers, or standardized assessment data as with nursing facilities. Recent efforts have examined rates of hospitalization for HCBS users as indirect evidence of the quality of care being provided in those settings.[7,8] We will therefore use administrative data to construct a range of indicators, drawing on previous research as much as possible. These are mainly measured through inpatient hospitalizations for conditions that could have been prevented with high quality HCBS such as dehydration, urinary tract infection and pressure ulcers. In addition, there has been recent research on hospital readmission rates that compares HCBS users to nursing home populations as well as people who have been transitioned out of nursing facilities (e.g., under MFP).

As part of our evaluation of the implementation, we will examine the use of evidence based best practices by MCOs. In particular, we will examine their approach to credentialing and reviewing provider performance. Critical questions are whether providers are dropped from the MCO network based on quality of care or other reasons (e.g., price).

Goal 4. Advance Program Innovation. The transition to managed care is a major change in the way care and services for the target populations is financed that has the potential to lead to dramatic changes in the way that care is organized and delivered. MCOs will have the flexibility and incentive to use the resources available to achieve the program goals without the arbitrary distinction between 'acute' and 'long-term' care that have led to the oft cited problems of duplication, lack of communication, poor quality transitions, and so on. The primary research questions are whether CHC leads to innovation – this may occur in models of care, care

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[7] Bohl, A., Finucane, M., Ross, J., Wang, S. "Final Report: Proposed Methods for Developing and Testing Risk- and Reliability-Adjustment Models for HCBS Composite Measures." February 12, 2015. Cambridge: Mathematica Policy Research.

[8] Wysocki, A., Bohl, A., Fleming, C., and Ross., J. "Final Report: Development of an HCBS Pressure Ulcer Measure, Volume 1." August 26, 2015. Cambridge: Mathematica Policy Research.

coordination, provider categories, or the use of technology, however innovation may not be limited to these categories. For example, it might lead to new approaches to supporting employment or combinations of housing and services. In order to address these interrelated questions, we will rely on interviews with key informants as well as site visits to provider organizations and participants' homes. As noted on Table 2, our approach to this Goal is primarily descriptive and exploratory. By definition, we do not know in advance what constitutes an innovation.

Goal 5. Increase Efficiency and Effectiveness. The CHC program is expected to have an impact on the utilization and cost of physical health care and LTSS. Under the current fee for service (FFS) system, Medicaid providers do not have a financial incentive to prevent or reduce hospitalization, since the cost is covered by Medicare[9]. Medicare Advantage and D-SNP plans do not have an incentive to prevent permanent nursing home placement, since those costs are mainly covered by Medicaid. By creating a new set of MCOs that are at risk for both Medicaid and Medicare covered services, plans' and providers' financial incentives will be aligned with those of the Commonwealth. The overarching research question related to this goal is whether utilization or cost goes up, down or stays the same for participants in the CHC program. The main data source for this component of the evaluation will be linked Medicaid and Medicare claims data. There are a number of ways of specifying this question empirically. First, the per person use of services will be calculated for each major utilization category: ambulatory, acute, outpatient, durable medical equipment, emergency department, nursing home, in-home services, dental and pharmaceutical. In each category, service use can be further disaggregated (e.g., to distinguish primary care and specialist services). We would hypothesize that some categories may actually increase as MCOs place a higher emphasis on prevention and primary care. In some cases, the effects may be mixed. For example, improved medication adherence may result in greater use, while at the same time, care coordinators might reduce polypharmacy and inappropriate prescriptions. The use of LTSS is expected to increase, while permanent nursing home placement, hospitalization (readmissions), and emergency department use are expected to decrease. An emphasis on person-centered care may increase hospice and palliative care.

B. DATA COLLECTION AND ANALYTIC METHODOLOGIES

The evaluation plan is designed to capture and analyze data from a wide range of sources with the overall goal of providing a comprehensive picture of the implementation and impact of CHC. Table 3 summarizes the different sources of data, broken down by the population group that will be covered, along with an estimate of the size of each subgroup. Data sources will combine duals and non-duals, however we will capture dual status for use in analysis. The numbers in parentheses refer to sections in the text. Each of the three major data sources is described below. Note that each major participant subgroup is covered by multiple data sources. This will allow us to triangulate our findings and develop a rich description of the process and outcomes of the program.

[9] Approximately 95% of the CHC population is dual eligible.

Table 3. Overview of Data Sources by Participant Subgroup

Participant Subgroup				Data Source			
Age	LTSS Use	Dually Eligible	Population [a]	Key Informant Interviews and Focus Groups (§1)	Administrative Data (§2)	Participant Interviews (§3)	Caregiver Interviews (§3)
21-59	Community	No	8,946	✓	✓	✓	✓
		Yes	10,994		✓		
	Facility	No	2,221	✓	✓	✓	✓
		Yes	2,990		✓		
	None	Yes	117,241	✓	✓	✓	✓
60 and older	Community	No	2,807	✓	✓	✓	✓
		Yes	27,214		✓		
	Facility	No	50,242	✓	✓	✓	✓
		Yes	1,726		✓		
	None	Yes	110,359	✓	✓	✓	✓

[a] Source: Office of Long Term Living Historical Data Summary; unduplicated count as of 6/1/2014.

The following sections describe the methodology for the major components of the study. The order of presentation follows the general order of the overall workplan: (1) qualitative interviews and focus groups with key informants; (2) analysis of administrative data; (3) participant and caregiver interviews, and (4) interviews with nursing home residents.

1. Qualitative Interviews and Focus Groups with Key Informants.

We will conduct semi-structured, qualitative interviews with representatives from participating MCOs, selected providers and participants. The purpose of these interviews is to capture data on aspects of the program implementation and process from the perspective of key informants. By using semi-structured, open-ended interviews, we will capture consistent feedback from a wide range of different types of key informants. Since the interviews will be open-ended, we will also collect unsolicited feedback on topics that are of high salience to stakeholders. Interviews will be scheduled for up to one hour, and we will follow best practices in coding and analyzing qualitative data in order to draw valid conclusions. *In addition, to complement these data collection strategies, we will conduct focus groups with participants during each year of the project.*

Table T1 (see attachments) summarizes the target number of interviews with each type of respondent. During the planning year (2016), we will interview representatives from each of the participating MCOs. Since we do not know in advance how many MCOs will be awarded contracts, we are planning to contact up to 10 organizations. From each MCO, we estimate an average of 3 informants, however, there may be more individuals depending on the corporate structure. We will seek to interview the CEO, the vice president responsible for LTSS, the director of care coordination or case management and also the medical director responsible for LTSS. We will also attempt to interview an individual working as a care manager or service coordinator. We will also interview 20 providers in urban areas and 20 providers in rural or adjacent communities. The general types of providers we will interview are outlined on Table T2 (attached). *During the first quarter of 2016 we will work with the Working Group to refine the list of providers and identify specific organizations and individuals to contact.*

During Year 1, we will interview about two representatives from each type of provider in Phase I (active implementation in 2017). Since providers in Phase II and III regions will still be planning and anticipating for CHC, we will interview only one person per provider. During Year 2, we will follow-up with one representative from each provider in the Phase I region, and about two people from each provider in the Phase II region (e.g., active implementation in 2018). This pattern will continue until all provider types have had at least one year of follow-up.

We will seek to return to the same providers each year. This increases the quality of the data because we will be able to develop rapport with respondents and efficiently solicit their perceptions of change over time. However, we anticipate that some providers may not be able or willing to participate in interviews every year. We may also revise our priorities in consultation with the Working Group for the types of providers we contact, which may lead us to change or add different provider types.

During each year, we will interview up to 40 program participants from the region that is actively implementing CHC. The purpose of these interviews is twofold. First, while we are planning a large, rigorous data collection effort from representative samples of participants (see below), there are limitations inherent in that approach. Specifically, closed-ended interviews are designed to generate representative, generalizable data that can be aggregated across individuals and used for quantitative comparisons over time and between groups (e.g., treatment and comparison groups). By conducting a smaller sample of semi-structured open-ended interviews, we will be able to elicit the subjective perspective of participants, allowing us to deepen our understanding of their daily lives. We will therefore be able to produce a richer description of the participant experience than we would with only closed-ended interviews. Second, we will use purposive rather than random sampling. This will enable us to collect data from individuals who may not otherwise be captured in other data collection approaches. For example, there are small subgroups of people that may not be sampled simply by chance. By planning key informant interviews with selected participants, we will be able to seek out and identify informants whose voice might otherwise have been overlooked. Participants will be selected to represent key subgroups that might not be well-represented in other components of the evaluation, e.g., people with acquired brain injury, blind or deaf. In addition, we will include newly enrolled HCBS users for the specific purpose of capturing their impressions of the eligibility process after the implementation of CHC.

The majority of the qualitative interviews with providers will be conducted on the telephone. Over the course of the project, we will seek to combine this activity with a site visit with each type of provider. Conducting in person interviews and observations will improve the level of trust between informants and the interviewers and will improve the quality of the data.

A preliminary list of topics for key informant interviews is provided on Table T3. This list was developed based on input from the Working Group and review of MLTSS evaluations from other states. We will use this list of topics to draft the interview guide.

An overview of the procedures for analyzing the data from key informant interviews are described in Attachment B. Coding and analysis of qualitative data will be led by Dr. Mary Hawk, Dr. PH. In summary, we create an audio recording of all interviews to reduce the burden of note taking. After each interview, the interviewer will write a brief summary. Then he or she will listen to the entire interview and additional notes. Results will be reported two different ways: across issues and across types of informants. In brief, we will report the most common statements with respect to each major issue (e.g., access, service coordination, inter-organizational issues) as well as the most common statements from each type of informant (MCO, LTSS provider, county agency, participant). The reports will follow the outline of the interview guide and address each of the major topics as well as topics that are raised by the informant during the interview.

In order to generate findings from the KII in a timely way, we will use an expedited analysis strategy for MCO and Professional (e.g., providers, county officials, etc.) representatives. This

will allow us to provide summary reports more rapidly. In particular, we are sensitive to the need for actionable information during the first half of 2017.

We will follow a more rigorous qualitative approach to analyzing participant interviews. This approach is more time consuming, however, it allows us to have greater confidence in the themes that emerge from the interviews. As noted below, we will conduct focus groups with participants in order to generate quick-turn around findings to complement the MCO and professional KII.

Recruitment of Key Informants. We will work with staff from the Office of Long-Term Living (OLTL) to identify the appropriate contact persons at each MCO.

Recruitment of providers will be conducted purposefully. Since the goal is to get input from across the state from a wide range of provider types, we will be seeking informants from different regions and different types of communities (e.g., urban, rural, adjacent). We will begin by asking individuals on the sub-Medical Assistance Advisory Council (MAAC), Area Agencies on Aging (AAAs) and Centers for Independent Living to nominate providers. Next we will use a modified snowball technique by asking providers to recommend or refer other informants. We will also ask providers to identify participants who would be interested in being interviewed.

The number of informants in each category was selected to balance several concerns. In general, when conducting qualitative research, it is desirable to have sufficient interviews to achieve thematic saturation. This is done by coding and analyzing the data on an ongoing basis while interviews are being conducted. Recruitment is ended when no new themes or concepts are identified from new respondents. We expect that we will reach this goal with the participant interviews. However, given the wide range of provider types that we plan to interview, it would be impractical to achieve thematic saturation in each category. Our goal with providers will therefore be to cover the range of provider types from across the state and over time. We will be flexible and can add provider types and accommodate multiple informants per provider as necessary. With respect to MCOs, we will interview representatives from all participating plans.

Timing. The purpose of this data collection effort is to gather insight from providers and participants about their direct experience with CHC. The topics will address their perceptions of the implementation and process of care. However, we expect that their experience will change over time as the program is implemented. Early challenges will be resolved, and new issues will emerge. The key informant interviews will be conducted on an ongoing basis throughout the planning and active program period in order to track these issues as they emerge. A limitation of this approach is that we will have different types of providers being interviewed throughout the year. However, the importance of an ongoing series of interviews and regular contact with a range of stakeholders is more valuable to the state than a smaller cross-sectional approach. *In particular, we anticipate that providers and professionals will perceive changes immediately, as the payment and management of the program will shift to the MCO on July 1. However, most changes will not impact participants until the 6-month transition period has elapsed.*

Therefore, we will spread out the KII with participants in order to capture impacts that occur during the third quarter of each implementation year. We will address this analytically by reporting the themes that emerge from each month and quarter.

Rapid Participant Focus Groups. We will conduct one focus group with each major subgroup of participants (age 21-59, age 60 and older, duals not using LTSS, and caregivers) as a complement to the individual interviews with participants described above. Focus groups can elicit responses from people that they may be unwilling to share during an individual interview. Thus, it can provide a valuable adjunct to the other data collection efforts. These will be conducted during the first half of each year in order to capture the impressions of participants of the program and their anticipation of the changes to expect after the 180-day transition period has elapsed.

We plan to use these focus groups as a way to provide rapid feedback to the WG and OLTL during the initial implementation year in each region (e.g., Southwest PA during 2017, Southeast PA during 2018). Since the goal is to capture immediate impressions and feedback from participants, we are not seeking to identify widely held themes or consensus. Thus, we are planning to conduct and analyze these groups using a rapid analytic technique designed to generate a high level summary in time to inform our Early Implementation Report (see Table 5). We plan to conduct one session for each of the four subgroups; additional sessions will be added if it is deemed necessary by the study team in collaboration with the qualitative research team.

2. Administrative Data

Using secondary administrative data, we intend to measure the impact of CHC on key outcome variables related to cost, utilization and access, and quality and care coordination. These secondary data include Medicaid claims, Medicare claims, and Minimum Data Set (MDS) variables, as well as administrative data sets used to monitor program performance. These measures will play a critical role in understanding how CHC changes health care utilization patterns, quality and coordination of care across providers, use of HCBS and LTSS, and the overall efficiency of care for beneficiaries.

All measures will be reported descriptively across each year of the evaluation for subpopulations of interest. Descriptive measures will also be presented for those regions of the state where CHC has not yet been implemented as a point of reference. As data become available, throughout the evaluation period, we will conduct multivariable regression analyses (described elsewhere in this report) to estimate the effect of CHC on each measure. Due to data-lag, we anticipate reporting annual descriptive data beginning in late 2017 with baseline data (2014-2016). It is possible that each data source will have a different lag period, which may result in delays for certain measures. In addition, based on previous research, we expect that the impact of CHC on utilization and cost will take 12-24 months to manifest. In other words, changes to the delivery of primary and acute care and LTSS (either through improved care coordination or utilization management) do not happen instantaneously and risk reduction

accrues over time. Thus, we would not expect to see major changes until the second year of the program in each region.

(a) Data Sources

For several data sources that we plan to analyze, the format and content of the data is not known in advance. These data sources are therefore described in general terms.

MCO Dashboard (DB). The MCOs will be required to submit performance metrics and other data to OLTL that will be used to measure process and outcomes. Process measures include enrollment and disenrollment, proportion of members who have their Medicare coverage through an affiliated plan, people referred for level of care assessment, time from referral to completion, and the number of people with service plans. Referrals to behavioral health providers and coordination of services between physical health, LTSS and behavioral health are important care processes. The MCOs will be required to report relevant indicators of coordination across these boundaries. For example, we will examine whether the MCO records documentation of care coordination meetings, what kind of people (e.g., professionals, participants, family) participate in these meetings, and when and how frequently these meetings occur. MCOs are not permitted to change participants' service plans or terminate providers for the initial 180 days of the program (e.g., from July 1, 2017). We anticipate that changes to provider networks will be reported to OLTL. The MCO DB is expected to capture non-traditional services that may not generate claims or encounter data. For example, this could include services such as training or support for caregivers, and education or counseling about HCBS options. *Additional indicators include grievances, appeals and critical incident reports. This data source will be defined as part of the MCO contracting process, which is not complete as of this draft of the plan. We will work closely with the WG and OLTL to identify relevant data elements and incorporate them into the analysis plan. In general, our approach to these data is to analyze long-term, risk-adjusted trends (i.e., decline in the rate of negative events). As with other administrative outcomes, we will compare Phase I to Phase II and Phase III regions to estimate the causal effect of CHC.*

Person Centered Service Plans. Plans will be required to use an electronic system to manage person-centered service plans. These data will be examined to evaluate whether they reflect the principles of person-centeredness. For example, service plans should document and support individual goals, and should be varied and individualistic.

Level of Care Determination (LCD) Assessment Data. Level of care data play an important role in understanding the level of need for LTSS in the population. The LCD includes assessment of physical and cognitive function, which are used to determine eligibility for HCBS services under Medicaid waivers. This is the only source of comprehensive data on participants' functional status and living arrangements. In conjunction with CHC, Pennsylvania will implement a new LCD instrument referred to as the "Clinical Eligibility Determination (CED)" along with changes in the entities that conduct this process. The evaluation plan will examine these data from the 1 to 2-year period prior to the implementation of CHC to identify risk factors for nursing home placement among users of HCBS.

Medicaid and Medicare Claims/Encounter Data. The University of Pittsburgh has extensive experience working with Medicare and Medicaid claims data. Under FFS Medicaid and Medicare, all providers are required to submit claims in order to be reimbursed. These claims include the service date, procedure codes (HCPCS), diagnosis codes (ICD-9/10), and diagnosis related groups (DRG), and also capture the amount paid. Managed care plans are required to submit encounter data that do not include payment amounts. Under CHC, we will have a mixture of FFS and encounter data.

During the first program year (2017), the MCOs in the Phase I region are expected to begin submitting encounter data, while providers in the other regions of the Commonwealth that will be used as the comparison group will still be paid on a FFS basis. This pattern will continue in Year 2, but by Year 3 all services will be paid for by MCOs. Some disruption and challenges with data quality may be expected during the first several months of each year as providers and MCOs adjust.

Linked Medicare and Medicaid claims will be used to examine all-cause and preventable hospitalization rates, 30, 60 and 90 day readmissions, and use of post-acute care (PAC) for dual eligibles.[10] With regard to PAC, we will examine whether MCOs have an effect on the type and amount of PAC and, crucially, whether hospitalization leads to long-term nursing home placement. We will examine whether CHC members are more likely to have primary care follow-up after a hospitalization; this has been shown to be associated with lower likelihood of readmission.

The CHC population will consist of beneficiaries who transition to Medicaid managed care from Medicaid FFS, many of whom are currently enrolled in Medicare FFS or Medicare managed care, either through a D-SNP or a Medicare Advantage plan. This creates data differences where utilization by dual-eligibles will be captured in the Medicaid administrative data, while the claim's paid amount will not accurately reflect the true cost of services. To estimate the effect of CHC on overall costs, we list various approaches based on CHC beneficiary enrollment type and corresponding data (claims or encounters) (Table 4). We introduce the term 'Medicaid Derived Encounters' to refer to the use of Medicaid data to measure utilization that is paid primarily by Medicare. We will link Medicaid and Medicare data which will provide a complete picture of costs using the claims paid amount for beneficiaries who are either solely in Medicaid FFS, or a dual-eligible enrolled in Medicare FFS. We anticipate that the MCO paid amount will be available in the encounter data to estimate costs for beneficiaries who transition to (or who are currently enrolled in) Medicaid managed care; however, should the cost data be deemed proprietary or withheld for any reason, we will use a shadow pricing methodology. This approach substitutes a paid amount that is based on historical and concurrent FFS claims data for a given procedure and provider in place of the withheld MCO paid amount. We will employ the same methodology for dual-eligibles in D-SNPs should the D-SNP MCO paid amount in the encounters submitted to DHS be unavailable as well. We will use

[10] Analysis of utilization (e.g., hospitalization) for non-duals (Medicaid only) will rely on Medicaid data.

shadow pricing to estimate baseline costs for beneficiaries enrolled in D-SNPs prior to July 1, 2017, when these plans will begin to submit encounter data for beneficiaries statewide. We anticipate that a small proportion of dual-eligibles will be enrolled in a Medicare Advantage plan that is not a D-SNP.[11] DHS will not have authority to require Medicare Advantage plans to submit encounter data; therefore, we will use shadow pricing to estimate costs for this population at both baseline and post-CHC enrollment. The following table summarizes the different Medicare data that will be available based on the program participation and phase of implementation.

Table 4. Medicaid and Medicare Data Type based on Program Participation and Phase

Enrollment Type	Data	Utilization Models	Cost Models
Baseline Period (2014-2016)			
Medicaid Fee-for-Service	Claims	Medicaid Claims	Paid Amount
Medicare Fee-for-Service	Claims	Medicare Claims	Paid Amount
Medicare Managed Care (D-SNP)	N/A	Medicaid Derived Encounters*	Shadow Pricing
Medicare Managed Care (Medicare Advantage)	N/A	Medicaid Derived Encounters	Shadow Pricing
Program Period (2017 –)			
Medicaid Managed Care	Encounters	Medicaid Derived Encounters	MCO Paid Amount or Shadow Pricing
Medicaid Fee-for-Service (Comparison Groups)	Claims	Medicaid Claims	Paid Amount
Medicare Fee-for-Service	Claims	Medicare Claims	Paid Amount
Medicare Managed Care (D-SNP)	Encounters	Medicare Encounters	Shadow Pricing
Medicare Managed Care (Medicare Advantage)	N/A	Medicaid Derived Encounters	Shadow Pricing

*Medicaid Derived Encounters refers to service utilization that is primarily reimbursed by Medicare, but appears in the Medicaid Claims data because Medicaid is responsible for the copayment. The total paid amount is not available for research, however, there is sufficient information from which to derive an indication of the encounter (e.g., inpatient, outpatient and ambulatory services). We will use shadow pricing to estimate the costs of these services.

Nursing Home Minimum Data Set 3.0. All licensed nursing facilities in the US are required to conduct a standardized resident assessment, commonly referred to as the Minimum Data Set (MDS) 3.0. The MDS contains comprehensive data on a range of domains including resident physical function, cognitive function, mood, preferences for daily living, behavior and other topics. Assessments must be completed on admission and repeated annually. A brief version is used at quarterly intervals and at discharge as well as if there is a significant change in status. Residents who are receiving Medicare skilled care (SNF benefit) are required to have assessments completed at 5 and 14, 30, 60 and 90 days after admission to document the need for rehabilitation.

These data will be used to measure several factors relevant to the evaluation. MCOs have an incentive to prevent or delay permanent relocation to nursing facilities. This would be evident

[11] We will examine the distribution of plan-types for the 2014-2016 period to assess this point.

in several measures. First, CHC participants admitted to nursing facilities for PAC will be more likely to return to the community than non-CHC participants. Second, the acuity level of those participants who are admitted to nursing facilities will have higher levels of disability and acuity than in the comparison groups.

Data Security and Storage. Medicare, Medicaid and MDS data will be stored at the University of Pittsburgh Health Services Research Data (HSRDC). The HSRDC was developed for the specific purpose of providing a secure environment to store and control access to identifiable data. A description of the resources and security procedures is included as Attachment C. In summary, all identifiable data will be stored on the HSRDC server and only project personnel who are conducting data analysis will have access to the server. No individuals who are not part of the CHC Evaluation team will have access to the data obtained under this project, except as authorized by the Principal Investigator.

(b) Analysis

Subpopulations. We intend to stratify each measure described below by three subpopulations: 1) beneficiaries over age 60 who receive LTSS; 2) beneficiaries between the ages of 21 and 59 who receive LTSS; and 3) dual-eligible adult beneficiaries who do not receive LTSS. Note that for these analyses we include all LTSS users (i.e., community and facility dwelling). These populations are distinct and their care needs are meaningfully different. A younger LTSS population is more likely to have disabling conditions such as spinal cord injuries or nervous system disorders, whereas an older LTSS population may require LTSS due to conditions associated with the aging process, such as Alzheimer's disease or dementia. Dual-eligibles who do not require LTSS and will be enrolled in CHC have a broad range of needs, from aging services to HIV/AIDS care, but are significantly different from the other subpopulations of interest in that their restrictions on activities of daily living are likely minimal in comparison. It is plausible that the MCOs that participate in CHC will have different approaches for each subpopulation; thus, it is beneficial for the evaluation to report measures and multivariate analyses on each group.

Cost. We present each measure in Tables T4, along with an indication of the hypothesized direction under CHC for each of the three subpopulations. Ten measures of cost are listed in Table T4. We intend to report costs for multiple categories of service to determine where savings (or increases) are being driven. We also seek to measure if out-of-pocket costs change under CHC by measuring utilization of services where the MCO requires copays. Costs will be calculated on an annual and on a per member per month (PMPM) basis to allow estimates of program effects for people who are not available for a full year (i.e., due to attrition).

Utilization and Access. Many of the utilization and access measures in Table T5 mimic the cost measures, as it is of interest to measure utilization changes across categories of service. We also intend to measure how HCBS and LTSS services are being used, such as the volume of home modification service utilization, and if the non-LTSS duals population uses LTSS earlier in the disablement process. Finally, we will measure if CHC impacts care geographic variability through MCO standardization of processes over the evaluation period.

Quality and Care Coordination. Coupled with stakeholder and participant interviews, we will measure quality and care coordination through a number of administrative data measures (Table T6). The care coordination measures focus on transitions and discharges, duplication of services, and compliance with beneficiary care plans. The quality measures focus on beneficiary functional status, receipt of preventive services, and measures specific to HCBS and nursing facility care from the MDS (e.g., nursing home compare). We exclude specific quality measures of other providers at this time (e.g., hospital process-based quality measures), as the main impact of CHC on quality will likely be with providers of LTSS. In addition, MCOs that participate in CHC will be required to implement incentive policies to improve quality of care and care coordination for beneficiaries. We intend to measure the impact of the MCO-proposed incentive policies to further understand the effect of MLTSS. We will analyze MCO documents that detail these policies and design an analysis of those specific incentive programs. This part of the analysis will remain flexible as these policies will not be finalized until 2017. It is possible that some initiatives will parallel measures included in this evaluation plan, and thus could be combined.

Causal Analysis. The analysis plan will take advantage of the phased implementation of CHC in order to derive causal estimates of the program effects. The goal of causal analysis is to determine the extent to which changes in outcomes, and in this case, utilization and cost, can be attributed to the CHC program. For example, to estimate the extent to which hypothesized decreases in hospitalization rates, increases in HCBS, and decreases in nursing home placement, are directly due to CHC. A detailed description of our analytic approach to causal modeling is included in Attachment C. A list of candidate control variables appears in Attachment D.

An important secondary research question is whether the effect of CHC is moderated by the degree of financial integration between Medicaid and Medicare. In general, we hypothesize that participants with a higher degree of financial integration will experience better outcomes (e.g., lower duplication of services, increased access to LTSS). Ideally, participants will be enrolled in D-SNP plans that are sponsored by the same insurer as the Medicaid MCO. This is considered a 'fully aligned' plan. People who are enrolled in an 'aligned' D-SNP will have the highest level of integration, followed by those in a Medicare Advantage plan and those in FFS. Although Medicare Advantage plans have an incentive to control costs and manage utilization, as with FFS, there is no requirement to coordinate with LTSS providers. We will treat this as a categorical independent variable and examine whether there is a difference between the three plan types on CHC on outcomes. This analysis will use propensity scoring or instrumental variables to take into account the endogeneity of selecting Medicare Advantage or FFS.

A related issue is that some participants may be enrolled in LIFE or in an MCO that is part of an integrated health system. Participants may also be patients of an Accountable Care Organization (ACO) or similar integrated or risk-bearing provider group. Each of these delivery system innovations would be expected to lead to lower levels of duplication of services and a greater focus on primary and secondary prevention. As above, we will use propensity score analysis to control for the endogeneity of selecting an integrated provider.

3. Participant and Family Reported Outcomes.

We will conduct interviews with a representative statewide sample of program participants (or proxies; see below) and caregivers to collect primary data about a range of participant and family reported outcomes. For the purpose of this evaluation, we are focusing on the impact of CHC on unpaid caregivers who are primarily family or friends of the program participant and assist with instrumental or basic activities of daily living on a regular basis.[12] This component of the evaluation will be conducted in collaboration with the Office of Health Survey Research, in the Department of Behavioral and Community Health, Graduate School of Public Health. See Attachment F for a description of the organization, capacity, quality management, training, and approach to participant safety and well-being.

Table T7 presents the design for this component of the evaluation schematic form. The design takes advantage of the phased implementation to enroll samples of participants and caregivers from each phase and each time period. In addition, we plan to interview participants prior to the implementation of each phase, which will provide a 'clean' baseline data point for estimating change over time in outcomes such as quality of life and satisfaction. This will make the CHC evaluation one of the strongest national evaluations of MLTSS in the country.

This component of the evaluation is designed to address an important aspect of the transition to CHC. Specifically, during the first six months of each phase, MCOs are not permitted to make reductions to participants' service plans (technically, they are permitted to increase, but not decrease, services). MCOs cannot change providers or renegotiate fees during this six-month window, and they cannot change the service coordinator. Thus, it is likely that any changes to individual service plans that might affect outcomes will not begin to take place until afterwards. The impact of any change, however, is not instantaneous. Thus, it is important to have a sufficiently long observation period. While one option would be to observe participants for 24 months after the initial transition, we do not know a priori when each person might have their care plan revised. Thus, it makes more sense to observe people for a full three years. As noted on Table T4, we are planning for longer in-person interviews on an annual basis alternating with shorter, telephone based interviews. Thus, ending the study at 30 months would mean that the final outcomes would be measured differently than at baseline.

Several features of the design are important to note. First, we will be able to estimate the causal effects of CHC on participant outcomes at 12- and 24-months. However, by 36 months all eligible participants will be enrolled in a MCO. Thus, since there will be no one left to form a comparison group, our conclusions about longer term effects of CHC will be based on trends in outcomes after all regions have implemented the program. For example, we will be able to draw strong conclusions about the effect of CHC on changes in participant quality of life,

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[12] Family members who are paid caregivers may be eligible if they are the person most involved with the participant's care and live with the participant. Paid attendants who are not-relatives will not be considered in this component of the study; their perspective will be captured through the Key Informant Interviews with providers.

satisfaction and caregiver stress over a two-year period (for Phase I and Phase II regions). We will be able to describe longitudinal trends over a three-year period for all three regions, but we will not have the benefit of a counterfactual for longer term outcomes.

The sample has been designed to maximize our ability to draw strong conclusions about the effect of the program on several important subgroups of participants:

- age 60 and over using community based LTSS (HCBS),
- age 21-59 using community based LTSS (HCBS), and
- dual eligible (Medicare and Medicaid) not using any LTSS (any age).

In addition, we will interview a sample of caregivers selected to represent the following types of participants:

- age 60 and over using community based LTSS (HCBS),
- age 60 and over living in a facility,
- age 21-59 using community based LTSS (HCBS), and
- age 21-59 living in a facility.

The study has been designed to collect data from contemporaneous comparison groups during Phase I and Phase II. (As noted, there is no contemporaneous comparison group available at Phase III.) In order to do this, it is necessary to recruit a new treatment group subsample from Phase II and a new comparison group subsample from the Phase III region in 2017. This compensates for the fact that enrolling the entire sample at baseline will lead to a healthy survivor bias. In other words, people who are sampled in 2016 and are still alive 12, and 24 months later will be different than a random sample of the population in 2017.

Table T5 summarizes the target sample size for each subgroup of participants. This represents the number of completed interviews we expect to have for each subgroup at each point in time. In order to reach this target, we need to recruit enough individuals to allow for attrition. The first row presents the total sample for pooled comparisons across all subgroups for each type of comparison (12, 24 and 36 month outcomes). The next rows show the sample sizes for each subgroup. Table T6 provides additional data on the sample of unpaid caregivers. Note that the caregiver sample is allocated to generate a larger sample from community based care receivers. This reflects the greater heterogeneity in living arrangements for these people. Within this group, caregivers can live with the care receiver (primarily spouses) or have their own households (primarily adult children or non-relatives).

<u>Power.</u> The sample size for each subgroup has been set so that there will be at least 400 treatment group and 400 comparison group subjects for each planned analysis. This is based on a conservative approach that does not take into account the greater statistical efficiency from using multivariate regression models. For example, at the 24-month point, there will be 466 subjects in the treatment group and 400 in the comparison group (Table T5). Using conventional settings for statistical power (alpha .05, beta .80), we will be able to detect a difference of delta = .07 on a generic categorical variable. For example, we will be able to

detect whether 87% compared to 80% agree with the statement, "I am confident I can make choices in my daily routines." [13] By design, we will have the same number of subjects for within-person longitudinal analyses. For analysis of all categories of participants, we will be able to detect smaller differences, e.g., 87% compared to 83%. For analysis of caregivers, we will have sufficient power for analyses that combine all four subgroups.

Recruitment and Retention. Participants and caregivers will be recruited using nationally recognized best practices for survey design. The Commonwealth will provide identifiable enrollment tables for all program participants in 2015. These data will be used to send initial letters to sampled participants, followed by telephone calls. Subjects will be screened on the phone for eligibility, and scheduled for initial in-home interviews. We will develop a recruitment script that identifies whether a sampled person can participate in an in-home interview or if a proxy informant is required. We have anticipated that up to 40% of sampled individuals will not be able to complete an interview.

The sample of caregivers will be constructed in two ways. For community dwelling individuals, we will ask the sampled person to identify the individual who is most involved in their daily care (defined in terms of IADL and ADL support). Then our interviewer will ask for permission to contact that caregiver. We will then send a letter, followed by a telephone call to recruit the caregiver. We anticipate, however, that in most cases the caregiver will either be the proxy informant or will be present in the home during the initial contact. For individuals living in a facility, we use several methods. First, we will send a generic letter to the home address of the sampled person that describes the study and asks for the person most involved with their care and decision-making to contact the study team. We will also contact the facility directly and ask to speak to the individual with power of attorney for the sampled person; the person with power of attorney is likely to be the most involved family member, or will be the person with legal authority to refer the study team to an appropriate individual.

These recruitment approaches have been used successfully in other studies. We have accounted for the fact that we will need to contact a large number of individuals to reach the target sample sizes.

Given the expense of assembling a large and complex sample, it is important to take every step possible to maximize retention. We will follow best practices in survey research to develop a sense of shared mission and identity with the study. This includes sending out birthday and holiday cards, as well as regular newsletters. We will develop a web page with information about the study (e.g., contact information and links to official program websites). During the subject recruitment phase, we will ask about participant and caregiver use of email and social media such as Facebook for ongoing communication.

[13] This is based on an item from the National Core Indicators – Aging and Disabilities Consumer Survey Pilot Survey (January 2015) reported that 78% of older adults agree with the statement "Do you feel in control of your life?"

Interview Methods. We plan to use a combination of in-person and telephone interview techniques. Previous research with these populations suggests that in-person interviews provide the highest quality data, especially with self-reports of physical disability and assessment of cognitive impairment. To control the cost of data collection, we will conduct annual interviews in-person, alternating with telephone interviews.[14] This allows us to efficiently increase the number of data collection points. For example, if a person is admitted to a nursing facility between annual interviews, we will have data from no more than six months prior to that transition for predictive modeling. All proxy informant and caregiver interviews will be collected on the telephone.

The University of Pittsburgh uses the Qualtrics data collection platform. This is a computerized interview system that allows us to design sophisticated adaptive and branching instruments. When conducting an interview, the interviewer will be prompted with the next question and response set, and can rely on the software to direct them away from irrelevant questions. It also improves the quality of data, since it is impossible to enter invalid responses. Finally, since interviewers enter the survey responses in real time, there is not lag between data collection and the availability of files for analysis.

Survey Development. We have identified a list of candidate topics and measures for participant and caregiver interviews (see Table T10). Several steps will be taken to finalize this list and prepare the interview tools. First, it is important in a large, complex study such as this, to assure that the topics cover the range of issues that are important to the participants themselves. We will gather input from stakeholders in OLTL, the sub-MAAC, expert opinion and our literature review. However, it is crucial to obtain feedback on this component of the design directly from the type of people who will be participating in the study. We will therefore conduct a series of twelve focus groups: three in each of the four major survey participant groups (60+ HCBS, 21-59 HCBS, Duals, and caregivers). In each group we will conduct a focus group in an urban area, a rural or adjacent community, and with Spanish speaking individuals. The focus groups will spread across the different CHC phase regions. The analytic strategy for the focus groups is summarized in Attachment B.

The Office of Health Survey Research has the capacity to conduct interviews in Spanish using bilingual interviewers. We will translate, test, and back-translate the survey instrument to assure that the Spanish language version is equivalent to the English language original. For areas where additional languages are prevalent, we will arrange to have interpreter services available (e.g., using medical translator service). The Medicaid enrollment portal is available in Russian, Cambodian, Chinese and Vietnamese. However, given the low prevalence of these languages, we anticipate this will be a relatively rare occurrence, and we do not plan to extensively test the instrument in other languages.

[14] For individuals who are not able to participate in a telephone call, we will use TTY or whatever technology the individual prefers.

Next, we will pilot test the instruments with small samples of participants. This will allow us to test the efficiency of our sampling procedures as well as every aspect of the interview process. While we plan to use established, reliable instruments as much as possible, some topics will require new item development and testing. It is important to do this before starting the baseline data collection. We will gauge the length of time it takes to conduct the interviews, test the wording and response set of every question, and finalize all field procedures.

We will conduct a small mixed-mode and test-retest reliability study. This is necessary to confirm that survey instruments produce comparable results when conducted on the phone or in-person. This is done by interviewing a small sample of individuals on two occasions using a four-square design. One group will have an initial phone interview followed by a second, identical phone interview within one week. One group will have two in-person interviews. One group will have phone followed by in-person, and the last group will have in-person followed by phone. This procedure establishes test-retest reliability within each mode, which can be compared to the mixed mode reliability to identify mode effects. Items that are divergent will be replaced or eliminated.

Analytic Strategy. The analysis plan for participant and caregiver interview data will draw on the same general framework as for administrative data (see Attachment D).

4. LTSS Provider Survey.

We will conduct an annual online survey of LTSS providers. This survey will complement the qualitative findings from the KII and will provide data on the impact of CHC across the full range of providers. This survey will be conducted statewide beginning in the summer of 2017 to capture the perspective of providers on program implementation. The topics for the survey will be informed with stakeholder input and by the KII, and will tentatively include staffing and leadership turnover, size, mergers and acquisition, network formation, satisfaction, coordination with other agencies and providers, and use of health information technology. The Evaluation team will work with OLTL to obtain email addresses for LTSS providers. After the implementation of CHC, contact information for LTSS providers will be obtained from MCO Provider Directories.[15] The survey instrument will be developed and pilot tested during the first half of 2017.

5. Nursing Home Residents.

The University of Pittsburgh will conduct interviews with cross-sectional samples of nursing home residents from a sample of nursing facilities in each Phase. The purpose of this component of the evaluation is to augment the data available about the experience of nursing facility residents from MDS and other data sources with interviews about quality of life and satisfaction. The results of these interviews will be combined with other data about these facilities (e.g., overall quality of care, state inspection results, case mix data) to construct a

[15] The Evaluation Team is tasked with measuring network adequacy and the assessing the quality of the provider directories, so the survey will be a natural extension of those efforts.

series of rich case studies that will provide insight into the effect of the CHC program on this population.

There are several pathways by which the CHC program may have an impact on the daily lives of nursing facility residents. Over time, the MCOs are expected to reduce admission of low-acuity residents and facilitate the return to the community of people who can live independently with LTSS. This component of the evaluation will shed light on this process from the perspective of individual participants.

While important, the impact of these factors on quality of life and satisfaction is likely indirect; any effect on daily operations will take time to manifest. Nevertheless, it is important to monitor whether there is a negative pattern. We therefore plan a small, descriptive before and after tracking study that is designed to capture the indication of a trend. Evidence of a substantial change in quality of life or satisfaction from before to after the implementation of Phase I would justify expanding this component of the evaluation.

We will enroll four facilities in each region to participate in this tracking study. Facilities will stay in the sample throughout the life of the evaluation. Selection of facilities will be done purposively to assure that certain specific types of organizations are represented: for profit, not-for profit, county owned, chain, non-chain, freestanding, hospital based, urban and rural/adjacent. We will also seek facilities that vary in the age of residents and in the amount of skilled care they provide. We will work with the various trade associations and health systems to identify facilities that are willing to participate in this component of the evaluation.

We plan to conduct approximately 25 interviews, 10 with people age 21-59, and 15 with people age 60 and older, in each facility at each time point. The sample size is designed to generate a stable estimate of the facility average of self-reported quality of life and satisfaction, and also take into account the typical age distribution of residents. Residents also vary in length of stay and intention (or preference) for returning to the community. We will therefore select residents with length of stay over and under 100 days. *We will conduct preliminary analysis using MDS data to examine the distribution of intention to return to the community; if possible, we will stratify long-stay residents based on their preferences.*

The interview instruments will include the Minnesota QOL Survey and the Nursing Home CAHPS.

6. Limitations and Challenges.

Several limitations and challenges exist with regard to the participant and caregiver experience survey. One concern is that the comparison group will be comprised of people from the Phase II (Southeast) and Phase III (Central/northern) regions. To the extent that these regions are different in terms of demographics, health status, preferences, or use of LTSS, the comparisons will be limited. In particular, Phase II has a higher proportion of racial and ethnic minorities and Phase III has smaller cities than Phase I or Phase II and is largely comprised of rural and rural

adjacent communities. We will therefore take care during the sampling to identify communities that are similar in terms of population density in each region, as well as balance the sample in terms of race. However, we anticipate that it will be difficult to balance ethnic groups due to the distinct differences across the Commonwealth. Some statistical approaches to ensuring appropriate comparison groups are discussed in the causal inferences strategy section (Attachment D).

A second limitation is that we have designed the evaluation to estimate the statewide effect of the program within each of the major subgroups. Our ability to estimate within-region effects is limited, however, to pooled data from the three major subgroups. In order to generate separate effects of the program in Phase I and Phase II, the sample size would have to be increased significantly (approximately by a factor of three) in each region.

A third factor is the difficulty of recruiting and retaining a large cohort of participants. The populations of interest have chronic conditions, physical disability, cognitive impairment and many have behavioral health issues. Caregivers are under substantial levels of stress. Our planning takes into account high levels of attrition, however, we also plan to use best practices developed in previous research. The approach, which has been successful in previous studies, is to emphasize the importance of sharing their personal experience to help others. Techniques for retention include using newsletters and other communication strategies to create an esprit de corps, recognizing birthdays and holidays, and sharing findings (as appropriate).

With regard to analysis of administrative data, we anticipate delays and challenges regarding the suitability of data for rigorous statistical analysis. Our team has extensive experience working with these types of data, however, we expect that with new programs there will be new challenges. For example, at the beginning of each phase, we expect that there will be a backlog of claims and payments as LTSS providers grapple with a new reimbursement system. Another challenge is the transition to ICD-10. We expect to work closely with programmers from the Department of Human Services to assure data quality and expedite data acquisition. Our approach to the challenge of delays will be to allocate our programming and statistical resources to analyzing the baseline and comparison group data. This will allow our team to develop techniques for ICD-10, including crosswalks to ICD-9 to facilitate pre-post analysis.

C. TIMELINE

The overall project timeline is in Attachment A. The timeline has been divided into the planning year (2016) and program years. As noted above, the transition to managed LTSS affects a large number of processes and outcomes. The impact of many of these changes will not be evident until the program has been in place for a sufficient period of time. In addition, important outcomes such as utilization and cost are measured with administrative claims data that have substantial time lag before they become available for analysis. The Phase I region will begin the program in 2017. The impact of changes in care coordination on utilization may not be evident until the end of 2018; claims data will not be available until mid- to late 2019. Thus while the timeline shows preliminary findings based on year 1 data will be available in late 2018, more reliable reports on Phase I outcomes will be available in 2019-2020. Other data sources, such

as key informant interviews and participant/caregiver interviews will be available sooner. This will allow us to examine changes in process of care throughout 2017. However, the same underling program dynamics that affect utilization outcomes also impact participant quality of life and satisfaction, thus we expect that it may take 12 to 24 months for changes in participant experience to be evident.

During the planning year (2016), the study team will prepare draft instruments for key informant interviews and participant interviews. We will conduct focus groups with participants, followed by pilot testing of all instruments. Preliminary analysis of administrative data will be ongoing; however the data for Phase I outcomes will not be examined until mid-year 2018 at the earliest. Recruitment for baseline interviews will begin in the fall of 2016.

D. GOVERNANCE

The evaluation is governed by the master contract with the Department of Human Services. Under this framework, the following governance applies:

- The Evaluation Work Group will continue to provide oversight for the life of the evaluation;
- The Department must review and approve the following:
  - Instruments, protocols and training curricula;
  - Initiation of field work;
  - Any public release of evaluation materials or findings;
- The University will consult with the Department in advance of communicating with the public about the evaluation. This includes, but is not limited to, soliciting subjects for the evaluation, seeking stakeholder input and recruiting focus group participants. The purpose of this consultation is to coordinate with any other activities the Department may have underway, and to allow advance notification from the Department to stakeholders when appropriate and helpful to the evaluation;
- Data use should already be clearly governed by Data Use Agreements (DUAs), but in any event, any reuse or release of data requires explicit approval by the Department; and
- On request, the Department must be given access to the data compiled and collected for the evaluation, including any data bases created for the evaluation.

The evaluation team will establish a schedule for regular meetings with the WG. Initially, meetings will be held monthly by telephone or in-person as schedules permit. This may be reduced to quarterly as the evaluation activities get underway.

The evaluation team will present as requested at the MLTSS sub-MAAC well as in 'Third Thursday Webinars' and other public presentations in order to brief the community on the design of the evaluation and elicit important topics from their perspective. We will develop a powerpoint presentation that can be made publicly available.

Other presentations will be arranged as needed. Other venues may include senior centers, Centers for Independent Living, county offices, or non-profit organizations.

Key deliverables will be quarterly and annual reports. Quarterly reports will be informal updates on the various milestones of the evaluation. We anticipate that the first reports will cover planning and development activities. Preliminary findings will be included as available. Final reports will include a summary of activities in the previous year and a cumulative update. A summary of proposed deliverables over the next two years is below. As appropriate, quarterly and annual reports may be combined into one deliverable.

We have highlighted in bold the reports that will provide early feedback on the progress of the implementation.

Table 5. Summary of Preliminary Deliverables (2016-Q1-2017)

Due Date	Deliverables Received by Working Group
December 31, 2015	• Project Narrative
March 31, 2016	• Report on Focus Group Task • Quarterly Update including: ○ Draft interview schedules for Key Informant, Participant, and Caregiver Interviews

June 30, 2016	• Report on Focus Group Task
	• Quarterly Update including:
	  ○ Preliminary analysis of baseline administrative data files from 2014-2016 (as available)
	  ○ Progress to date and draft documentation for interview instruments, training, protocols, schedules, and pilot test procedures

August 31, 2016	• Report on Focus Group Task
	• Quarterly Update including:
	  ○ Participant interview instruments
	  ○ Training curricula and protocols for interviewers
	  ○ Pilot test procedures and interview schedules

December 31, 2016	• Quarterly Update including:
	  ○ Status of recruitment for participants and caregivers.
	  ○ Preliminary results from initial Key Informant Interviews

March 31, 2017	• Cumulative Annual Report
	  ○ Progress to date on interviews, coding, and administrative data analysis
	  ○ Update on adjustments to Phase II baseline
	  ○ Preliminary results from Key Informant Interviews and Rapid Participant Focus Groups

June 30, 2017	• Quarterly Update including: ○ Results from follow up participant interviews

August 31, 2017	• Early Implementation Report
	  ○ Preliminary results from Key Informant Interviews and Rapid Participant Focus Groups
	• Quarterly Update including:
	  ○ Progress to date on interviews and coding

December 31, 2017	• Quarterly Update including:
	  ○ Results from participant and caregiver interviews
	  ○ Results from caregiver interviews
	  ○ Results from Key Informant Interviews (implementation)

March 31, 2018	• Cumulative Annual Report

Due Date	Deliverables Received by Working Group
December 31, 2015	• Project Narrative
March 31, 2016	• Report on Focus Group Task • Quarterly Update including: ○ Draft interview schedules for Key Informant, Participant, and Caregiver Interviews

June 30, 2016	• Report on Focus Group Task
	• Quarterly Update including:
	  ○ Preliminary analysis of baseline administrative data files from 2014-2016 (as available)
	  ○ Progress to date and draft documentation for interview instruments, training, protocols, schedules, and pilot test procedures

August 31, 2016	• Report on Focus Group Task
	• Quarterly Update including:
	  ○ Participant interview instruments
	  ○ Training curricula and protocols for interviewers
	  ○ Pilot test procedures and interview schedules

December 31, 2016	• Quarterly Update including:
	  ○ Preliminary results from interviews of baseline sample of participants and caregivers
	  ○ Preliminary results from initial Key Informant Interviews

March 31, 2017	• Cumulative Annual Report
	  ○ Progress to date on interviews, coding, and administrative data analysis
	  ○ Update on adjustments to Phase II baseline
	  ○ Preliminary results from Key Informant Interviews and Rapid Participant Focus Groups

June 30, 2017	• Quarterly Update including:
	  ○ Results from follow up participant interviews
	• Early Implementation Report
	  ○ Preliminary results from Key Informant Interviews and Rapid Participant Focus Groups

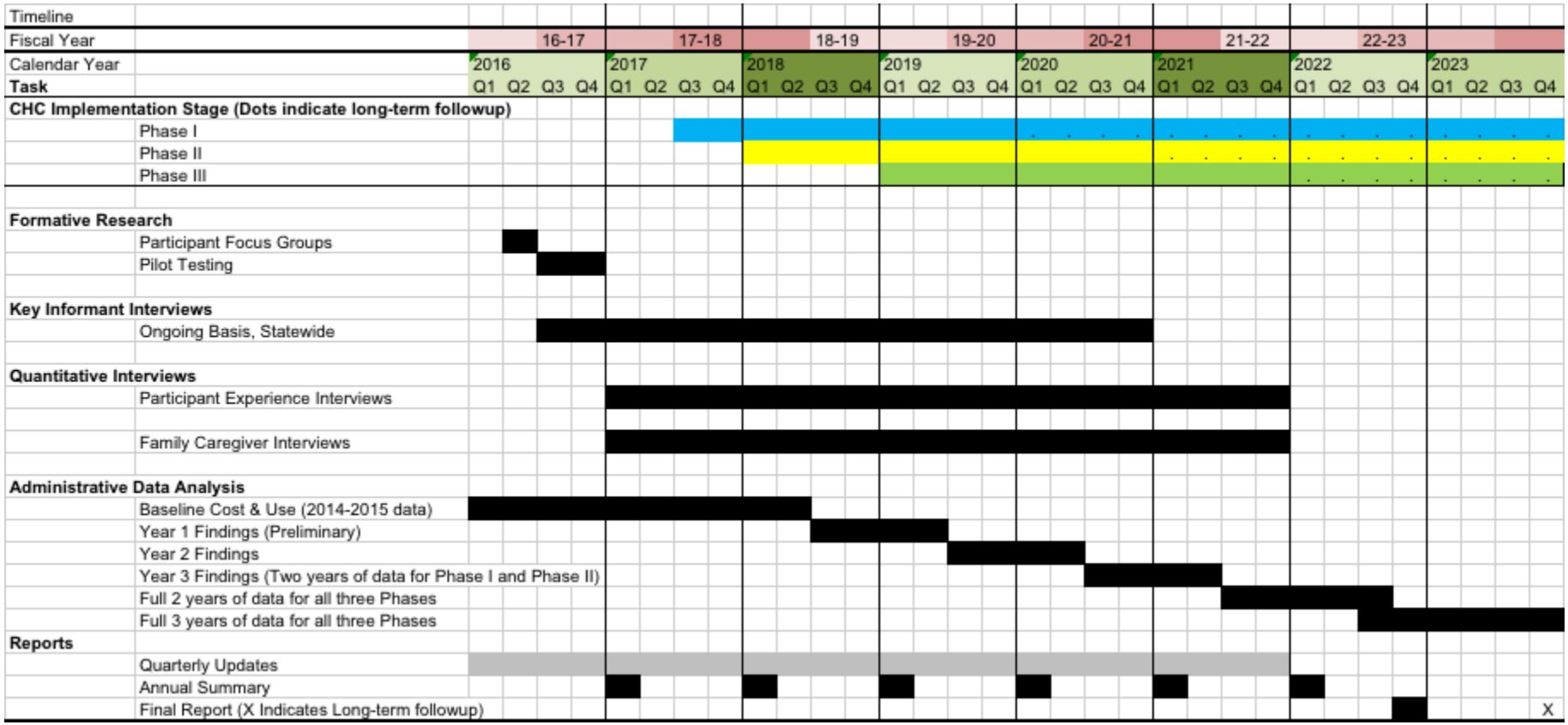
August 31, 2017	• Quarterly Update including: ○ Progress to date on interviews and coding

December 31, 2017	• Quarterly Update including:
	  ○ Results from follow up participant interviews
	  ○ Results from follow up caregiver interviews
	  ○ Results from follow up Key Informant Interviews (implementation)

March 31, 2018	• Cumulative Annual Report

Attachment A:

Project Timeline


Timeline
Fiscal Year
16-17
17-18
18-19
19-20
20-21
21-22
22-23
Calendar Year
2016
2017
2018
2019
2020
2021
2022
2023
Task
Q1 Q2 Q3 Q4
CHC Implementation Stage (Dots indicate long-term followup)
Phase I
Phase II
Phase III
Formative Research
Participant Focus Groups
Pilot Testing
Key Informant Interviews
Ongoing Basis, Statewide
Quantitative Interviews
Participant Experience Interviews
Family Caregiver Interviews
Administrative Data Analysis
Baseline Cost & Use (2014-2015 data)
Year 1 Findings (Preliminary)
Year 2 Findings
Year 3 Findings (Two years of data for Phase I and Phase II)
Full 2 years of data for all three Phases
Full 3 years of data for all three Phases
Reports
Quarterly Updates
Annual Summary
Final Report (X Indicates Long-term followup)
X

Attachment B:

Qualitative Data Analysis Procedure

Qualitative Data Analysis Procedure

Qualitative data analysis of focus groups and key informant interviews with providers and participants will be conducted by the study team under the direction of Dr. Mary Hawk, PH, Co-Director of the Evaluation Institute for Public Health at the University of Pittsburgh Graduate School of Public Health.

This document summarizes qualitative data procedures that will be used to analyze both focus groups and key informant interviews.

1. Focus Group Sessions

Focus groups will discuss and explore the perceptions of LTSS and responses to draft interview instruments. Dr. Hawk will construct the focus group interview script working with the principal investigators. Staff of the Evaluation Institute will engage in a mock focus group session as a means of pilot-testing the script. Team input will be used in finalizing the focus groups scripts.

Each focus group will be guided by a trained moderator and will include a trained note-taker to record group interaction patterns and the group dynamics. The moderator will guide the group discussion and will meet with the note-taker to discuss the findings from the group discussion and to record field notes. Each of the 10 focus groups will consist of 8-10 subjects and discussion will be held for approximately 60 minutes. All focus group sessions will be audio-taped and transcribed verbatim by a trained transcriptionist.

2. Qualitative Data Analysis of Key Informant Interviews

Codebook construction will follow the qualitative editing method as outlined by Crabtree and Miller and that is designed to use for research conducted within the health sciences.[i] A system of audit trails will be employed to document the creation of codes. The codebooks will be sensitive to themes regarding perceptions of LTSS, the implementation and transition processes for people moving to the new care system, and any changes resulting from the new CHC system. The codebooks will be modified, as needed, to incorporate new themes gained through the iterative analytical approach and will be allied equally to all relevant interviews groups. In addition, Dr. Hawk will work closely with the larger study team to identify meaningful descriptive categories of participants that are interviewed, which will allow a more in-depth analysis of qualitative findings and application of a true mixed-methods approach.

Dr. Hawk will oversee the coding/analyses of the interviews. Using the codebooks developed, two trained independent analysts will code the interviews, and 20% of the interviews will be duplicate coded and tested for inter-coder reliability. Each of the analysts will have 1-5 years in experience in qualitative coding. In addition, each analyst will receive project specific training gained by working with Dr. Hawk and the larger study team. A manual will be developed for each code in the codebooks with specific inclusion / exclusion criteria and textual examples of clear and borderline cases. Representative quotations will be captured verbatim from the transcripts using Dedoose, a mixed methods data analysis software package (Sociocultural Research Consultants.) As part of the coding process, the analysts will meet and process any differences in the assessment of codes for each case until agreement is achieved between them. The codes determined through this agreement process will then be recorded in a master file, which will become the basis for the final analysis. This process of coding independently (the basis for the inter-coder reliability scores) and then discussing each case has enabled Dr. Hawk in her research to maintain narrative coherence in the qualitative coding with an inter-coder reliability kappa scores of 0.75 and above.[ii](Landis and Koch.)

The quality of the textual coding will be ensured through the following steps: (1) we will provide a methodical process for constructing the codebook, which shares decision-making, and allows for the documentation of decisions through audit trails; (2) we will train two analysts to code the interviews independently, and then have a discussion process to ameliorate any differences before entering codes in the master file; (3) we will maintain this quality coding throughout the analysis by tabulating inter-coder reliability kappa scores on regular intervals; (4) we will have extensive accuracy checking, including a system whereby kappa scores of 0.70 and below trigger automatic review and retraining sessions by Dr. Hawk.

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[i] Miller W, Crabtree BF. Primary care research: a multi typology and qualitative road map. In: Crabtree BF, Miller WL, editors. Doing Qualitative Research. London: Sage Press, 1992.

[ii] Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics 1977; 33(1):159-174.

Attachment C:

Health Services Research Data Center (HSRDC)

University of Pittsburgh
Health Policy Institute
Health Services Research Data Center (HSRDC)

OVERVIEW

The Health Services Research Data Center (HSRDC) is a University-wide resource designed to facilitate patient-centered outcomes research using large datasets containing sensitive health information. The HSRDC acts as a shared resource to University investigators interested in conducting public health related research using large clinical and administrative datasets from public and private sources.

The HSRDC was founded in 2011 as a component of the Comparative Effectiveness Research Core (CERC), originally a core of the University of Pittsburgh Clinical and Translational Science Institute (CTSI) and is now a core of the University of Pittsburgh Health Policy Institute.
The data center is comprised of hardware, software and human resources that together provide a powerful, secure analytic and storage platform for health services research compliant with state and federal security regulations. The computing infrastructure consists of multiple servers dedicated exclusively to the analysis and storage of large clinical and administrative datasets. Users access these services via a secure virtual private network (VPN), allowing researchers to directly manage and analyze sensitive data directly in secure computing environment, maximizing both operability and security.

The data center is administered by a faculty director, a systems engineer, an administrator. All HSRDC activities are overseen by an advisory committee with representatives from each of the six schools of the health sciences.

As the prevalence of research using large administrative and clinical datasets increases, so does the need to dynamically adapt to changing regulations and security needs. An enterprise such as the HSRDC, with an administrative and information technology infrastructure designed explicitly to store, manage, and analyze this type of data, facilitates this task for the University in order to uniquely position Pitt to seek new funding sources as the health care landscape evolves.

Computing Resources

Data management and analysis activities specific to this project will utilize the University's Health Services Research Data Center (HSRDC), a state-of-the-art computing facility. The HSRDC is specifically designed to provide a high-throughput computing platform for analysis of large, health data sets directly in a secure environment. The HSRDC uses Dell PowerEdge multi-processor blade servers with 1.7 TB of memory, 208 cores, and a 17 terabyte Storage Area Network configured with multiple levels of RAID for high throughput and maximal data integrity. The user interface utilizes VMware-based "virtual desktops" running Windows 7 or 10, which allows users to work directly on the secure server while still providing for a familiar

computing experience. Users access their virtual desktops by way of a two-factor authentication process (passwords and tokens) via a secure socket layer (SSL) 128 bit VPN connection around an encrypted virtual desktop connection. Upon logoff the virtual desktop is deleted to ensure no malware can persist in the environment. Virtual Desktops are isolated from the internet via enterprise firewalls further mitigating risk of data loss. Any data leaving the secure servers, summary data, does so through an audited data interchange zone. A variety of statistical software licenses are maintained on the virtual desktops such as; SAS, STATA, SPSS, ArcGIS, and R permitting a wide array of data manipulation and statistical analyses directly on the virtual desktops. Servers containing protected health information are protected by multiple firewalls and physical security measures in accordance with the Health Insurance Portability and Accountability Act (HIPAA) and other governmental security standards. This allows users to directly work with data containing PHI in a highly secure environment, obviating the need to store sensitive data on laptop or desktop computers, which are more of a security risk. The entire system is housed within the University's Network Operations Center, a secure facility with redundant power feeds, fire protection, electronic access controls, and 24x7 monitoring.

Security Summary

Data for this project will reside in the University of Pittsburgh Health Services Research Data Center (HSRDC). All data will be stored on hardware at the Network Operations Center (NOC). The NOC is a secure facility requiring card access by authorized personnel. All visitors must be authorized by the NOC director, sign in and escorted by NOC staff. The NOC is staffed and monitored 24x7x365. Data resides on encrypted volumes and encrypted when backed up, ensuring encryption at rest. All data is backed up at least daily with a local copy and a DR copy offsite. Any physical media received with PHI is stored in a safe and securely destroyed upon project completion.

The user will access the data via a virtual desktop running on hardware at the NOC. Access to the virtual desktop is through a 128 bit SSL VPN around a 256 bit SSL connection using two factor authentication. The use of virtual desktops allows all data to stay in the secure environment through the lifecycle of the research project, data loading to analysis to data archival. The virtual desktop is deleted upon log off and rebuilt from a master image ensuring reliability and no malware can persist. Any files leaving the secure zone, summary data and results, must do so through a data interchange zone which is audited to ensure no raw data leaves. Users gain access to the virtual desktops only after completing required security training and meeting any Institutional Review Board (IRB)/DUA requirements. Security training is reviewed and completed annually to ensure it remains relevant and to serve as a reminder for users. User's unique accounts are created in University of Pittsburgh's Active Directory ensuring a single point of authorization. User access can be revoked by either an expired Active Directory account, when a user leaves the university or a sponsored account expires, or notification from the project PI of the user leaving. All data access is controlled at the project group level. Each user is a member of a project group and that group only has access to data which they are authorized both in the database and file server.

The HSRDC uses a number of VLANs to separate and isolate access to the appropriate zones. Network zone traffic is restricted by enterprise class firewalls. Firewall changes to production servers are approved by the University of Pittsburgh security team within CSSD. The virtual desktop, SQL server, and file server zones have no internet access decreasing the likelihood data will be stolen/leaked from the environment. Only ports necessary are open to traffic between zones.

Servers and virtual desktops are patched at least monthly. In the event a critical patch is made available which exposes a security vulnerability, the patch will be applied out of cycle. Windows Servers run anti-malware software with real-time and daily scanning alerting the CSSD security team. Monthly vulnerability scans on production Servers are completed. Actions taken are documented for all critical and high rated vulnerabilities. Annual risk analysis are completed.

Production server logs are forwarded to a log server and maintained for 6 months, or 3 years in the event they are related to a security breach. The log sever generates real-time alerts of suspicious activity and sends to system administrator. In addition, the NOC monitors servers for outages and unusual activity, e.g. processor spikes, disk access. The system administrator analyzes the alerts and in the event of a possible breach a ticket is created and the University of Pittsburgh Security Officer is notified. In the event a breach occurs, the security officer notifies general counsel who notifies the data owner and engages the appropriate resources.

Attachment D:

Identification Strategy for Causal Analysis

Identification Strategy for Causal Analysis

This evaluation is motivated, in part, to assess whether there is a causal relationship between the CHC program and any observed changes in participants' outcomes over time. That is, we aim to identify the causal effects of CHC on participants' health, quality of life, and health care utilization. We draw on Rubin's causal model as a framework for drawing causal inferences.[1] Under Rubin's model, the estimation of causal effects is conceptualized as a comparison of potential outcomes between individuals in an intervention group (CHC) and a comparison group (no CHC). Therefore, a causal effect for individual *i* can be expressed as:

$$Y_i(1) - Y_i(0)$$

Where $Y_i(1)$ represents the potential outcome for an individual *i* after participation in CHC, and $Y_i(0)$ represents the potential outcome for the same individual *i* had s/he not participated in CHC. What Holland labeled the "fundamental problem of causal inference" is that we can observe only one of the potential outcomes for a given individual.[2] For a given time period, individuals will either participate in CHC or not participate in CHC, but they cannot do both. In other words, the potential outcomes framework can be thought of as a missing data problem in which we are missing one potential outcome for each individual in our study.[3] Therefore, to evaluate the causal effects of CHC, we need to compare distinct groups who are participating in the CHC program (the intervention group) and who are not participating in the CHC program (the comparison group).

To ensure unbiased and efficient estimation of the unobserved potential outcomes, we seek to compare intervention and comparison groups who are as similar as possible on both observed an unobserved characteristics. The "gold standard" study design to ensure highly comparable intervention and control groups is an experimental design under which individuals are randomly assigned to groups. The major strength of an experimental design is that a known, random assignment to study group will be independent of both observed and unobserved characteristics that might be causally associated with our outcomes of interest. Although experimental study designs provide high internal validity, they often present challenges when implemented as part of a public program that serves distinct constituencies.[4] In the present case, for instance, it would be extremely administratively complex to randomly assign some individuals to CHC and others to remain in existing programs on a Commonwealth-wide basis.

Instead, we propose to exploit the phased-in implementation of CHC, under which individuals in different geographic regions of the Commonwealth begin participation in the program at different times. As a motivating example of a health care outcome to demonstrate our analytic strategy, we will refer to the likelihood of becoming a long-stay nursing home resident. This same analytic strategy will be employed for other quantitative outcomes, however, including self-report measures.

Although the regions are not randomly assigned CHC implementation order, we assume CHC regional implementation is exogenous – that is, we do not believe that the timing of regional

implementation is related to past responses on the probability of having a long stay residence in a nursing home. By the same token, individual program participants do not move from one region to another in anticipation of or response to CHC. Thus, the variation in the timing of implementation of CHC by geographic region allows us to implement a difference-in-differences quasi-experimental study design to estimate the causal effects of the CHC program on an individual's likelihood of becoming a long-stay nursing home resident. The difference-in-differences design is well established in economics and health services research,[5-8] and has been employed in prior rigorous studies pertaining to the effects of Medicaid policies on health.[9-14] Under the difference-in-differences design, two groups are compared over the study time period: individuals who reside in a geographic region where CHC has been implemented (the intervention group), and individuals who reside in a geographic region where CHC has not yet been implemented (the comparison group). The intervention group is observed before and after the CHC was implemented, and the comparison group is observed over the same time period, but without the program change. The mean differences in the likelihood of becoming a long-stay nursing home resident over time in the comparison group are subtracted from the mean differences in the likelihood of becoming a long-stay nursing home resident over the same time in the intervention group, thus avoiding biases from unmeasured confounders and secular trends. Specifically, this approach avoids bias from region-level factors that may be correlated with both CHC implementation and the likelihood of becoming a long-stay resident. We can easily extend this framework to include multiple groups and multiple time periods. The empirical model takes the following form:

$$Y_{irt} = \alpha CHC_{irt} + \beta X_{irt} + \gamma X_{rt} + \varphi_r + \tau_t + \varepsilon_{irt}$$

Where Y_{irt} is the likelihood of becoming a long-stay nursing home resident (or any other outcome of interest) for individual *i* in region *r* and time quarter *t*. CHC is an indicator of program participation (equal to 1 if an individual resides in a region after CHC is implemented and equal to 0 otherwise). We also include a vector of individual-level control variables, region-level control variables, region fixed effects, and quarterly time fixed effects. Region fixed effects control for unobserved, time-invariant regional characteristics that may be associated with outcomes. Time fixed effects control for Commonwealth-wide secular trends that may be associated with becoming a long-stay resident. Thus, α represents the changes in the likelihood of becoming a long-stay nursing home resident among individuals in regions with CHC relative to those residing in regions without CHC, after implementation compared to before implementation. The effects of CHC may not be constant across time or across regions. This is because detailed aspects of implementation may be different in each of the three geographic regions, and different population subgroups may respond differently to CHC. For these reasons, the coefficient on α should be interpreted as the mean of heterogeneous program effects in the post-CHC time period.

The effects of CHC estimated under this approach represent the average treatment effect during the two-year period when there is variation by region in implementation of CHC. Because all regions will implement CHC by January 2019, there is no longer a comparison group

after that date. Effects for later years are based on secular trends in outcomes after all regions have implemented the program.

A major underlying assumption in the difference-in-differences analysis is that, in the absence of the intervention, trends in the intervention group would have been the same as those trends in the comparison group. To assess the validity of this assumption, we will compare baseline information (for example, trends in the proportion of long-stay nursing home residents) among individuals enrolled in CHC with those individuals not yet enrolled in CHC in other regions of the Commonwealth. Although this method of assessing the face validity of intervention and comparison groups is standard practice, it has been criticized as leading to arbitrary selection of comparison groups. One alternate approach is to use newly developed data-driven methods to create "synthetic" comparison groups.[15] Under this method, a synthetic comparison group is constructed as a weighted average of potential comparators, so that the resulting synthetic comparison best reflects the intervention group in the pre-CHC state of the world.[15] Another possible method is to use "bias formulas" to estimate the extent to which an unmeasured confounder affects the program effects that we observe. Briefly, this method seeks to determine the "true" point estimates adjusted for an unmeasured confounder *u* by specifying the relationships between *u* and the intervention group status, and the prevalence of *u* in both the intervention and comparison groups.[16] Bias formulas would allow us to assess to what extent our causal estimates are sensitive to a hypothetical unmeasured confounder.

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Attachment E:

Control Variables

Control Variables

To accurately estimate the effects of CHC, our multivariable analyses will include independent variables that are associated with both CHC participation and the outcomes of interest (i.e., confounding factors). These control variables include measures at both the beneficiary and county levels. Sociodemographic (e.g., age, gender, race), enrollment (e.g. dual-eligible status, MCO plan), and health status (e.g., number of diagnosed chronic conditions) are all measured at the beneficiary-level and all are associated with various types of utilization, expenditures, and outcomes. County-level factors such as workforce supply, economic characteristics, and payment rates for LTSS will likely impact outcomes of interest as well. The list of control variables is presented in the tables below. Each variable will be tested and adjusted as necessary to effectively address confounding factors.

Note that these tables summarize control variables that will be used for analysis of both administrative claims data as well as analysis of participant and caregiver self-report data.

Beneficiary-Level Control Variables

Variable	Definition	Measurement	Data Source
Age	Years	Continuous	Eligibility File
Gender	Male/Female	Binary	Eligibility File
Race	American Indian or Alaskan Native Asian Black/African American Native Hawaiian or Other Pacific Islander Other race White	Categorical	Eligibility File
Ethnicity	Hispanic/Latino Not Hispanic/Latino	Binary	Eligibility File
Body-Mass Index	Weight in kilograms divided by the square of height in meters	Continuous	Self-reported weight and height
Beneficiary Residence	Urban/Rural Continuum Code	Categorical	Based on County in Eligibility File
Dual-Eligible Status	Eligibility for Medicare	Binary	Eligibility File
D-SNP Medicare Plan	Medicaid and Medicare MCO are the Same	Binary	Eligibility File
FFS Medicare	Medicare Eligibility is FFS	Binary	Eligibility File
MCO Plan	MCO that the Beneficiary is Enrolled With	Binary	Eligibility File
Length of Enrollment in MCO	Number of Days Enrolled in the Given MCO	Continuous	Eligibility File
Number of Diagnosed Chronic Conditions	Elixhauser Index, Chronic Condition Wharehouse, or Charlson-Deyo Index	Continuous	Claims Files
Nursing Facility Status	Nursing Facility Certified Eligible (NFCE) status, date	Binary	Eligibility/Level of Care Assessment
Nursing Facility Use	Number of Days in a NF	Continuous	Claims
Functional Status	Activities of Daily Living, Instrumental Activities of Daily Living	Ordinal	Level of Care Assessment

County-Level Control Variables

Variable	Definition	Measurement	Source
Nursing Facility Supply	NF Beds per 1,000	Continuous	Area Health Resource File
Hospital Supply	Hospital Beds per 1,000	Continuous	Area Health Resource File
Primary Care Supply	PCPs per 1,000	Continuous	Area Health Resource File
Dental Provider Supply	Dentists per 1,000	Continuous	Area Health Resource File
Behavioral Health Provider Supply	Behavioral Health Providers per 1,000	Continuous	Area Health Resource File
Home Health Supply	Home Health Agencies per 1,000	Continuous	Area Health Resource File
Local Economic Characteristics [a]	Per-capita personal Income	Continuous	Area Health Resource File
HCBS Payment Rates [a]	Payment for HCBS in Dollars	Continuous	Claims Files
Nursing Facility Payment Rates	Historical Per Diem Payment for NF Care in Dollars	Continuous	Claims Files

[a] Adjusted for the Consumer Price Index

Attachment F:

Office of Health Survey Research (OHSR)

Office of Health Survey Research (OHSR)

The Office of Health Survey Research (OHSR), is housed in the Evaluation Institute for Public Health in the Department of Behavioral and Community Health Sciences, in the Graduate School of Public Health. Under the direction of Todd Bear, the OHSR will conduct the Participant and Caregiver Experience Surveys. The OHSR has the capacity to recruit and retain the sample, and conduct in-person and telephone interviews. The following sections describe the organization and capacity, approach to interviewer training, quality, and commitment to participant safety and well-being.

Organization and Capacity. The OHSR is equipped to carry out all phases of a survey research process, including sample design, questionnaire development, data collection, data processing, statistical analysis and weighting, and reporting and dissemination. With more than 40 years of survey research experience, OHSR staff apply a variety of research designs and methods, including random-digit-dialing, mail, face-to-face interview, web, and mixed-mode surveys to assess the health status, utilization patterns, barriers to obtaining health care, and unmet needs of populations of interest.

The Office of Health Survey Research is located on the main campus of the University of Pittsburgh in Pittsburgh, Pennsylvania. Our newly renovated survey center includes 15 interviewer work stations, 2 supervisor stations, and 3 administrative offices. In addition to our faculty and administrative staff, our survey center currently employs 40 part-time interviewers and 4 shift supervisors. The Evaluation Institute for Public Health administrative structure is depicted in Figure 1.

The OHSR utilizes a number of techniques to ensure the highest data quality including extensive interviewing training, verification callbacks, unobtrusive audio and visual monitoring, and interviewer monitoring statistics. Our survey center faculty and staff make use of a number of survey software systems to conduct survey research and surveillance activities including WinCATI 6.0, Qualtrics, ARCS panel management software, and Interactive Voice Response software. In addition, as a structure within the University of Pittsburgh, OHSR has access to and utilizes many analysis software packages, including SAS, SPSS, SUDAAN, and ARC GIS.

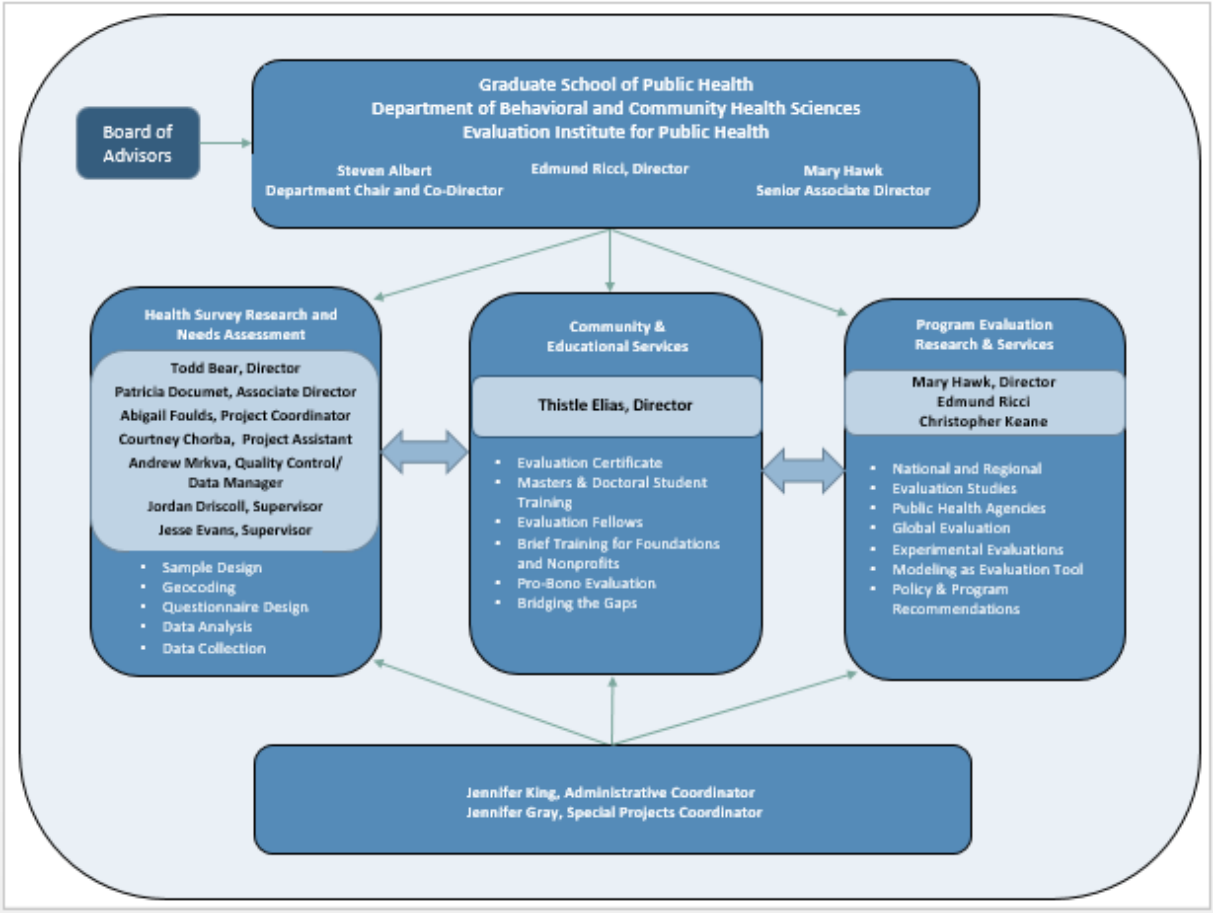

Figure 1. Evaluation Institute Administrative Structure

All Survey data and related electronic files are stored on the Graduate School of Public Health (GSPH) fileserver. The GSPH-Fileserver is a virtual server hosted on a VMware 4.0 system with three ESX servers (Dell PowerEdge 2950, 8 CPUs each). The system is housed offsite in Pitt's Network Operations Center (NOC), a state-of-the-art server facility that hosts all of Pitt's enterprise servers. The virtual server runs Windows Server 2008 R2 64bit, with 12 Gigs of RAM allocated. The server is inside the University's server firewall zone, with no access except through firewall rules. Data are kept on virtual drives assigned individually to departments, with access restricted by file/folder permissions. The virtual drives themselves are created on LUNs on Pitt's enterprise SAN. Currently the server has 11 such departmental drives, with a total data storage capacity of 10 Terabytes. As these are virtual disks, size can be increased as needed.

Pitt's NOC provides round-the-clock active monitoring of the server for any performance, intrusion, or virus issues, using Netcool and Symantec Endpoint Protection. The NOC backs up the server nightly with Symantec Backup/Veritas; past tapes are available for 2 months back. In addition, the server keeps twice-daily (7am and noon) shadow copies of all changed files for as long as storage space permits, currently over one month.

Interviewer Training: The OHSR employs at any given time an average of 40 part-time interviewers and students as well as 4 full-time staff members. All OHSR interviewers participate in a rigorous training program prior to engaging in human subjects research. Our newly hired interviewers attend a week long training program in which they learn about and demonstrate proficiency in data collection techniques and ethical conduct of human subject research. The typical training schedule includes the following modules:

- Module 1 - Confidentiality and Institution Review Board requirements
- Module 2 - Study Specific Objectives and Protocols
- Module 3 - Using WinCATI and Qualtrics
- Module 4 - Eligible Household and Selected Respondent
- Module 5 - Cell Phone Protocols
- Module 6 - Common Questions, Refusals, & Comments
- Module 7 - Recruitment and Appointments
- Module 8 - Dispositions
- Module 9 - Interview Probing & Reinforcements
- Module 10 - Refusal Conversions
- Module 11 - Telephone Demeanor
- Module 12 - Sampling and Response Rates

A number of activities are conducted alongside the didactic material to ensure OHSR interviewers have proficiency in the topics covered, including: group readings of all scripts, role playing, live piloting, quizzes, tandem interviewing, pronunciation exercises, and unobtrusive monitoring. All activities are rated by training staff and additional training is provided as needed.

Quality Control. The OHRS quality control team is led by our Quality Control and Data Manager (QCDM) who regularly coordinates activities to prevent protocol drift, ensure compliance with both Institutional Review Board (IRB) and study specific protocols, and to provide individual feedback and training to interviewers. For telephone surveys, for example, each interviewer is monitored unobtrusively at least twice weekly and each interviewer is rated on a number of facets including: calling procedures, attitude, interviewing techniques, and probing. This data in conjunction with productivity measures (e.g., number of completes, dialings per hours, average interview length, and percent refusal conversions) are used to identify interviewers who need additional training or supervision. Moreover, the QCDM utilizes a number of software programs to monitor data quality by running daily range checks, skip pattern checks and consistency checks. We utilize this information to identify missing or inaccurate data points and identify interviewers who may be in need of additional training.

Participant Well-being and Safety. OHSR staff are trained to recognize risks to participants. During data collection, if interviewers perceive that is a threat to the well-being or safety of the participant, interviewers will follow a protocol to ensure that the risk is mitigated in a timely

fashion. All participants, regardless of threats to well-being or safety, will be given information discreetly which will include referral information and hotlines for depression and suicide, hoarding, and elder abuse and neglect. If immediate assistance is needed, our interviewers will be instructed to consult with our clinician consultant who can further assess the situation and provide guidance and referrals. All safety issues will be reported to the University of Pittsburgh's IRB in accordance with policies regarding disclosure, confidentiality, and event reporting.

Tables

- Table T1. Target Number of Key Informant Interviews by Year and Program Phase
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Table T1. Target Number of Key Informant Interviews by Year and Program Phase

Year	Baseline (2016)	Y1 (2017)			Y2 (2018)			Y3 (2019)			Y4 (2020)	
Region	P1	P1	P2	P3	P1	P2	P3	P1	P2	P3	P2	P3
Program Phase	Planning	Implementation	Planning		Followup	Implementation	Planning	Followup	Followup	Implementation	Followup	Followup
Plans (MCO)	30	30				30			30		30	
Providers [a]												
Urban	25	64	25		25	64	25	25	25	64	25	25
Rural/Adjacent	25	64	25		25	64	25	25	25	64	25	25
Participants												
Urban												
60 + LTSS		5				5				5		
60 + Dual		5				5				5		
21-60 LTSS		5				5				5		
Caregivers		5				5				5		
Rural/Adjacent												
60 + LTSS		5				5				5		
60 + Dual		5				5				5		
21-60 LTSS		5				5				5		
Caregivers		5				5				5		
Total number:	80	248				298			298		130	

Table T2. Provider Types and Estimated Number of Respondents

Provider Type	Potential Respondents	Target Number of Respondents (est.)
Personal Care/Assisted Living	Administrator, Care Coordinator/Manager	2
Nursing Home	Administrator, CFO, DON	3
Home Care/Personal Care	CEO, Care Coordinator/Manager	2
Home Health Agency	Manager, Home Health Aide	2
Centers for Independent Living	CEO, Director of Waiver Services, Service Coordinator	3
Senior Center/Senior Community Center	CEO, Director of Waiver Services, Service Coordinator	2
LIFE Providers	CEO, Medical Director	2
Adult Day Care	Program Manager/Director	1
Hospice	CEO, Medical Director, Finance/Administration	3
Meals on Wheels	Program Manager/Director	1
Transportation	Program Manager/Director	1
Adult Daily Living	CEO, Staff	2
Home Modification	CEO, Staff	2
Residential Habilitation	CEO, Staff	2
Respite	CEO, Coordinator	2
Service Coordination Entity	CEO, Coordinator	2
Fiscal Management	CEO, Coordinator	2
Primary Care Physician	Physician, Office Manager	4
Hospital	CEO, CMO, CNO, Social Work/Discharge Planner	4
Direct Care Worker (Hired by participant)	Staff	1
Advocacy Groups	CEO, Outreach	5
State Officials	Administrator, Program Manager/Director	5
County Officials	Administrator, Program Manager/Director	5
Area Agency on Aging	ED, Finance Director, Consumer/Client Services Director, Assessment Coordinator	4
Long-Term Care Ombudsman	Ombudsman	1
Number of Provider Types:	25	63

Table T3. Topics for Key Informant Interviews

Main Heading	Relationships*	Examples	MCO	Provider	Participant
Readiness	A, B, E, F	What has your organization done to prepare for the transition to CHC? Describe efforts taken to educate providers and participants about CHC?		X	
Benefits and services	F	Changes in benefits: Describe major changes in benefits and the rationale. How are benefits and services communicated to participants?	X		
Financial Impact	A, B	What impact has CHC had on the financial status of your organization? Have there been changes to the way that providers are being paid? This includes physical health and LTSS. Can providers earn incentives for performance goals? How are those goals set?	X	X	
Administrative impact	A, B, E	Impact of new data collection and reporting requirements. Have there been changes to how your organization evaluates its operational or financial goals in the short or long term?	X	X	
Provider Networks	E	What has the plan done to assure network adequacy? Have providers been terminated? What standards do you use for assuring quality?	X		
Care Coordination	C, D, E	How is care coordination being conducted for people who are in FFS or a separate Medicare plan? What are the qualifications for care coordinators? Do family caregivers participate in assessment and care planning?	X		
		How are referrals made across settings and types of providers (physical health, behavioral health, or LTSS? Are services being denied?		X	
		How does your plan develop individualized (person-centered) care plans? How does the plan identify people who could benefit from a care plan? Who usually participates in the process?	X		
Inter-organizational Collaboration	A, B, E	How does the plan collaborate with Behavioral Health Plans? Other providers or agencies?	X		
		Has your organization experienced resistance to collaboration with other providers? Have there been benefits, challenges or lessons learned from collaborative efforts? Have there been changes in data sharing and		X	

		communication between providers or plans?			
Workforce impact	E	Have there been changes to the recruitment and training of the direct care workforce? Impact on workload?		X	
Impact on beneficiaries	C, D	What has been the impact on beneficiaries? Are things the same, better or worse?		X	
Cultural competency	C	Are CHC services appropriate for people from different racial or ethnic groups? Who speak languages other than English? With disabilities? Who are LGBT? Homeless? Have dementia? Have Behavioral or substance abuse issues? Have there been changes in physical accessibility at your organization or other providers?		X	X
Innovations, Promising Practices, and Challenges	C, D, E	What are some of the innovations or promising practices you have observed? Are there new types of services or supports available to participants? How are MCOs and providers using information technology (IT)?	X	X	
General Services and Supports	D, C	How have services changed since CHC began? (medical, behavioral health, LTSS)? Have there been changes to effectiveness or quality? Have beneficiaries experienced delays or disruptions? What have been the biggest challenges to service delivery? Are provider networks adequate to serve new enrollees (medical, LTSS)?		X	
Long Term Services and Supports	C, D	Are services provided with consumer direction? Are there opportunities for participants and their caregivers to participate in care planning? How much control do beneficiaries have on their health decisions (choice and control)? Are people living in the least restrictive setting? The most integrated setting? Are people returning successfully to the community? Are long-term nursing home residents relocating to the community? Other institutions? Are participants and caregivers being referred to LTSS as appropriate?	X	X	X
Prescription drugs and durable medical equipment	C, D	Have there been changes to pharmacy or DME benefits? Have participants had disruptions or changes in their medications due to formulary or benefit differences?	X	X	

Beneficiary safeguards	D, F	What protections are in place for participants? What is the complaint, grievance and appeal process? What type of advocacy services are available?	X	X	X
Access to Care	D, F	Have you had to change providers (physical health, LTSS)? Have you experienced changes in the type or amount of services you receive? Do you have to travel the same distance for medical care? Are the providers you use based in your community?	X		X

* See Figure 1.

Table T4. Administrative Data - Cost Measures

	60+ LTSS	21-59 LTSS	Non-LTSS Duals
Total Health Expenditures	↓	↓	↓
LTSS Expenditures	↑	↑	↑
Nursing Facility Expenditures	↓	↓	▬
HCBS Expenditures	↑	↑	↑
Inpatient Expenditures	↓	↓	↓
ED Expenditures	↓	↓	↓
Outpatient Expenditures	↑	↑	↑
Behavioral Health Expenditures	↑ or ▬	↑ or ▬	↑ or ▬
Pharmaceutical Expenditures	▬	▬	▬
Dental Expenditures	↑	↑	↑
Out-of-Pocket Costs for Beneficiaries	↓	↓	↓

↑ = Increase; ↓ = Decrease; ▬ = No Change

Table T5. Administrative Data - Utilization and Access Measures

	60+ LTSS	21-59 LTSS	Non-LTSS Duals
LTSS Utilization	↑	↑	↑
Nursing Facility Utilization	↓	↓	▬
HCBS Utilization	↑	↑	↑
Inpatient Utilization	↓	↓	↓
Preventable Hospitalizations	↓	↓	↓
ED Utilization	↓	↓	↓
Behavioral Health Utilization	↑ or ▬	↑ or ▬	↑ or ▬
Outpatient Utilization	↑	↑	↑
Pharmaceutical Utilization	▬	▬	▬
Dental Utilization	↑	↑	↑
Proportion of Beneficiaries who Receive HCBS	↑	↑	↑
Access to Transportation Services	↑	↑	↑
Home Modification Service Utilization	↑	↑	↑
Utilization of LTSS Among Beneficiaries Early in Disablement Process	NA	NA	↑
Utilization of Earlier Appropriate Hospice and Palliative Care	↑	↑	↑
Variability in Health Care Utilization Across Regions and Time	↓	↓	↓

↑ = Increase; ↓ = Decrease; ▬ = No Change

Table T6. Administrative Data - Quality and Care Coordination Measures

	60+ LTSS	21-59 LTSS	Non-LTSS Duals
Functional Limitations at Nursing Facility Admission	↑	↑	▬
Nursing Facility Case Mix Index	↑	↑	▬
Safe and Appropriate Transitions from the Nursing Facility to the Community	↑	↑	▬
Proportion of Beneficiaries Discharged to Appropriate PAC Setting Post-Hospitalization	↑	↑	↑
Proportion of Beneficiaries who Return to Community Setting Post-Hospitalization	↑	↑	↑
Duplication of Services	↓	↓	↓
Compliance with Care Plans	↑	↑	↑
Proportion of Beneficiaries who Receive Preventive Services Based on Current Guidelines and Standards	↑	↑	↑
HCBS Quality	↑	↑	↑
Nursing Facility Quality	↑	↑	↑

↑ = Increase; ↓ = Decrease; ▬ = No Change

Table T7. Participant/Caregiver Interview Design

		2017				2018				2019				2020				2021			
Participants		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Phase 1																					
Treatment	PI	O_0		O_6		O_{12}		O_{18}		O_{24}		O_{30}		O_{36}							
Comparison	PIII		O_0		O_6		O_{12}		O_{18}												
Phase 2																					
Treatment	PII			O_0		O_6		O_{12}		O_{18}		O_{24}		O_{30}		O_{36}					
Comparison	PIII				O_0		O_6		O_{12}												
Phase 3																					
Observational	PIII							O_0		O_6		O_{12}		O_{18}		O_{24}		O_{30}		O_{36}	
Caregivers																					
Phase 1																					
Treatment	PI	O_0				O_{12}				O_{24}				O_{36}							
Comparison	PIII		O_0				O_{12}														
Phase 2																					
Treatment	PII			O_0				O_{12}				O_{24}				O_{36}					
Comparison	PIII				O_0				O_{12}												
Phase 3																					
Observational	PIII							O_0				O_{12}				O_{24}				O_{36}	

Table T8. Sample Sizes for Planned Comparisons

	Causal				Observational	
	12 Month		18 Month			
Participants:	Treatment	Comparison	Treatment	Comparison	24 Month	36 Month
Pooled Analyses	1983	1890	1845	1200	1716	1485
Stratified Analyses						
Age 21-59 (HCBS)	661	630	615	400	572	495
Age 60 and Older (HCBS)	661	630	615	400	572	495
Age 21 and Older Dual (No LTSS)	661	630	615	400	572	495
Caregivers:						
Pooled Analyses	615	600	615	400	535	465
Stratified Analyses						
HCBS						
Age 21-59 (HCBS)	205	200	205	133	178	155
Age 60 and Older (HCBS)	205	200	205	133	178	155
Nursing Facility						
Age 21-59 (HCBS)	102	100	102	67	89	78
Age 60 and Older (HCBS)	102	100	102	67	89	78

Table T9. Caregivers Sampling Quotas

Type of Care Recipient	n	%
Ages 21-59		
Community LTSS	200	33%
Facility LTSS	100	17%
60 and Older		
Community LTSS	200	33%
Facility LTSS	100	17%
Total	600	100%

Table T10. Participant and Caregiver Interview Topics

Topic	Participant	Proxy	Caregiver
Home Environment (Interviewer Observation)	x		
Type of housing (SRO, Apartment, PCH, Group Home)	x		
Quality of home and property	x		
Physical Limitations (ADL, IADL)	x	x	
Difficulty and Assistance Received	x	x	
Unmet Need	x	x	
Mobility (upper and lower body)	x	x	x
Assistive/Adaptive Devices (wheelchair, cane, communication, eating)	x	x	
Cognitive Impairment	x	x	
Psychological Well-Being (depression, anxiety)	x	x	x
Participant Experience	x	x	
Personal Assistance	x	x	
Care Manager	x	x	
Choice regarding care plan	x	x	
Community Integration	x	x	x
Participation (Social, community, lifestyle)	x	x	x
Employment Module	x	x	
Health Related QOL	x	x	x
Quality of Life (Choice, Control over daily life, life satisfaction)	x	x	x
Demographics	x	x	x
Race/ethnicity (census categories)	x	x	x
Gender	x	x	x
Date of Birth	x	x	x
Height/Weight (BMI)	x	x	x
Household Composition	x	x	x
Access to Care (Usual source of care, deferred medical care)	x	x	x
Assistance provided (IADL, ADL, communication, medical visits, time spent)			x
Psychological Well-being			x
Burden			x
Employment (including paid assistance)			x

Note: Participant interviews will be conducted in person. Proxy and caregiver interviews will be conducted over the telephone.

Table T11. LTSS Services Covered by Community HealthChoices

Adult Daily Living
Assistive Technology
Benefits Counseling
Career Assessment
Community Integration
Community Transition Services
Employment Skills Development
Exceptional DME
Financial Management Services
Home Adaptation
Home Delivered Meals
Home Health Services
Job Coaching
Job Finding
Non-Medical Transportation
Nursing Facility Services
Participant-Directed Community Supports
Participant-Directed Goods and Services
Personal Assistance Services
Personal Emergency Response System
Pest Eradication
Residential Habilitation
Respite
Specialized Medical Equipment and Supplies
Structured Day Habilitation
TeleCare
Therapeutic and Counseling Services
Vehicle Modifications

Source: Community Health Choices Agreement Exhibit EE(1). http://www.dhs.pa.gov/cs/groups/webcontent/documents/document/c_222885.pdf Accessed September 14, 2016