

PERSON-CENTERED CARE: THE BUSINESS CASE

Prepared for The SCAN Foundation

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1. INTRODUCTION

Considerable interest has been shown recently in *person-centered care* (PCC) models of health care delivery. Such models are characterized by what might be termed person or patient sovereignty. In PCC, the goals of care are determined or at least significantly shaped by the individual and family and the care plan is reflective of their goals and values. PCC contrasts with more traditional models of provider-driven care that place the person on the periphery rather than in the center of health care decision-making. Interest in PCC has been based largely on its potential to improve both the experience for the person and health outcomes, including quality of life. Particular interest has been shown in PCC for older adults with multiple chronic conditions and functional limitations, a population characterized by high levels of medical utilization and expense. That population – older adults with multiple chronic conditions and functional limitations – is the focus of this paper. The scale-up and accelerated adoption of PCC for this target population would be complemented and strengthened by demonstrating that this approach creates value. Value means better outcomes at a lower cost; enhancing value with this target population is crucial for medical cost containment. Improved health outcomes at a lower per capita cost is central to the Triple Aim and to alternative payment methods tied to value and outcomes.

This paper provides a framework to assess the business case for PCC. It highlights the factors that affect the strength of the case, and shares encouraging evidence and forecasts that suggest that PCC models of care can be beneficial from a business or financial perspective. The intent of the paper is to equip and encourage organizations that may be considering adopting or expanding PCC with the requisite tools, data, and motivation to systematically assess the business case in their own circumstances.

2. THE MEANING OF PERSON-CENTERED CARE (PCC)

Before launching into the business case for PCC, it is useful first to examine what is meant by the term, what are its essential elements, and what outcomes can be expected from the provision of such care.

2.1 Background

A person-centered approach to health care and community-based service delivery is considered appropriate for everyone, and has been highlighted in national policy, practice recommendations, and international reports to improve quality of care.^{1,2,3,4} However, older adults with chronic illnesses and functional limitations are likely to experience the greatest immediate and long-term benefit from this collaborative and holistic model of care as their health care needs are typically more diverse, multifaceted, and costly than other populations' health care. For example, older adults have been found to have a greater amount of comorbidities,⁵ health service utilization,^{6,7} and transitions between care settings⁸—leaving them at risk for poor transitions and adverse outcomes.^{8,9,10} This equates to the highest amount of U.S. health care expenditures, compared to any other group of people;^{11,12} the per capita Medicare spending in 2009 for those with three or more comorbidities was \$22,723 (and \$45,580 when dementia is added).¹³ Moreover, cost of care for special populations of older adults, such as Medicare-Medicaid beneficiaries and individuals at the end of life, has been found to be even higher. Research highlights due to care fragmentation, lack of continuity, poor quality, inconsistency with the person's wishes, and high costs^{14,15,16,17,18,19} beneficiaries in the last year of life (6%) account for 27 percent to 30 percent of overall Medicare spending.²⁰ Clearly, a person-centered approach that elicits, respects, and is congruent with an individual's goals, values, and beliefs should be practiced across all settings and among all providers to the fullest extent possible.

2.2 Definition of PCC: The American Geriatrics Society Panel on Person-Centered Care

Recently, PCC for older adults with multiple chronic conditions and functional limitations has been defined by a research panel (informed by empirical research and insights from practice) as health care and social provisions where, "...individuals' values and preferences are elicited and, once expressed, guide all aspects of their health care, supporting their realistic health and life goals."²¹ The panel also provides an operational supplement to this definition emphasizing that this type of care is achieved through a collaborative relationship and decision-making process between the person, their chosen supports (i.e., family and other individuals), and their medical providers to the extent that the person desires that interaction.²¹ This definition, operational supplement, and overall focus to improve care quality for older adults with chronic illness and functional limitations has theoretical underpinnings from the well-established Chronic Care Model (CCM),^{22,23} which serves as a guide for comprehensive chronic disease management in primary care and has been incorporated in the Patient-Centered Medical Home model.^{24,25} Interventions implementing

CCM have been found to lower health care costs among patient populations with certain chronic conditions through reductions in health service utilization^{22,26,27} (especially among those with advanced illness severity). This is believed to be a product of improved self-management support and better care coordination; thus, it can be hypothesized that PCC may also result in cost avoidance and subsequent cost savings.

2.3 Elements of PCC

Grounded in theory and informed by research, practice, and expert opinion, PCC for older adults with chronic illness and functional limitations builds upon existing models of chronic care management by targeting an older adult patient population that is more likely to experience advanced illness severity as compared to other patient groups and utilize primary, specialty, and acute care settings. PCC emphasizes the importance of including family and other supportive people if desired by the patient. The inputs, processes, key players, and anticipated outcomes are depicted in an operational logic model for PCC (see **Figure 1**). The model emphasizes specific and essential elements – indicated with bold, shaded boxes for realizing this type of holistic care. Additionally, several supplemental elements that may be feasible at some health care and community-based service sites are proposed:

- Assessment conducted in the person's place of residence;
- Regular review of individualized care plan;
- Flexible team composition, adaptable to changes in the person's health status, circumstances, and life and care goals;
- Single point of contact for the person, someone that assumes responsibility for communicating across providers;
- Electronic health records;
- Training and education of the person and those important to the person; and
- Statistical analyses and utilization of performance measures and quality improvement data.

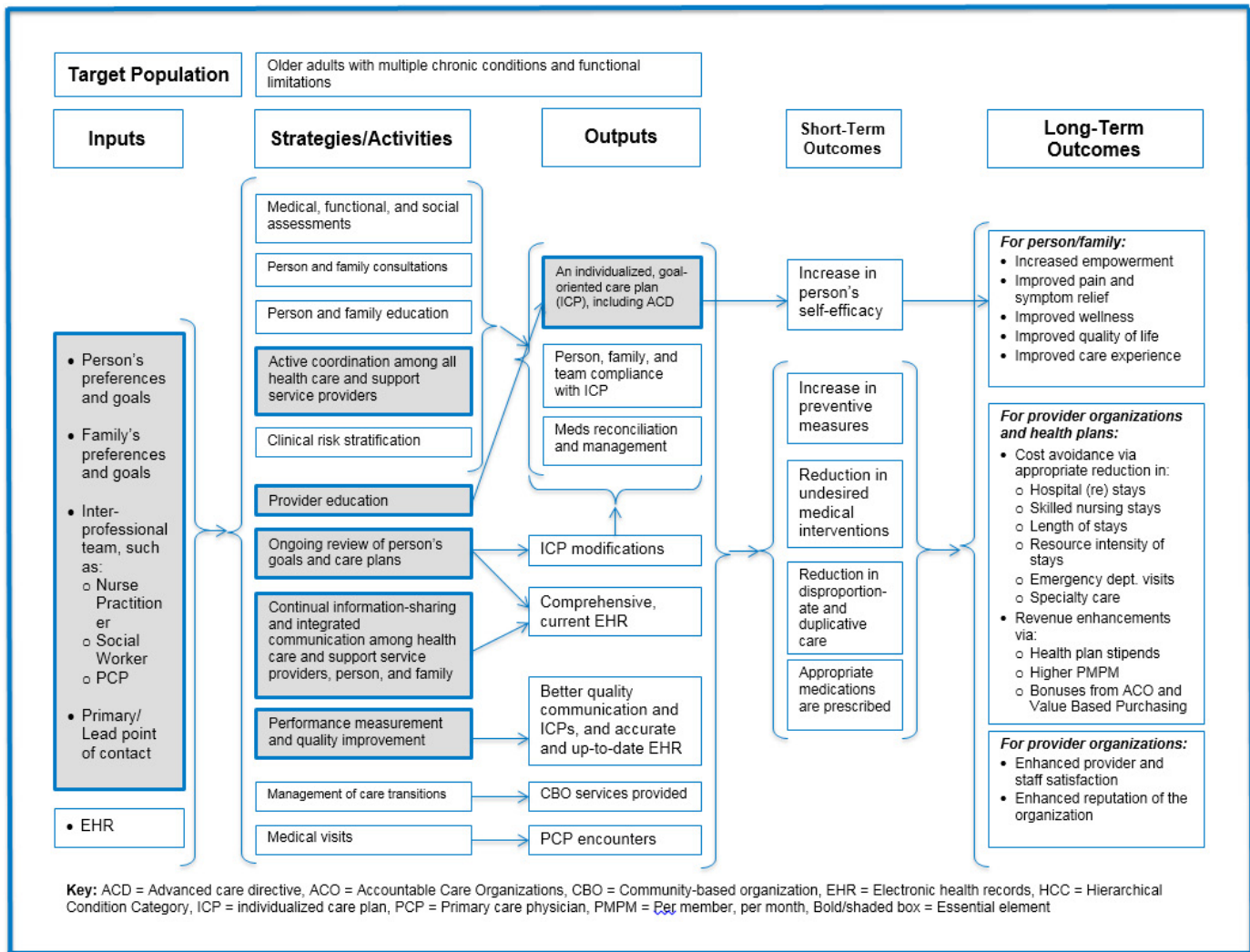


Figure 1. Logic Model for Person-Centered Care

2.4 PCC Program Categories

At the time an older adult with multiple chronic conditions and functional limitations needs a PCC program, the person may best be served by categorizing their needs as follows: care for those with ongoing complex problems, those with advanced illness, and those who are at the end of life (see Figure 2). Of course, an individual's status and care needs may change (for better or worse). For example, palliative care programs are classified in the advanced illness category; a participant's health status may improve such that they no longer require palliative care but still require ongoing complex care management, or the status may change such that they shift into an end-of-life status. Regardless of program classification, the goals for offering person-centered models of care and service provision focus on a person's quality of life and well-being while reducing unnecessary and unwanted care.

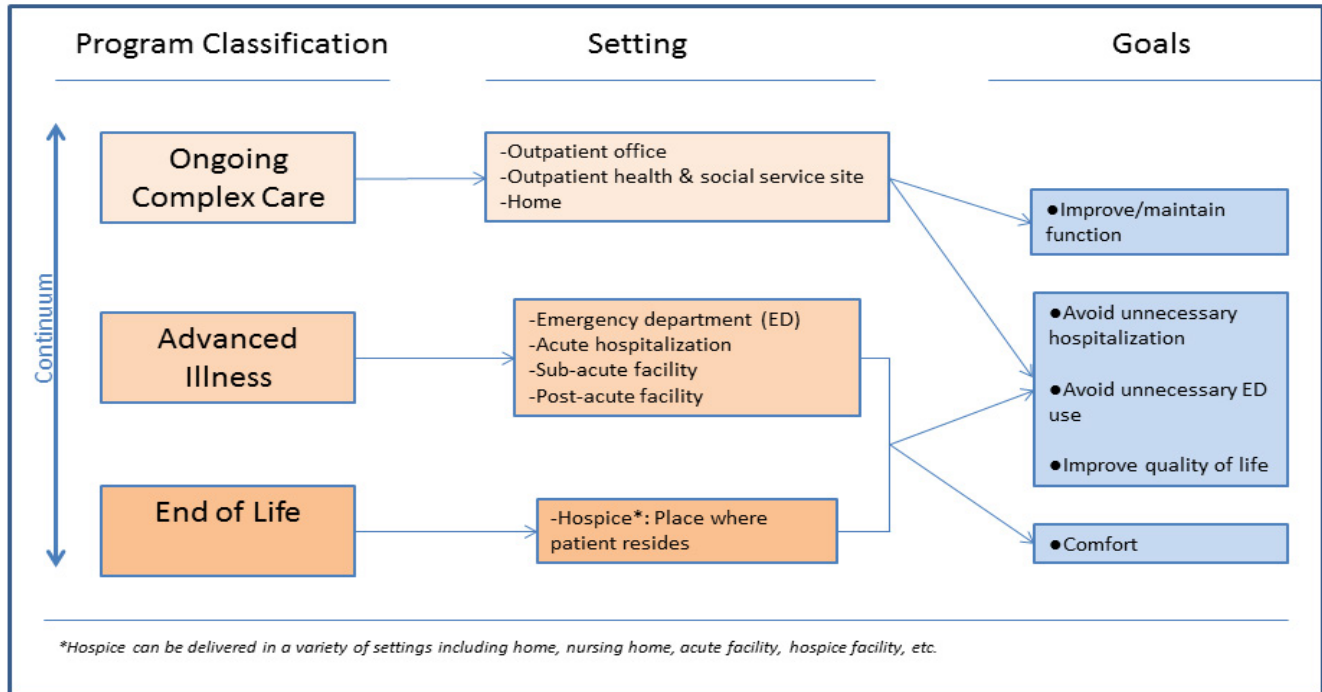


Figure 2. Person-Centered Care Program Classification

2.5 Expected Results From PCC

Person-centered approaches to care and service provision for older adults can reduce unnecessary service utilization by fostering a dynamic collaborative between the three parties (patients, their supports, and providers) that is more responsive to patients’ needs due to the following reasons:

- Knowledge of patient preferences;
- Incorporation of individuals’ values;
- Facilitation of direct communication channels between all parties; and
- Increased patient empowerment.

Similar approaches have been found to result in lower health care costs and utilization among primary care patients;²² it can be hypothesized that PCC for older adults with multiple chronic conditions and functional limitations would produce similar results. Evidence of cost-savings through reduced unnecessary service utilization has been found in other PCC approaches to care such as: care management programs,²⁸ hospital-to-home care transitions interventions,^{29,30} long-term residential facilities upholding a PCC model (e.g., Green House Model),^{31,32} Program of All-

Inclusive Care for the Elderly (PACE programs),³³ palliative care,^{15,34,35} and hospice.³⁶ These results suggest that cost savings may be a predictable consequence of PCC programs and may provide further incentive for providers to better meet patients' needs, policy imperatives, and budgetary considerations. The potential for cost avoidance is explored later in the paper.

Furthermore, unintended and positive, financial consequences of PCC have been found. Job turnover is an ongoing issue in primary care³⁷ and in long-term care workforces (especially those caring for patients with cognitive limitations or mental health concerns)³⁸ and results in elevated personnel costs, primarily recruitment expenses and training of new personnel.³⁹ Factors related to job turnover include burnout, poor job satisfaction, high stress, and high burden of conscience (emotional distress and heavy heart resulting from providers' sense of not being able to deliver the level of care they wish to provide). These have been found to be associated with medical errors,^{40,41,42} poor care quality,^{43,44,45} and poor patient satisfaction.^{46,47} Indeed, several studies investigating the impact of PCC programs on care providers have found significantly higher ratings of job satisfaction,^{48,49} reduced stress of conscience,⁵⁰ lower emotional exhaustion,^{51,52} and higher morale.⁴⁸ Specifically in the primary care arena, a team-based culture was identified as a possible antidote to turnover; a close team structure was significantly associated with less clinician and staff exhaustion and burnout.³⁷ Since team-based care is an essential element of PCC, it is plausible to expect a similar effect on staff providing PCC in primary care for older adults.

2.6 Challenges For a Scale-Up of PCC

Despite the growing evidence of positive outcomes for all involved with a PCC model (care and service recipients, family members, and providers), several important challenges to implementing PCC in general, and for older adults specifically, have been well-documented.^{21-23, 53-57} Potential barriers include the following:

- A traditional paternalistic approach to patient-physician communication and decision-making;
- Heavy physician workload;
- Lack of appropriate indicators where health metrics guide care as opposed to quality of life measures;
- Provider concerns for risk and safety when the person and physician disagree on the course of care;
- Inconsistent terminology in regards to key aspects of PCC elements (e.g. person- versus patient-centered, case management versus care coordination);
- Lack of payment structures spanning health care and community-based organizations;

- Lack of comprehensive electronic health records that span multiple providers;
- Lack of strong, prevailing leadership to champion PCC efforts; and
- Misaligned incentives regarding cost assumption and receipt of savings.

A further barrier to a scale-up of PCC is its real and perceived expense. Potential adopters face the difficult task of assessing its benefits and comparing them to these costs to determine whether such programs make economic sense. The purpose of the next section is to lower that barrier by providing a systematic framework for assessing the business case for PCC.

3. THE MEANING OF AND PURPOSE FOR MAKING A BUSINESS CASE

What exactly is a business case? Simply put, making a business case is an attempt to justify an expenditure based on its economic consequences for the organization that would incur it. These economic consequences fall into one of two categories: benefits or costs. A requirement in a business case is that the benefits be expressed in monetary terms so that they can be easily weighed against the costs that are naturally denominated in dollar terms.

The perspective adopted is a narrow one; the economic consequences that matter are those accruing to the entity that would expend the funds. Any external financial consequences enjoyed or borne by others generally are irrelevant in the making of the business case. Although narrow, the perspective should not be myopic: account must be taken of costs and benefits that occur not solely in the period when the expenditure is made, but also of any lingering financial implications in subsequent periods. Often, benefits will be enjoyed over multiple periods—qualifying the expenditure from which they stem as an investment.

The usual purpose of presenting a business case for a health care intervention is to win support for the underwriting of its expense. While the advocate should demonstrate that the intervention is effective in achieving its stated goals for health outcomes and for the patient experience, those outcomes may be insufficient to acquire the needed financial resources. Often, it is necessary to also show that the intervention makes financial sense, meaning it has an acceptable return on the dollars invested.

In the case of PCC for older adults with multiple chronic conditions and/or functional limitations, there is widespread belief, much of it backed by evidence, that the incremental resources devoted to such care in relation to “usual care” result in a superior patient and family experience. There is evidence too, as cited in the previous section, that provider and staff satisfaction are also elevated with PCC. Nevertheless, these outcomes, no matter how worthwhile, do not provide any assurance that the resources required to produce them will be forthcoming. Health plans and provider organizations, faced with limited financial resources and competing demands for them, may also require that any new service delivery model be at least cost-neutral, or better still, generates a positive financial return.

To witness the wider adoption and scale-up of PCC among health plans and provider organizations, a rigorous, relevant and easy-to-deploy framework must be available to assess the strength of the business case in their own particular circumstances. With a clear and sound method to estimate the return on investment (ROI), potential adopters of PCC will be encouraged to assess it. It is also believed that recent empirical evidence concerning the actual economic consequences of PCC models will be illuminating and encouraging for its advocates.

4. THE METHOD AND STEPS IN MAKING A BUSINESS CASE FOR PCC

Making a business case involves assessing an intervention’s economic benefits in relation to its costs. It is simply a cost-benefit analysis, meaning the consequences are monetized, weighed; and compared with the costs. Once a target population is identified and the intervention’s components are specified, there follows a logical sequence of steps (**see Table 1**) that should be taken to make a business case in health care.

Table 1: Steps in Making a Business Case

Step	Description
1	Adopt a Perspective
2	Decide on a Time Frame
3	Determine the Costs of the Intervention
4	Estimate the Benefits of the Intervention
5	Calculate the Return on Investment (ROI)
6	Compare the ROI with the Hurdle Rate
7	Conduct a Sensitivity Analysis

4.1 Step One: Adopt a Perspective

Before examining the magnitudes of costs and benefits, a decision must be made as to whose costs and benefits will be considered to be relevant in the assessment. An intervention such as PCC probably will have external effects, meaning that not all of the costs and consequences will be borne or enjoyed by the entity that invests in it. The appropriate perspective taken for the purpose of quantifying the return on investment (ROI) should, however, be narrow and assess only the costs and benefits of the investing party. After all, the decision to invest in PCC or not will most likely be predicated on the economic interest of the party that provides it.

4.2 Step Two: Decide on a Time Frame

It is not always the case that a PCC model's operation and cost will be restricted to just a point in time; rather, it is likely to be offered over time. Even if it were to be delivered only in the current time frame, its effects can extend beyond that. Therefore, it is important in making a business case to adopt a long-term perspective and consider any future costs and benefits as well as the current ones. Viewing the introduction of a PCC program as an investment, and not as a current expense, is both correct and crucial in this context. As payment reform continues to move toward rewarding value over volume, an investment made to establish an innovative system for delivering care to older adults now may provide a favorable future return. While the capacity to deliver PCC that is built today may not pay off immediately, preparing and aligning with an evolving payment system that emphasizes value may still be a shrewd decision.

4.3 Step Three: Determine the Costs of the Intervention

Since a business case will compare the intervention's benefits with its costs, the costs both of launching and operating a PCC program should first be estimated. The program, if being newly considered, will generally require certain one-time only (launch) costs that must be considered in the business case analysis. For example, the adoption of a new care delivery model may require training and certain infrastructure expenditures for health information systems and equipment. The launch expenses can be accounted for by amortizing the expense over the period of time the program is expected to operate. Alternatively, the initial cost can be ignored at first, and instead the payback period for the investment can be calculated. The payback period is the number of months or years the program must operate for the initial investment to be recouped by operating surpluses. If the initial outlay is to be paid back in a reasonably short time, the investment may be considered favorable.

Once in operation, the continuing expenses of an ongoing program, such as salary expenses for the care team must be estimated. In assessing costs, it is important to differentiate between fixed costs and variable costs of the care model. Fixed costs do not change with respect to the volume of persons served; variable costs rise continuously with volume. An example of a fixed cost may be the salary of a medical director appointed to oversee the program. A variable cost would be the mileage allowance provided to a social worker that conducts in-home patient consultations and assessments.

Some PCC programs will intentionally provide increased medical utilization in certain areas. Depending on the model, for example, more frequent primary care visits and more behavioral health and physical rehabilitation encounters may be intentional. The associated expenses tend to be variable in that their magnitude rises with the volume of persons served. These added costs must enter the overall cost estimate.

The mix of costs between fixed and variable can be crucial in making the business case. If fixed costs loom large, the business case may be weak for a small-scale program but strong for a larger one. In the latter case, the fixed costs can be spread more thinly over that larger volume—resulting in a lower per unit cost.

4.4 Step Four: Estimate the Benefits of the Intervention

In the case of PCC, the primary economic benefit derived by the offering organization is the avoidance of medical costs that would otherwise have resulted under usual care. PCC can reduce medical utilization by curtailing unwanted, unnecessary, and reactive expensive care. For example, reductions in the duration and incidence of admissions and readmissions, in emergency room visits, and in specialty care encounters are all expected and frequently experienced when PCC is tendered. (The evidence for these outcomes is presented in Section 6.) In accounting for the cost savings associated with reductions in utilization, care must be taken to exclude fixed costs from the magnitude of these benefits. Fixed costs are not reduced when service volume declines; only variable costs constitute valid savings.

In addition, any added revenues that result from delivering PCC should be added to the extent of cost avoidance to calculate the gross benefit of the service offering. While likely to be small in relation to cost savings, the possible sources and magnitudes of any added revenues triggered by the offering of PCC must still be considered. One potentially important source of added revenues for at-capacity hospitals that succeed in reducing the length of stay is the opportunity to backfill beds with revenue-generating patients. Other possibilities for revenue enhancements, many resulting from value-based payment reforms, will be discussed in Section 5.6.

4.5 Step Five: Calculate the Return on Investment (ROI)

Once gross benefits and costs have been separately estimated, they must be compared with each other to express the magnitude of the net economic advantage from PCC. Net benefit is calculated by subtracting program costs from the gross benefits. ROI is a shorthand term loosely used to express the net benefit achieved in return for a program outlay. This return is often expressed as a percentage: the net benefit is calculated in the numerator by subtracting the program cost from its gross benefit; the denominator is the cost of the program.

Example: If a program costs \$200,000 and results in gross benefits of \$400,000, the return on investment using this definition would be 100%: $\$400,000 - \$200,000 \div \$200,000 = 100\%$

While this is the most common method reported in studies of the business case for PCC, it is not truly an ROI measure. Instead, it is a measure of a program's operating margin—expressed as a percentage of its cost. However, as long as there are no significant upfront expenses required in launching the program and as long as the operating margin remains constant over time, this shorthand definition provides an acceptable measure of the ROI. But, this measure should not be used to compare the profitability of mutually exclusive programs; a small program with a high ROI may incorrectly be deemed superior to a larger one with a lower ROI. The correct selection criterion is not the magnitude of the ROI but rather, the extent of the total net benefit.ⁱ

Care also must be exercised when expressing the ROI in this shorthand way if benefits and costs accrue over a period of several years and are not level. If returns and costs fluctuate and accrue over multiple time periods - a characteristic of an investment - they first need to be discounted back to present value terms by an appropriate rate of interest before being compared. To respect the time value of money, the net present value of the investment in terms of current dollars should be reported. For the business case to be attractive, this net present value needs to be positive.

When capital expenditures are large to launch a program, another measure to gauge the attractiveness of the investment is the payback period. This period is calculated by estimating how long a program needs to run for the investment outlay to be totally defrayed by projected operating surpluses. When the operating surplus is larger, the payback period is shorter and the business case is more attractive.

Due to the pervasiveness in the extant PCC literature of the shorthand definition of the ROI and the small upfront expense relative to the operating expense, it is that shorthand measure that will be used in this subsequent discussion of the business case.

4.6 Step Six: Compare the ROI with the Hurdle Rate

Demonstrating that a program has a positive ROI is a necessary but insufficient condition for making a convincing business case. The ROI has to be *exceptionally* high. It must overcome a hurdle. Program investments have opportunity costs; the investment dollars could be deployed elsewhere. Therefore, for an investment in PCC to be warranted, it must generate a return that is at least equal to what the money could have earned in alternative uses. It should be noted that the hurdle rate would inevitably be higher when a high degree of uncertainty surrounds the accuracy of the ROI prediction. In that circumstance the investment is riskier and that risk needs to be balanced by a larger return. That assertion takes us to the final step.

4.7 Step Seven: Conduct a Sensitivity Analysis

Conducting a sensitivity analysis is the final step in doing business case calculations. The values of the key variables in the business case assessment will be subject to uncertainty and debate. So, instead of reporting a single ROI, it is wise to report a range of results. A simple yet worthwhile approach is to report the ROIs for three scenarios. The first scenario is when all the independent variables that shape the ROI are assigned “pessimistic” values; the second when these variables are at their most likely levels; and the third when variables assume reasonable but somewhat “optimistic” values. The values for the variables may be taken from studies reported in the published literature. If a PCC program is predicted even under the more pessimistic set of assumptions to exceed the hurdle rate, the business case can be considered strong.

A sensitivity analysis should also involve determining the extent to which each independent variable influences the ROI. Certain drivers will loom larger than others in shaping the ROI and particular care should be taken to make estimates of their magnitudes. Once this final step of conducting a sensitivity analysis is taken, the business case has been presented and a more informed decision to undertake the investment or not can be made.

5. FACTORS INFLUENCING THE STRENGTH OF THE BUSINESS CASE FOR PCC

There is no unique ROI for PCC. The strength of the business case for any PCC initiative is crucially dependent on the result of the ROI calculation described above using the data and specifics of each program. However, understanding the steps required in making the business case leads to the identification of those factors that make the strongest case. The following factors, all of which can be shaped and controlled to some degree, drive the strength of the business case for PCC (see **Figure 3**).

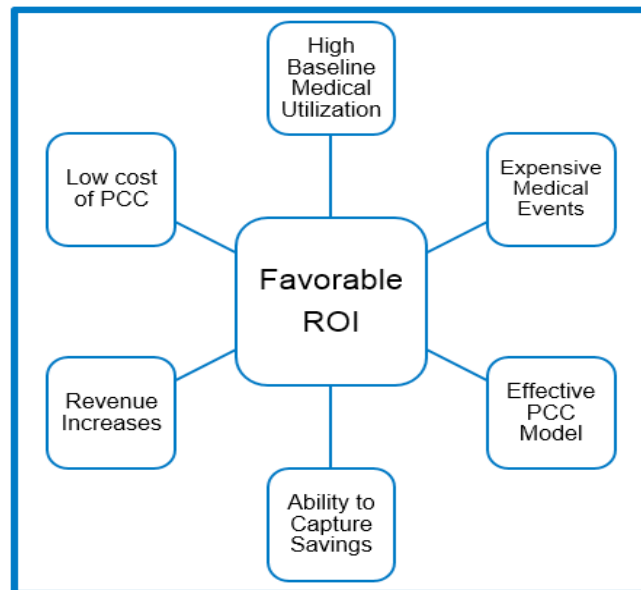


Figure 3. Factors Shaping a Favorable Business Case for PCC

5.1 The Baseline Incidence of Medical Utilization

Medical utilization includes the volume of services provided in all inpatient settings, in hospital outpatient and ambulatory care, and home health. The severity and number of comorbidities possessed by the targeted population, then diagnosed and treated for, are the principal determinants of medical utilization. When the pre-intervention utilization level is greater, the mitigation potential for PCC is also larger. The implication should be clear: a PCC program that targets older adults with multiple chronic conditions and with severe functional limitations will likely yield a higher ROI than one focused on individuals whose needs are less. A proxy measure to separate population into segments according to their likely degree of medical utilization would be Hierarchical Condition Categories (HCC) scores.

5.2 The Unit Costs of the Various Medical Services

Certain medical services are clearly more expensive than others, a hospital admission being an especially costly event. Total expense of medical utilization—the target of PCC models—is the product of the incidence of each medical event times its respective per unit cost. This total cost of medical utilization prior to the delivery of PCC represents the baseline from which cost savings stemming from PCC will be calculated. Sometimes this cost is called the disease burden, or the burden at least from an economic perspective. The heavier this economic burden, the greater the potential for PCC to display economic benefits. Crucially, hospital admissions and readmissions constitute about 80 percent of the annual per capita patient medical costs for high-risk Medicare beneficiaries.¹³

5.3 The Effectiveness of the PCC Model

Effectiveness in this context means the extent to which the PCC intervention reduces medical utilization (and therefore medical costs) in relation to the baseline incidence. The effectiveness will depend on a number of factors, including the caliber of the leadership and management of the PCC program, the skill and training of those who deliver it, and the amount of resources devoted to the program. For a PCC program to demonstrate an attractive ROI, its effectiveness in reducing high-cost medical events, such as hospital stays, is especially important.

5.4 The Cost of Launching and Operating a PCC Program

For any given level of effectiveness, the smaller the cost in initiating and operating a program, the larger the return relative to the investment. Hence, less expensive but equally effective models present a more attractive business case. These costs are likely to be lower under the following circumstances:

- A PCC program is not forced to absorb a large portion of organizational overhead. While it is not always the practice, only costs that are incurred directly as a result of the PCC should be allocated to the cost of the program. Sunk costs should not burden the PCC program's financial return.
- The program is expected to run for several years—allowing the up-front expenses of the launch to be spread more thinly over more periods.

- The program scale is larger—allowing fixed costs of operation to be spread more thinly over a large population, thereby achieving scale economics.
- Incorporating the above two factors – longevity and scale – suggests an expected beneficial effect that learning exerts on per unit costs; the more experience an organization has with delivering PCC, the lower will be the per-unit cost. It is uncertain how steep the learning curve is in delivering PCC. In other sectors, however, a doubling of the history and experience of providing a good or service – measured by cumulated volume produced over time – generally lowers the cost per unit by 20 percent. That implies that a new PCC program can expect to enjoy cost improvements as it gains experience and greater efficiency.

5.5 The Ability to Capture the Benefits of Cost Avoidance: Matter of Perspective

If a PCC model is effective and reduces medical utilization, costs are obviously avoided. However, all the cost savings may not accrue to the organization that pays for the elevated level of care that was responsible for the cost avoidance. Sometimes third parties in the medical ecosystem might experience the savings. For example, take a hospital compensated under traditional Medicare fee-for-service that invests in a comprehensive PCC model. Suppose it reduces the average length of stay while simultaneously reducing the probability of a subsequent emergency department (ED) event. The hospital will generally only benefit financially from the first, but not the second consequence. (The reduction in ED visits is a benefit accruing not to the hospital but to the payer.) The higher the proportion of overall cost savings gained by the party considering the investment in PCC, the greater will be its return on the investment made. With the increase in emphasis by the Centers for Medicare and Medicaid Services (CMS) on at-risk contracting (i.e., Value-Based Purchasing, Accountable Care Organizations (ACO) Global Payments), the business case for PCC will become increasingly attractive for a more highly integrated medical sector that will continue to assume added responsibility for overall costs.

Its role within the health system, the manner in which it derives its revenues, and the degree to which it is at risk for costs of medical utilization are profound influences on the degree of enthusiasm that any health organization would likely display toward PCC. This section considers the matter of perspective and the associated nuanced incentives to provide PCC when alternative payment methods and reforms are taken into account.

The incentive to provide PCC for Medicare beneficiaries is directly related to the degree of risk assumed by providers and, in the case of Medicare Advantage (MA), by health plans. The benefits of PCC accrue to providers and health plans that are capitated and can achieve cost avoidance by reducing expensive components of medical utilization. In particular, reductions in ED visits, hospital admissions and readmissions, and post-acute care can produce significant savings, even if they are partially offset by increased use of lower-cost care in more appropriate settings or via more effective interventions (e.g., social supports).

Clearly, payment systems matter when assessing the business case for PCC. It is equally clear that among payment systems, fully capitated models surely provide the strongest incentive to offer PCC. Under capitation, providers become responsible for all medical costs. Therefore, an intervention such as PCC that can reduce medical utilization becomes potentially profitable and a candidate for assessing its investment returns.

Payment Model: Traditional Medicare

Until recently, the traditional, fee-for service (FFS) Medicare payment model has provided little incentive for providers to adopt PCC because of a lack of mechanisms for shared savings. Hospitals that are paid via Medicare Severity Diagnosis Related Groups (MS-DRGs) lose revenue if they reduce admissions. And the proportion of all beneficiaries that is enrolled in traditional FFS Medicare was about 70 percent in 2015.⁵⁸ Furthermore, while some hospitals are paid a percentage of the total premium that the MA plan receives from Medicare, the still somewhat dominant pattern is for MA plans to use MS-DRGs rather than capitation in contracting with hospitals and health systems.⁵⁹ Medical groups and physicians that are effective in reducing hospital and ED use by their patients do not benefit financially despite producing savings for Medicare.

The Affordable Care Act (ACA) created several hospital quality initiatives targeted at reducing inappropriate FFS hospital admissions, including the Hospital Readmission Reduction Program (HRRP). This program measures relative hospital performance, and provides penalties to hospitals based on their excessive FFS readmissions for five conditions. HRRP has thus introduced incentives for hospitals to reduce readmissions. For hospitals facing penalties for excess readmissions, PCC programs can be effective at helping hospitals reduce readmissions, as well as other goals that would create savings for Medicare. These include reducing the acuity level of admissions through, for example, reducing intensive care unit (ICU) days and increasing the use of appropriate post-acute care, including hospice. Nevertheless, while evidence suggests that up to 10 percent of Medicare admissions are potentially avoidable, Medicare FFS providers still lack strong incentives to reduce such admissions via PCC.⁶⁰

Payment Model: Two Perspectives of Managed Medicare

When assessing the strength of incentives to embrace PCC under managed care, it is crucial to distinguish between the interests of health plans and those of provider organizations.

Health Plan Perspective on PCC

In general, capitated payments and quality ratings provide strong incentives for MA plans to improve quality and potentially reduce costs. However, MA plans can achieve savings through effective contracting, including tough negotiations on unit prices with providers in their network. After contracting, MA plans have little incentive and ability to micro-manage costs and quality within their networks. Therefore, these MA plans may not strive to adopt PCC themselves but depending on the site of care, they could contract with providers who have adopted PCC if such adoption improves value by lowering cost, improving quality, or both. MA plans that bear more direct risk, such as FFS plans, are likely to have a stronger incentive to adopt PCC.

Provider Perspective on PCC

Integrated health care delivery systems are those systems that include at least a hospital and a multispecialty medical care delivery system. When a MA plan contracts with a fully integrated health system using a capitated rate, the full utilization risk is delegated to the integrated system because it is held clinically and fiscally accountable for the outcomes and health status of the population served. Thus, the system has strong incentives to reduce utilization in all areas (outpatient, inpatient, and post-acute care) because it bears the costs of such utilization. As a result, providers in integrated health care systems have a strong incentive to adopt PCC to the extent they believe it can succeed in reducing overall utilization.

Partial-risk medical groups that do not assume financial responsibility for inpatient events face only the moderate financial risk stemming from outpatient events, which include ED visits. Health plans will contract separately with hospitals for inpatient events, leaving partial-risk medical groups with only mild incentives to incorporate PCC because any reduction in hospital utilization does not confer a direct benefit on them. Individual practice association (IPA) managed care networks have little financial incentive to adopt PPC because they have no shared financial risk.

Accountable Care Organizations

ACOs, because they represent voluntary arrangements between providers, may in fact have the strongest incentives to adopt PCC programs, particularly if all providers in the ACO share in the savings. ACOs represent a more flexible organizational form than MA plans, allowing doctors, hospitals, and other providers to form organizations that promote quality through care coordination. As of the end of 2014, 7.8 million beneficiaries have been served by ACOs and 353 Medicare ACOs were in operation, with the vast majority (333) participating in the Medicare Shared Savings Program (MSSP).⁶¹ ACOs are a mechanism for promoting similar incentives for economic efficiency and high quality through improved care coordination as faced by MA plans, without requiring beneficiaries to sacrifice their choice of providers. More importantly, because ACOs are voluntary arrangements among providers, they can focus on how to achieve savings through shared risk and quality improvement efforts that involve all partners.

Bundled Payments

Medicare, through the Center for Medicare and Medicaid Innovation created by the ACA has also recently started implementing the Bundled Payments for Care Improvement Initiative (BPCI). Under this initiative, providers enter into payment arrangements that include financial and performance accountability for episodes of care. BPCI consists of four broadly defined models of care that combine payments for services in multiple settings. Because each of the four models involves hospital inpatient care, hospitals participating in BPCI have a strong incentive to adopt PCC.

5.6 The Existence of Revenue Enhancements: Payments for Value

Yet another factor, influencing the strength of the business case is the potential of PCC to generate revenues as well as reducing costs. While the business case for PCC is built invariably on the benefits of cost avoidance, there are potential benefits in the form of revenue enhancements that result from PCC delivery. The opportunity for a hospital facing capacity constraints to take advantage of reduced lengths of stay by backfilling beds has already been mentioned. Another example revolves around an increase in the per member per month (PMPM) payment made by CMS to a MA health plan or by a health plan to a capitated health system with which it contracts. Such an increase can potentially result from a reclassification of a patient's condition under the HCC system. Secondary conditions, such as depression, and added risk can be revealed when a comprehensive health risk

assessment is conducted. Yet another example is the possibility of a health system receiving from CMS \$42.90 per month for chronic disease management, a recently established code.

Aside from these specific examples, there is a broader and significant trend that bodes well for PCC: Medicare has been increasing its efforts to pay providers for value. A rising share of Medicare hospital payments – 6 percent by 2017 – is dependent upon hospitals' performance under the HRRP, the Value-Based Purchasing Program, and the Hospital-Acquired Condition Reduction Program.⁶² MA plans have been scored based on a composite Five-Star Quality Rating System since 2007 and since 2012, have been paid incentive payments for achieving high scores as a result of the ACA. The Value-Based Purchasing Program consists of four components that are based on measures of: (1) clinical processes of care; (2) patient experience of care; (3) outcomes, including mortality, infection rates, and safety; and (4) economic efficiency. MA plans are exempt from these initiatives because they already have sufficient incentives to achieve the goals of each of these initiatives. However, MA plans have been subject to Health Care Acquired Conditions (HCAC) payment reductions, including denials, for conditions not present on admission since 2007. PCC can help hospitals achieve the goals of each of these Medicare hospital initiatives.

Medicare also has quality improvement initiatives targeted at physicians in the FFS sector. These include the: (1) Physician Quality Reporting System (PQRS); (2) Electronic Prescribing Incentive Program (eRx); and (3) Electronic Health Record Incentive Program. In contrast to hospital quality initiatives, these programs do not yet provide incentive payments based on performance; their only incentive is to report data.

In sum, PCC can be viewed as consistent with the goals of these various Medicare efficiency and quality improvement initiatives. Providers therefore have an incentive for PCC adoption when the savings can be realized by the adopting organization or entity (such as ACOs). For example, hospitals should have an incentive to adopt PCC if it produces savings that accrue primarily to the hospital, or in the case of initiatives like the HRRP, that help them reduce or eliminate penalties. Hospitals and medical groups will be less likely to adopt PCC if the savings accrue to others (e.g., MA plans), and they have no mechanism for shared savings.

This trend to reward for value together with a rise in many contexts of capitation as the payment mechanism is creating a changing payment environment. It is one of utilization accountability, and one which is increasingly friendly toward the economics of PCC adoption.

5.7 Other Factors Influencing the Strength of the Business Case

The quantitative business case – one that estimates an ROI percentage can only incorporate the monetary benefits that PCC delivers. However, there may be additional, intangible and difficult to monetize benefits that, while almost impossible to account for, can add weight to the argument for investing in PCC. Leaving aside any improved clinical outcomes that are benefits accruing to the person receiving care, there are other outcomes that, while not directly conveying financial benefit, are nevertheless beneficial to the provider organization.

Provider and Staff Satisfaction

The pervasive phenomenon of emotional exhaustion or burnout experienced by providers can to some extent be counteracted by participating in a person-centered program for adults with serious illness. Connecting authentically with patients, belief in a care model that focuses on what matters to the individual, and working together as a team are features of PCC that have been found to support the well-being of team members. It is anticipated that resulting outcomes would be improved productivity, lower turnover, and a greater ease in recruiting—results with positive financial implications. (See Section 2.5.)

Patient Experience

Evidence supports the plausible hypothesis that when care is planned, coordinated, and tendered around the individual's goals, values, and preferences, the result will be an enhanced experience. CMS administers patient experience surveys called the Consumer Assessment of Healthcare Providers and Systems (CAHPS). The results of these surveys are used in Value-Based Purchasing (Pay for Performance) initiatives discussed above. CMS also administers the Five-Star Quality Rating System for MA plans, which provides quality and service measures to assist beneficiaries choose plans and also to award additional payments to those that meet higher standards. Thus, while difficult to link quantitatively, if PCC enhances the person's experience as expected, there is the potential for higher payments to providers through these initiatives.

6. EXAMPLES, EVIDENCE, AND FORECASTS FOR THE PCC BUSINESS CASE

There is a reasonable expectation and considerable empirical evidence that a carefully designed and delivered PCC model will reduce overall medical utilization. While there are other factors influencing the ROI from PCC, its principal driver is the extent of cost savings from the overall reduction in medical utilization. Conceptually, utilization refers to the provision of any medical service along the care continuum. **Figure 4** summarizes all utilization areas that may be impacted by a PCC model.

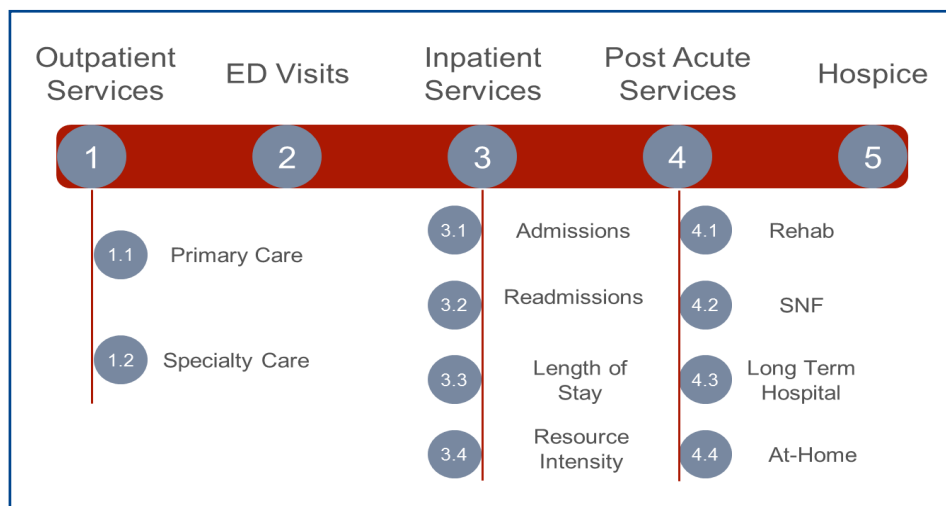


Figure 4. Medical Utilization

In practice, however, empirical research has tended to focus quite naturally on inpatient (admissions, readmissions and skilled nursing facility) events because these are expensive to provide. There are three distinct mechanisms for PCC to reduce inpatient costs: (1) via a reduction in the number of admissions and readmissions; (2) via a reduction in the average length of stay; and (3) via a reduction in the resource intensity of an inpatient facility day. The reduction in the number of admissions could result from care being preventative and proactive rather than reactive, and by providing community-based social support services—among other means. The reduction in the length of stay may result from having a better planned and coordinated discharge. This includes the provision of post-acute care monitoring and of services such as transportation to follow-up appointments, medication access, and adherence; the reduction in the daily cost that can result from diminished use of the ICU; and the substitution of a skilled nursing facility (SNF) day for a hospital day. These reductions are all plausible under PCC models that stress preventative care, care coordination including the provision of social supports, and the avoidance of unwanted care particularly at the end of life care.

While less expensive than hospital admissions, PCC programs have also tended to evaluate their effects on ED visits. This is understandable since a considerable proportion of ED visits are being made by the target population of older adults with multiple chronic conditions results in admissions. And, further, some proportion of admissions is followed by readmissions. Consequently, a focus on ED utilization in addition to acute and post-acute usage makes a great deal of sense when a PCC program is evaluated from an economic perspective.

Less attention in the empirical research on PCC has been paid to its impact on outpatient services. There are two reasons for this. First, the expense of these encounters pales in comparison with ED visits and inpatient stays. Second, while there may be sound reasons for expecting a reduction in specialty care, including for oncology in palliative care approaches, certain PCC programs involve not less, but additional, primary care.ⁱⁱ While hospice substitutes appropriately in many cases for the more expensive approaches to care, any resulting increase in hospice utilization is a financial consequence borne by Medicare. Therefore, changes in hospice utilization, while affecting overall costs, do not generally enter into business case calculations when such calculations are being made from the perspective of a health plan or by an integrated health system.

The next section reviews four actual examples of PCC programs and their business cases. The description will focus on the specific areas where medical utilization was reported to have been changed and on the programs' reported financial results. Following this section on actual programs results, a hypothetical case study is presented to demonstrate how ROI calculations should be conducted.

6.1 Four PCC Business Case Examples

This section is designed to illustrate how business cases for real PCC programs have been formulated. The four PCC models were selected on the basis of these criteria:

- Clearly meet the definition of being person-centered and are longitudinal in nature—managing the person over time and in evolving treatment settings;
- Possess a transparent program design with clearly identified inputs and processes;
- Target older adults with multiple chronic conditions and functional limitations; and
- Present findings on PCC effects on utilization and on overall costs, including the incremental cost of providing the person-centered service aspects.

Financial Results From These Programs

These four programs have found PCC to be financially attractive. This is perhaps not surprising in that they have significant, if not full, risk for medical utilization. Furthermore, the populations served are high utilizers where the potential for cost mitigation is correspondingly larger. A summary of the features and financial outcomes of each program is presented in **Table 2**.

Note: No attempt is made here to assess whether these program deployed a sound and rigorous evaluation design to measure their outcomes relative to usual care. All programs to be discussed made efforts to do so, but only in the cases of the Geriatric Resources for Assessment and Care of Elders (GRACE) program and the Allina Health LifeCourse program was the gold standard of experimental design – randomized control groups – used to measure changes. That design is necessary to avoid a selection bias that may be common in PCC. (Typically those targeted have exhibited large recent medical expenditures. In some cases, these spiked expenses were anomalous and possibly would have fallen even if the PCC intervention were not offered.) Unlike the LifeCourse evaluation, a randomized control group was used with GRACE. However, the evaluation took place in the time frame from 2002-2007 whereas the outcomes reported here result from other more recent, pre-versus post-program implementation comparisons, or less rigorous evaluation methods.⁶³

Table 2

Features and Outcomes of Four PCC Program Examples^{64,65}

Person-Centered Care Program	Key Program Components	Reported Sources of Financial Benefits
<p>Geriatric Resources for Assessment and Care of Elders (GRACE)</p> <p><i>Targeted</i> to older adults with multiple chronic conditions and functional limitations</p> <p><i>Implemented</i> in various settings, including:</p> <p>Indiana University Health Medicare Advantage</p> <p>Veterans Administration (VA) Healthcare System – Indianapolis</p> <p>HealthCare Partners – Southern California</p>	<p>In-home geriatric assessment by a nurse practitioner (NP) and social worker (SW) team</p> <p>Individualized care plan</p> <p>NP/SW meeting with primary care provider (PCP) and implementation of care plan</p> <p>Longitudinal care</p> <p>Continuity/coordination of care and care transitions</p> <p>Weekly interdisciplinary team conference with geriatrician, pharmacist, and mental health liaison</p>	<p><i>Reductions</i> in:</p> <p>Admissions</p> <p>Readmissions</p> <p>ED visits</p> <p><i>Increase</i> in per member per month premium received (from health plan)</p>
<p>Sutter Health Advanced Illness Management (AIM) Program</p> <p><i>Targeted</i> to individuals with advanced illness in the last 12-18 months of life with indicators of active decline</p> <p><i>Implemented</i> within integrated health system in Northern California</p>	<p>Health literacy and patient engagement</p> <p>Home, telephone, and in-person encounters</p> <p>Multidisciplinary teams consisting of nurses, social workers and palliative care physicians</p> <p>Emphasis on advance care planning, symptom management, care coordination</p>	<p><i>Reductions</i> in:</p> <p>Hospitalizations</p> <p>ICU days</p> <p>ED visits</p>
<p>Allina Health LifeCourse Program</p> <p><i>Targeted</i> to individuals estimated to have 2-3 years to live, many of whom do not believe that they are ready for palliative care</p> <p><i>Implemented</i> in Minnesota integrated health system operating as a Pioneer ACO</p>	<p>Asks patients and caregivers to articulate individualized goals</p> <p>Includes a trained lay health care worker as the primary contact</p> <p>Provides support rather than direct medical interventions</p> <p>Promotes whole-person care</p>	<p><i>Reductions</i> in:</p> <p>Inpatient days</p> <p>Skilled nursing facility (SNF) expenses</p>
<p>Priority Health Tandem365</p> <p><i>Targeted</i> to advanced and chronically ill patients who find traditional ambulatory care impractical</p> <p><i>Implemented</i> as a Michigan Medicare Advantage Program within an integrated health system</p>	<p>Care team includes nurse care manager and social worker, coordinating with a primary care physician (also back-up geriatrician)</p> <p>Delivers care and services at home not typically reimbursed</p> <p>A behavioral health component included</p> <p>Longitudinal rather than a transitional care program</p>	<p><i>Reductions</i> in:</p> <p>Hospital stays</p> <p>ED visits</p> <p>Specialty care</p> <p>SNF expenditures</p>

When reporting costs and cost savings, these programs most often express them in terms of PMPM. That basis makes sense in some PCC models where the enrollment period for beneficiaries is less than a year. Furthermore, a PMPM basis allows a ready comparison with the capitated payments that are expressed in the identical terms. **Figure 5** shows the approximate order of magnitudes of both the monthly cost avoidance and the ROI from these programs.

The presentation of these outcomes is designed to not only demonstrate how ROI calculations are reported but also serves to underscore the potential of PCC programs to make economic sense. There are, of course, no assurances that other PCC programs will yield similar results.

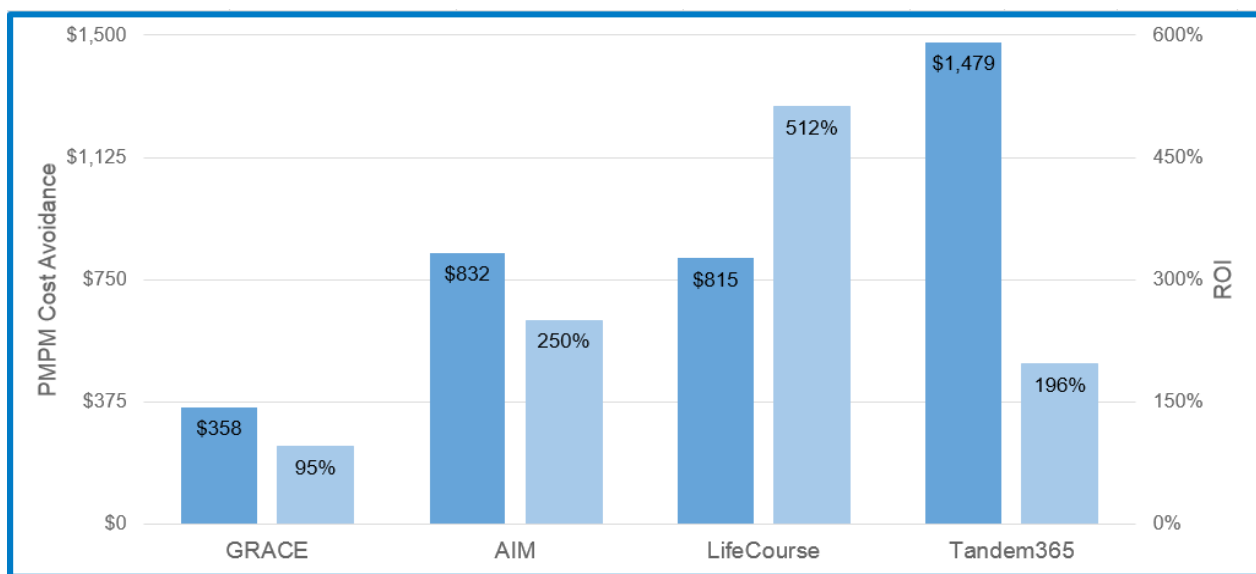


Figure 5. ROI and Monthly Cost Avoidance for Four Selected PCC programsⁱⁱⁱ

Summary of Results

- Results shown are for both the monthly medical cost savings and the ROI percentage from operating a PCC model. (The monthly costs of operating the program, not shown in Figure 5, are, however, accounted for in the displayed ROI values.)
- The results varied widely across the programs, given the variations in approaches and populations served along with differences in costs of implementing their models of service delivery.

- Note that while Tandem365 shows the highest monthly cost savings, it is also the most costly of the four to operate. (Cost, which is not shown in Figure 4, is reported to be about \$500 per month for each of 130 members.^{iv})
- All programs tend to emphasize changes in hospital utilization. The reduction in hospital resource intensity is a feature of the Sutter program whose palliative care component has reduced the average length of stay in the ICU.
- One program makes mention of an outcome not associated with cost avoidance. GRACE reported increases in the PMPM it received because of risk adjustments in the HCC revealed by a more in-depth personal health assessment.
- While all programs report reductions in ED visits, in the case of Allina Health LifeCourse Program the reduction was deemed statistically insignificant.
- Tandem365 is the only program among the four that is reporting a significant reduction (37%) in specialist encounters.^v
- It is interesting to note also that the advanced illness models of PCC appear to have larger returns than the one program discussed here that is focused on less advanced but nevertheless chronic, complex care patients (GRACE). A plausible interpretation is that advanced illness models intervene and therefore only begin to expend resources closer to the point in time when a person's health care utilization starts to accelerate rapidly. The business case may be stronger for programs that intervene close to, or just after, acute episodes of care. That consideration needs to be balanced by a fundamental principle of PCC: being proactive with preventative measures rather than waiting and being reactive to medical crises.
- While each approach to PCC can be expected to yield results different from than those reported in Figure 5, nevertheless those results should at least encourage a provider, health system, or plan to assess whether it makes economic sense in its own circumstances.

6.2 A Hypothetical Case Study

The measures used and the outcomes reported for the programs described in the previous section provide a useful foundation for making the business case for PCC, more generally. Relying on the methods and evidence from these programs, it becomes feasible to forecast the likely ROI from delivering a PCC program under a general and plausible set of assumptions under which it operates. Such a forecast can not only provide guidance concerning what the returns might be from PCC, but the forecasting methodology, itself, illuminates to what degree each individual assumption influences the results. Consequently, the methodology not only predicts a plausible result for the ROI but can also identify the most cost-effective ways to increase it.

This section features a hypothetical simulation of the costs and benefits of a PCC model that contains the essential elements and assumed costs of such care, the baseline medical utilization incidence and the associated costs, together with anticipated utilization reductions via PCC. The forecast is based on realistic assumptions drawn from interviews, publically available data, and from the experience of the four PCC programs described above. The model assumes that the program's design components are such that reductions in all areas of utilization (inpatient, outpatient and post-acute care) are being targeted. No allowance has been made in the hypothetical model to incorporate potential revenue enhancements. The benefits are assumed to accrue strictly in the form of cost avoidance. Thus, these ROI forecasts tend to be conservative in cases where such revenue potential can be expected to be additive to the cost avoidance benefits.

The Expected ROI: The Base Case

Table 3 presents the inputs and outputs of the base case simulation. Later, the results of a pessimistic scenario will be reported and compared to the base case. In the base case, the PMPM cost of the PCC program is assumed to be \$300.

The baseline utilization expense is calculated to be about \$42,000 per person per year,^{vi} an amount that would fall by about \$17,000 per person per year under the assumptions of the model. The resulting ROI from the PCC model is 370 percent. This is the return to an integrated health system that is fully at risk for medical utilization given the assumed values of each of the variables. This result is roughly consistent with the returns on investment reported for the four programs discussed earlier.

Table 3
Calculation of the ROI for the Base Case Simulation

		Value
Cost of PCC Program Per Member Per Year (PMPY)		\$3,600 ^{vii}
Baseline Utilization:		
	Hospital Admissions (PMPY)	1.33 ^{viii}
	Hospital Readmissions (PMPY)	0.17 ¹³
	Hospital LOS (Days per Stay)	6.5 ^{ix}
	Emergency Department (ED) Visits (PMPY)	1.89 ¹³
	Skilled Nursing Facility (SNF) Days (PMPY)	7.0 ^x
	Outpatient Encounters (PMPY)	12.2 ¹³
Baseline Unit Costs:		
	Hospital Day	\$3,500 ^{xi}
	ED Visit	\$2,400 ^{xii}
	SNF Day	\$300 ^{xiii}
	Outpatient Encounter	\$125 ^{xiv}
BASELINE OVERALL UTILIZATION COST (PMPY)		\$42,286
Percentage Changes due to PCC:		
	Number of Hospital Admissions	-33% ^{xv}
	Number of Hospital Readmissions	-33% ^{xvi}
	Hospital Length of Stay	-10% ^{xvii}
	Hospital Cost per Day	-10% ^{xviii}
	Number of ED Visits	-20% ^{xix}
	Number of SNF Days	-20% ^{xx}
	Number of Outpatient Encounters	0% ^{xxi}
POST PCC OVERALL UTILIZATION COST (PMPY)		\$25,353
	COST SAVINGS	\$16,933
	ROI	370%

The Expected ROI: The Conservative Case

It is instructive to examine the ROI again, this time where all the values of the independent variables take on more conservative values. This exercise may be useful to those who say that the assumptions for the input values used in the base case are simply forecasts that may turn out to be overly optimistic. For this next simulation, therefore, we have adjusted each variable by 20 percent from its corresponding magnitude in the base case in whichever direction that would make the ROI less favorable. For example, instead of assuming a PMPM program expense of \$300, \$360 was assumed. Similarly, instead of the base case assumption that baseline hospital utilization was 1.33 stays per year, we reduced that by 20 percent to 1.06. The effectiveness of the PCC in reducing utilization was lowered by 20 percent, uniformly for all medical events and their intensities. All variables were changed in this way to create a conservative scenario. The comparison of the results of this scenario with the base case appears in **Table 4**. The results illustrate that even if all variables simultaneously were assumed to be 20 percent less favorable (to the ROI) in relation to the base case, the ROI would still be a reasonably attractive 78 percent.

Table 4

Base Case versus Conservative Case Economic Outcomes

	PMPM Cost Avoidance	ROI
Base Case	\$1,411	370%
Conservative (Pessimistic) Case	\$642	78%

Quantifying the Influence of the Variables Impacting the Business Case

The hypothetical model identifies the variables that exert the most influence on the ROI. This knowledge is useful for at least two reasons. First, in estimating the ROI, particular care must be taken to be as accurate as possible with the assumed values of these key variables. Inaccurate values for the high impact variables result in significantly inaccurate outputs. Second, the ROI can always be improved. Therefore, understanding which factors are the crucial drivers of the ROI magnitude can suggest the most cost-effective way to enhance results from a PCC program. The sensitivity of the ROI to changes in the values of the variables that shape it is shown in **Table 5**.

Table 5
Sensitivity of ROI to Changes in Independent Variables

	Current - Baseline	Value with Change	New ROI (%)	Effect on ROI: Base of 370%
Pre-PCC Program: Baseline Values				
Effect of 10% Increase in Baseline Hospital Admissions Per member Per Year (PMPY)	1.33	1.46	409	39
Effect of 10% Increase in Baseline Hospital Readmissions (PMPY)	0.17	0.19	375	5
Effect of 10% Increase in Baseline ED Visits (PMPY)	1.89	2.08	373	3
Effect of 10% Increase in SNF days (PMPY)	7.0	7.7	372	2
Effect of 10% Increase in Baseline Cost of a Hospital Day (\$)	\$3,500	\$3,850	409	39
Effect of 10% Increase in Baseline Cost of a ED Visit (\$)	\$2,400	\$2,640	373	3
Effect of 10% Increase in Baseline Cost of a SNF Day (\$)	\$300	\$330	372	2
PCC Program: Effect of a 10% reduction in PMPM Cost	\$300	\$270	423	53
Post-PCC Program: Changes				
Effects of a further 1% point reduction in admission rate	-33%	-34%	377	7
Effects of a 1% further point reduction in readmission rate	-33%	-34%	371	1
Effects of a 1% further point reduction in ED visit rate	-20%	-21%	371	1
Effects of a 1% further point reduction in LOS	-10%	-11%	376	6
Effects of a 1% further point reduction in cost per hospital day	-10%	-11%	376	6
Effects of a 1% further point reduction in SNF days	-20%	-21%	371	1

One can see from the results that if the number of admissions prior to the intervention were 10 percent higher than assumed in the base case, the ROI would rise from 370 percent to 409 percent. Similarly, were the program to enhance its effectiveness by 1 percentage point in reducing admissions – a 34 percent reduction instead of 33 percent – its ROI would rise by 7 percentage points. While one can quickly compare the sensitivity of all baseline changes and utilization changes within each category, it should be noted that it is not possible to compare the sensitivities across the separate categories of baseline measures and post-program utilization changes. This is because for baseline measures, the forecasted result reported is for the effect of a 10 percent change whereas for utilization changes, the sensitivity being measured is for a 1 percentage point change. Nevertheless, some important implications can be drawn from this sensitivity analysis.

Implications: Baseline Determinants

Two crucial determinants of the ROI are these baseline magnitudes: (1) the pre-program hospital admission rate, and (2) the expense of a hospital day. A 10 percent increase in either factor results in a 39-point boost in the ROI. The implication is clear: when PCC programs target populations that present a higher risk for hospitalizations and, further, when the cost of a day in the hospital is especially expensive, the ROI from PCC is increased substantially. The baseline readmission, SNF, and ED utilization rates and costs are, in comparison, no more than one-eighth as influential as hospital admissions and daily costs.

Implication: Program Costs

The ROI from PCC can be significantly raised by reducing the PMPM cost of delivering it, assuming the cost reduction does not diminish its effectiveness. A 10 percent reduction in this cost would raise the ROI by 53 points: from 370 percent to 423 percent. The cost of the program is one of the main drivers of financial success from PCC.

Implications: Changes from Baseline

The ROI will change depending on the effectiveness of PCC in reducing utilization volume and per unit costs. The model shows that incremental success in reducing hospital admissions is rewarded significantly more than reducing readmissions or ED visits: a

1 percentage point reduction in hospitalizations exerts seven times the influence on the ROI as does a comparable reduction in both readmissions and ED visits. These results are not surprising; the absolute number of admissions is far larger than the number of readmissions, and the expense of an ED visit is small in relation to the cost of a hospital stay.

ROI Under Alternative Assumptions of PMPM Cost and Effectiveness

The implications discussed above suggest that a twin focus on improving the efficiency (cost) of providing PCC and effectiveness in reducing admissions is where the financial returns are greatest. In short, being cost effective yields worthwhile returns. While other factors influence the ROI, these two are especially influential. In **Table 6** the ROI is estimated under alternative scenarios of PMPM costs and hospital admission reductions. (All other variables are assumed to remain at the base case levels that appear in Table 3.) For example, the table shows that a combination of a \$400 PMPM program cost and an admission reduction of 30 percent results in a ROI of 237 percent.

Table 6

ROI Under Various Combinations of Cost and Effectiveness

	PMPM Cost			
Admission Reduction	\$200	\$300	\$400	\$500
10%	371	214	135	88
20%	473	282	186	129
30%	575	350	237	170
40%	677	418	288	211

Threshold Analysis

The simulated model of PCC can also provide answers to certain “threshold” questions that are typical of the ones posed by organizations contemplating adopting PCC:

1. “If a hospitalization reduction of 25 percent can be expected to result from PCC, how much can we as an organization afford to spend on the program?”
2. “If our hurdle rate of return on investing in PCC is 300 percent, how effective must the program be to generate this return?”

The Cost Threshold

The first question asks: what is the allowable PMPM cost that results in a financial breakeven situation, one where costs and benefits are just equal to each other? Assume for this calculation that the sole effect of PCC were to reduce hospitalizations. The result would then be a threshold PMPM expenditure on PCC of \$504. This is interpreted as an organization could afford to spend that amount per beneficiary if it believed that admissions would fall by 25 percent as a result of introducing PCC.

Clearly, if other utilization measures such as ED visits, readmissions, daily costs of a hospital stay, etc., were also to fall by 25 percent, the PMPM cost threshold is much higher. The simulation shows that as much as \$1,141 could be expended were the drop in utilization comprehensive rather than being confined to admissions.

The Effectiveness Threshold

The second question asks: what must the PCC effectiveness be to accomplish a specific ROI target? This is often asked in the context of uncertainty with respect of what PCC can deliver in terms of utilization reduction. This question starts with the desired ROI and then works backwards to determine what level of utilization reduction is needed to achieve it. If the requisite reduction appears modest in relation to what can be reasonably expected, a plausible business case for adopting PCC can be made just based on this threshold analysis. For example, the simulation shows that hospital admissions must fall by 48 percent for the

program to generate a targeted 300 percent ROI if the monthly program expense were \$300. This result assumes that the sole salutary effect of PCC was to reduce hospitalizations.

If the burden of cost avoidance were not being borne by admissions alone but rather was shared by anticipated reductions in other areas such as readmissions and ED visits, the required reduction in hospitalizations would be less. The threshold level is a 23 percent reduction in admissions in this scenario. Clearly, if the desired ROI were lower than 300 percent, so too would be the requisite effectiveness in order to achieve financial breakeven.

Some Conclusions from the Hypothetical Model

This section has demonstrated a systematic approach that can be used to calculate the ROI and therefore to assess the business case for PCC. While the calculated ROI from PCC is obviously dependent on the values chosen for the key variables in the analysis, this systematic approach can yield valuable insights even in the absence of certainty regarding the magnitudes of the key drivers. Conducting “what if” scenarios and performing sensitivity analyses can highlight the crucial determinants of financial success from deploying PCC models. In doing so, the framework can provide guidance to organizations on not only whether they might want to initiate such programs but also how to reshape and modify existing ones to make them more affordable, if not more profitable.

In a natural complement to this paper, The SCAN Foundation has built the systematic approach to rigorously assess the strength of the business case for PCC into an Excel-based ROI calculator. The calculator has been developed for use by current and potential payers, providers, adopters, and advocates of PCC.

7. SUMMARY

Person-centered care is characterized by accounting for individuals' values and preferences and using them to guide all aspects of their health care. The provision of such care for older adults with multiple chronic conditions and functional limitations is widely regarded as being in the best interests of those served—the person and their families. There is also evidence that it can enhance provider satisfaction and reduce turnover. However, because PCC also entails an incremental cost in relation to usual care, enthusiasm for its adoption can be slow and muted. Organizations considering initiating or expanding its delivery may be reluctant to do so because of its uncertain financial returns. In other cases, the reluctance may stem not only from a lack of data but on the business case but also from the lack of a systematic framework to assess it. The business case for PCC turns on its capacity to avoid medical costs. Since the target population for PCC consists of high utilizers of the medical system, the resulting burden of medical costs presents a potentially strong basis for the business case.

The framework for developing the business case focuses on both cost mitigation of this burden and, to a lesser degree, revenue enhancements. The approach suggested here has identified the following as the principal *a priori* factors that will shape the business case: the baseline incidence of medical utilization, unit costs of medical services, both the cost and effectiveness of the PCC model, and the ability of the investing party to capture the benefits of cost avoidance. The last factor is especially important; capitated systems and recent payment reforms have tended to increase accountability for medical costs, which now makes cost avoidance a more attractive strategy.

While evaluation methodologies could be improved and more variables affecting results could be accounted for, some PCC programs have reported the ROI from their programs. The returns discussed in this paper for four separate programs range from more than 90 percent to over 500 percent. These programs provided a basis for building the hypothetical model to forecast the ROI for PCC when a comprehensive set of program effects are considered together with the use of average or central values for the independent variables. For a fully integrated health system – adopting an efficient PCC strategy that targets high-risk individuals, and that contains service components designed and reasonably successful in reducing admissions, readmissions, ED visits, hospital length of stay, and the resource intensity of a hospital day – the returns can be quite attractive. The simulation estimates a ROI of more than 350 percent in these circumstances. Even when conservative assumptions were made, the sensitivity analysis showed far more than a breakeven outcome. The simulation also highlighted the criticality of reducing hospital admissions if a specific ROI requirement were to be achieved.

There is no single business case for PCC. The ROI is sensitive to a number of factors that will vary across different program models and across populations served. Nevertheless, the data presented here can serve to motivate those contemplating investments in PCC to seriously consider its economic advantages. In addition, the business case framework can equip these organizations with the systematic approach they need to make their economic assessment of PCC.

8. NOTES

- i An alternative measure that can be used in lieu of net present value is the internal rate of return from the investment. It is applicable when a large initial investment needs to be made to inaugurate a program. The internal rate of return, expressed as a percentage, is defined as the average rate at which the investment outlay grows during the life of the investment. For the investment to make sense, this internal rate of return should match, or exceed, the cost of capital required for the program. In order to ensure comparability, this paper will also deploy the widely accepted and seemingly standard definition of ROI (net benefits divided by program costs) despite its flaws.
- ii The reduction in specialty care can stem from many factors, including an obvious one—that being the wishes expressed in the advance directive. One less obvious manner is for the nurse practitioner or care manager to act as an intermediary between the patient and the specialist. Sometimes the care manager will decline to have the patient report for an in-person visit, deeming it unnecessary. (Interview with Dr. Jay Labine, CMO, Priority Health; Program Director, Palliative Care and Support Services, June 23, 2015). Another example is the use of physiatrists for lower back pain in lieu of neurosurgeons and extensive imaging. (Reported in a personal communication by Libby Collet, Director of Strategic Initiatives, Contracting and Clinic Integration Department InterMed, Maine, July 27, 2015.)
- iii The numbers on the graphs are based on a variety of sources, published and unpublished. Data for the GRACE program appear in Rodriguez S, Munevar D, Delaney C, Yang L, Tumlinson A. Avalere Health LLC: Effective Management of High-Risk Medicare Populations, September 2014. Results for the AIM program were based on the Advanced Care Project Report published by the Coalition to Transform Advanced Care (2015) and on a supplemental interview with Betsy Gornet, Chief Advanced Illness Management Executive at Sutter Health conducted on July 24, 2015. Information on cost avoidance from the Allina Health LifeCourse Program was presented in a poster titled Innovative Late Life Care Model Decreased Resource Utilization and Total Cost of Care at the 2015 Academy Health Conference by Karl Fernstrom, M.P.H.; Rebecca Prenevost, M.P.H., Ph.D.; TC Tong; Heather Britt, M.P.H., Ph.D.; Division of Applied Research, Allina Health. The ROI figure of 512 percent was reported during a personal interview with Sandra Schellinger, CNP, Allina Health SeniorCare Transitions conducted on July 8, 2015. The data for the Tandem365 program cost avoidance stems from the report titled Taking Better Care: Supporting Well-Being for An Aging Population published by the Alliance of Community Health Plans, May

2015. The ROI for Tandem was based on the estimated program cost of \$500 PMPM, a number provided in a personal interview with Dr. Jay Labine, CMO, Priority Health; Program Director, Palliative Care and Support Services conducted on June 23, 2015.

- iv Personal interview with Dr. Jay Labine, CMO, Priority Health; Program Director, Palliative Care and Support Services, June 23, 2015.
- v Personal communication from Karen George, Senior Medical Program Manager, Priority Health, received June 24, 2015.
- vi The baseline utilization expense of \$42,000 is consistent with other reported studies. In a DataBrief dated October 2011, The SCAN Foundation reported Medicare per capita spending of between \$36,000 and \$60,000 for seniors with chronic conditions and functional limitations. \$36,000 refers to the highest 20 percent of spenders while \$60,000 represents the highest 5 percent. At Priority Health spending on those considered appropriate for PCC programming cost the system between \$50,000 and \$60,000 prior to the introduction of LifeCourse.
- vii The cost of \$250 per month is a rough average based on the GRACE cost of \$183, Allina LifeCourse of about \$133, Sutter AIM of about \$238, and Tandem365 of \$500.
- viii Avalere reports 1.33 hospitalizations PMPY for baseline high-cost utilization (13). This is consistent with the 1.23 figure reported by the GRACE team for the Indiana University Health MA implementation.
- ix The average length of a hospital stay for Medicare-age patients was 5.2 days in 2013. (<http://www.hcup-us.ahrq.gov/reports/statbriefs/sb180-Hospitalizations-United-States-2012.pdf>). However, our higher assumption of 6.5 days might be reasonable to reflect the higher acuity of the target population and the significantly higher ALOS that is characteristic of mortality cases. (California HealthCare Foundation: Palliative Care in California: The Business Case for Hospital-Based Programs, November 2007.)
- x The number of SNF days PMPY is probably conservative. The Tandem365 program reports pre-program SNF stays at 33/1000 member-months and SNF days at 643/1000 member-months. That calculates to 7.7 days PMPY.
- xi The average cost in 2012 to Medicare per hospital-stay was about \$13,000, or \$2,600 for a five-day stay. (Agency for Healthcare Research and Quality: Costs for Hospital Stays in the United States, 2012, Brian Moore, Ph.D., Katharine Levit, B.A., and Anne Elixhauser, Ph.D., 2014). We have chosen a larger figure of \$3,200 to reflect the fact that many persons targeted for PCC will be in an advanced stage of illness with the ICU (significantly more costly than an acute care bed) being relied on in many cases.
- xii The mean expense per ED visit in 2009 for those perceived to have poor health status (those targeted for PCC) was \$1,900. The figure of \$2,400 used here represents a modest adjustment for inflation.

- xiii The figure of \$300 is based on cost data for 2012 reported in http://www.medpac.gov/documents/reports/mar14_ch08.pdf?sfvrsn=0.
- xiv This \$125 is a blended rate higher than the usual cost of a primary care visit to reflect the higher costs of specialty care encounters.
- xv Reductions in admissions and readmission of 33 percent resulting from PCC are not exceptional. For example, GRACE reports a 34 percent reduction for its HealthCare Partners implementation and a 43 percent reduction for that of the IU Health System. (Reported By Dr. Steven Counsell, Executive Director, GRACE Team Care Program at Healthcare Web Summit, April 29, 2015.) Tandem365 reports a pre- versus post 37.7 percent reduction in inpatient stays (Taking Better Care: Supporting Well-Being for An Aging Population published by the Alliance of Community Health Plans, May 2015). The Sutter Aim program reports a 59 percent reduction in hospitalizations and the Aetna Compassionate Care Program shows an even larger reduction: 82 percent reduction in acute inpatient days. (See Advanced Care Project Report published by the Coalition to Transform Advanced Care; 2015).
- xvi A 10 percent reduction on the average length of stay is very conservative. While the other programs have not reported unambiguous changes in this metric, the GRACE implementation for the IU health Plan, resulted in an ALOS reduction of 17.6 percent for those enrolled 12-24 months, and 13.2 percent for those enrolled for longer than 24 months.
- xvii No account is taken here of any possible benefits resulting from reduced hospital readmission penalties. These penalties are not applicable under Medicare Advantage plans.
- xviii This is very conservative number since a palliative approach to PCC for those with advanced illnesses who become hospitalized will often involve a bed-mix change tending away from more expensive the ICU beds and toward the less costly acute care beds. Resource intensity will also likely fall in hospital-based palliative care due to less use of imaging, pharmaceutical, and laboratory costs.
- xix A modest 20 percent reduction is used for this variable. The GRACE implementation with HealthCare Partners resulted in a 22 percent fall in ED visits. However, while the IU implementation showed a decrease in ED visits by 28 percent for those enrolled for 24+ months, those enrolled 12-24 months displayed an increase of 11 percent. The results were unambiguous for the Tandem365 program where ED visits fell by almost 52 percent. In sum, a 20 percent reduction seems to be realistic, yet conservative.
- xx The potential for PCC to reduce SNF utilization was made clear in the evidence from Tandem365 which shows a 53.9 percent reduction in SNF stays and a 51.7 percent reduction in days. The assumed 20 percent reduction here appears highly conservative.
- xxi Assumed here is that primary care encounters increase but are totally offset by reductions in specialty care.

9. REFERENCES

1. Institute of Medicine. Crossing the quality chasm: A new health system for the 21st century. 2001; <http://nationalacademies.org/hmd/reports/2001/crossing-the-quality-chasm-a-new-health-system-for-the-21st-century.aspx>. Accessed May 11, 2016.
2. Institute of Medicine. Patient-centered cancer treatment planning: Improving the quality of oncology care. 2011; <http://nationalacademies.org/hmd/reports/2011/patient-centered-cancer-treatment-planning-improving-the-quality-of-oncology-care.aspx>. Accessed May 11, 2016.
3. NCQA. 2014 PCMH standards and guidelines. 2014; <http://store.ncqa.org/index.php/2014-pcmh-standards-and-guidelines-epub-single-user.html>. Accessed May 11, 2016.
4. World Health Organization. Towards people-centered health systems: An innovative approach for better health outcomes. 2013.
5. Centers for Medicare & Medicaid Services. Historical overview of national health expenditures. <https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/NationalHealthExpendData/index.html?redirect=/NationalHealthExpendData/>. Accessed June 26, 2012.
6. Cornish PL, Knowles SR, Marchesano R, et al. Unintended medication discrepancies at the time of hospital admission. *Arch Intern Med*. 2005;165:424-429.
7. Friedman B, Basu J. The rate and cost of hospital readmissions for preventable conditions. *Med Care Res Rev*. 2004;61(2):225-240.
8. Naylor MD, Aiken LH, Kurtzman ET, Olds DM, Hirschman KB. The importance of transitional care in achieving health reform. *Health Affairs*. 2011;30(4):746-754.
9. Harrison A, Verhoef M. Understanding coordination of care from the consumer's perspective in a regional health system. *Health Serv Res*. 2002;37:1031-1054.
10. Van Walraven C, Mamdani M, Fang J, Austin PC. Continuity of care and patient outcomes after hospital discharge. *J Gen Intern Med*. 2004;19:624-631.
11. Morrison I. Health care costs and choices in the last years of life. 2015. <http://www.hnsmag.com/articles/3656-health-care-costs-and-choices-in-the-last-years-of-life>. Accessed May 11, 2016.
12. Centers for Medicare & Medicaid Services. Chronic conditions among Medicare beneficiaries. 2012; <https://www.cms.gov/research-statistics-data-and-systems/statistics-trends-and-reports/chronic-conditions/downloads/2012chartbook.pdf>. Accessed May 11, 2016.
13. Rodriguez S, Munevar D, Delaney C, Yang L, Tumlinson A. Effective management of high-risk medicare populations. 2014. <http://avalere.com/news/avalere-issues-white-paper-on-the-management-of-high-risk-medicare-populati>. Accessed May 11, 2016.
14. Delgado-Guay MO, Parsons HA, Li Z, Palmer LJ, Bruera E. Symptom distress, interventions, and outcomes of intensive care unit cancer patients referred to a palliative care consult team. *Cancer*. 2009;115(2):437-445.
15. Gade G, Venohr I, Conner d, et al. Impact of an inpatient palliative care team: A randomized control trial. *J Palliat Med*. 2008;11(2):180-90.
16. Gelfman LP, Meier DE, Morrison RS. Does palliative care improve quality? A survey of bereaved family members. *J Pain Symptom Manage*. 2008;36(1):22-28.
17. Higginson IJ, Finlay I, Goodwin DM, et al. Do hospital-based palliative teams improve care for patients or families at the end of life? *J Pain Symptom Manage*. 2002;23(2):96-106.
18. Manfredi PL, Morrison RS, Morris J, Goldhirsch SL, Carter JM, Meier DE. Palliative care consultations: How do they impact the care of hospitalized patients? *J Pain Symptom Manage*. 2000;20(3):166-173.
19. Van Staa AL, Visser A, van der Zouwe N. Caring for caregivers: Experiences and evaluation of interventions for a palliative care team. *Patient Educ Couns*. 2000;41(1):93-105.
20. Emanuel E. Better, if not cheaper, care. The New York Times 2013; http://opinionator.blogs.nytimes.com/2013/01/03/better-if-not-cheaper-care/?_r=2. Accessed May 11, 2016.
21. The American Geriatrics Society Expert Panel on Person-Centered Care. Person-centered care: A definition and essential elements. *J Am Geriatr Soc*. 2015;64(1):16-18.
22. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patient with chronic illness: The chronic care model, part 2. *JAMA*. 2002;288(15):1909-1914.

23. Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. *JAMA*. 2002;288(14):1775-1778.
24. Gabbay RA, Bailit MH, Mauger DT, Wagner EH, Siminerio L. Multipayer patient-centered medical home implementation guided by the Chronic Care Model. *Jt Comm J Qual Patient Saf.* 2011;37(6):265-273.
25. Improving Chronic Illness Care. Patient-centered medical home. 2016. http://www.improvingchroniccare.org/index.php?p=Patient-Centered_Medical_Home&s=224. Accessed May 11, 2016.
26. Bergmo TS, Berntsen GK, Dalbakk M, Rumpsfeld M. The effectiveness and cost effectiveness of the patient-centered team (PACT) model: Study protocol of a prospective matched control before-and-after study. *BMC Geriatr*. 2015;15(1):133.
27. Jacob V, Chattopadhyay SK, Sipe TA, Thota AB, Byard GJ, Chapman DP. Economics of collaborative care for management of depressive disorders: A community guide systematic review. *Am J Prev Med*. 2012;42(5):539-549. doi: <http://dx.doi.org.libproxy1.usc.edu/10.1016/j.amepre.2012.01.011>.
28. Reily S, Miranda-Castillo C, Malouf R, et al. Case management approaches to home support for people with dementia. *Cochrane Database Syst Rev*. 2015;5(1):1-127.
29. Coleman EA, Parry C, Chalmers S, Min SJ. The care transitions intervention: Results of a randomized controlled trial. *Arch Intern Med*. 2006;166(17):1822-1828.
30. Naylor MD, Brooten DA, Campbell RL, Maislin G, McCauley KM, Schwartz JS. Transitional care of older adults hospitalized with heart failure: A randomized, controlled trial. *J Am Geriatr Soc*. 2004;52(5):675-684.
31. The Green House Project. Evaluating the green house model. 2011. http://blog.thegreenhouseproject.org/wp-content/uploads/2011/10/green_house_research-1-pager-with-map_September-2011.pdf. Accessed May 11, 2016.
32. Kane RA, Lum TY, Cutler LJ, Degenholdz HB, Yu T. Resident outcomes in small-house nursing homes: A longitudinal evaluation of the initial green house program. *J Am Geriatr Soc*. 2007;55(6):832-839.
33. Hirth V, Baskins J, Dever-Bumba M. Program of all-inclusive care (PACE): Past, present, and future. *J Am Med Dir Assoc*. 2009;10:155-160.
34. Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non-small-cell lung cancer. *N Engl J Med.* 2010;363(8):733-742.
35. Brumley R, Enguidanos S, Cherin D. Effectiveness of a home-based palliative care program for end-of-life. *J Palliat Med*. 2003;6(5):715-724.
36. Hwang SJ, Chang HT, Hwang IH, Wu CY, Yang WH, Li CP. Hospice offers more palliative care but costs less than usual care for terminal geriatric hepatocellular carcinoma patients: A nationwide study. *J Palliat Med*. 2013;16(7):780-5.
37. Willard-Grace R, Hessler D, Rogers E, Dubé K, Bodenheimer T, Grumbach K. Team structure and culture are associated with lower burnout in primary care. *J Am Board Fam Med*. 2014;27:229-238.
38. Morse G, Salyers MP, Rollins AL, Monroe-DeVita M, Pfahler C. Burnout in mental health services: A review of the problem and its remediation. *Adm Policy Ment Health*. 2012;39(5):341-352.
39. Sikorska-Simmons E. Predictors of organizational commitment among staff in assisted living. *Gerontologist*. 2005;45(2):196-205.
40. West CP, Huschka MM, Novotny PJ, et al. Association of perceived medical errors with resident distress and empathy: A prospective longitudinal study. *JAMA*. 2006;296:1071-8.
41. Shanafelt TD, Balch CM, Bechamps G, et al. Burnout and medical errors among American surgeons. *Ann Surg*. 2010;251:995-1000.
42. Jones JW, Barge BN, Steffy BD, Fay LM, Kunz LK, Weubker LJ. Stress and medical malpractice: Organizational risk assessment and intervention. *J Appl Psychol*. 1988;73:727-35.
43. DeVoe J, Fryer GE, Hawgraves JL, Phillips RL, Green LA. Does career dissatisfaction affect the ability of family physicians to deliver high quality patient care? *J Fam Pract.* 2002;51:223-8.
44. Shanafelt TD, Bradley KA, Wipf JE, Back AL. Burnout and self-reported patient care in an internal medicine residency program. *Ann Intern Med*. 2002;136:358-67.
45. Reddy A, Pollack CE, Asch DA, Canamucio A, Werner RM. The effect of primary care provider turnover on patient experience of care and ambulatory quality of care. *JAMA Intern Med*. 2015.
46. Haas JS, Cook EF, Puopolo AL, Burstin HR, Cleary PD, Brennan TA. Is the professional satisfaction of general internists associated with patient satisfaction? *J Gen Intern Med*. 2000;15(2):122-8.

47. Halbesleben JRB, Rathert C. Linking physician burnout and patient outcomes: Exploring the dyadic relationship between physicians and patients. *Health Care Manage Rev.* 2008;33:29-39.
48. Lewis SE, Nocon RS, Tang H, et al. Patient-centered medical home characteristics and staff morale in safety net clinics. *Arch Intern Med.* 2012;172(1):23-31.
49. Edvardsson D, Fetherstonhaugh D, McAuliffe L, Nay R, Chenco C. Job satisfaction amongst aged care staff: Exploring the influence of person-centered care provision. *Int Psychogeriatr.* 2011;23(8):1205-1212.
50. Edvardsson D, Sandman PO, Borell L. Implementing national guidelines for person-centered care of people with dementia in residential aged care: Effects on perceived person-centeredness, staff strain, and stress of conscious. *Int Psychogeriatr.* 2014;26(7):1171-1179.
51. Reid RJ, Coleman K, Johnson EA, et al. The group health medical home at year two: Cost savings, higher patient satisfaction, and less burnout for providers. *Health Affairs.* 2010;29(5):835-842.
52. Reid RJ, Fishman PA, Yu O, et al. Patient-centered medical home demonstration: A prospective, quasi-experimental, before and after evaluation. *Am J Manag Care.* 2009;15(9):e71-e87.
53. Eaton S, Roberts S, Turner B. Delivering person-centered care in long term conditions. *BMJ.* 2015;350(h181):1-4.
54. Hagenow NR. Why not person-centered care? The challenges of implementation. *Nurs Adm Q.* 2003;27(3):203-7.
55. Davis K, Schoenbaum SC, Audet A. A 2020 vision of patient-centered primary care. *J Gen Intern Med.* 2005;20:953-957.
56. Epstein RM, Fiscella K, Lesser Cs, Stange KC. Why the nation needs a policy push on patient-centered health care. *Health Affairs.* 2010;29(8):1489-1495.
57. Ruggiano N, Edvardsson D. Person-centeredness in home- and community-based long-term care: Current challenges and new directions. *Soc Work Health Care.* 2013;52(9):846-861.
58. The Kaiser Family Foundation. State health facts. 2015. <http://kff.org/statedata/>. Accessed May 12, 2016.
59. Berenson, RA, Sunshine, JH, Helms, D, Lawton, E. Why Medicare Advantage plans pay hospitals traditional Medicare prices. *Health Affairs.* 2015;34(8):1289-1295.
60. Stranges E, Stocks C. Potentially preventable hospitalizations for acute and chronic conditions. 2010. <https://www.hcup-us.ahrq.gov/reports/statbriefs/sb99.pdf>. Accessed May 12, 2016.
61. Centers for Medicare & Medicaid Services. Medicare ACOs continue to improve quality of care, generate shared savings. 2015. <https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2015-Press-releases-items/2015-08-25.html>. Accessed May 12, 2016.
62. Kahn C, III, Ault T, Potetz L, Walke T, Chambers J, Burch S. Assessing Medicare's hospital pay-for-performance programs and whether they are achieving their goals. *Health Affairs.* 2015;34(8):1281-1288.
63. Counsell, SR, Callahan, CM, Tu, W, Stump, TE, Arling GW. Cost analysis of the geriatric resources for assessment and care of elders care management intervention. *J Am Geriatr Soc.* 2009; 57(8):1420-1426.
64. Coalition to Transform Advanced Care. Advanced care project report. 2015; <http://www.thectac.org/key-initiatives/advanced-care-project/>. Accessed May 12, 2016.
65. Alliance of Community Health Plans. Taking better care: Supporting well-being for an aging population. 2015; http://www.achp.org/wp-content/uploads/report-Innovation_ElderCare_FULL-BRIEF.pdf. Accessed May 12, 2016.