

Interventions to Address Basic Resource Needs in Kaiser Permanente: A Care Continuum and an Outcomes Wheel

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ABSTRACT

As Kaiser Permanente develops interventions to help members address basic resource needs such as food, housing, utilities, and transportation, the organization is concurrently developing a framework for program implementation, outcomes assessment, and interventions dissemination. This framework combines a care continuum, adapted from population-based care management strategies for chronic diseases, with an outcomes wheel, which reflects a broad range of health outcomes that are relevant to patients, valued by diverse stakeholders, and potentially modifiable through interventions.

The resource-needs care continuum has 5 steps: 1) *plan* new interventions to generate evidence of effectiveness, 2) *assess* basic resource needs in broad or targeted membership groups, 3) *connect* individuals to community organizations that can fulfill basic resource needs, 4) *improve* health outcomes through these interventions, and 5) *spread* effective programs to other settings. Each step has multiple subcomponents that support implementation and evaluation. Although all stakeholders agree that interventions should assess fulfillment or mitigation of underlying basic resource needs, patients, clinicians, and organizational leaders often have different priorities for assessment of other health outcomes. The outcomes wheel identifies health outcomes at the individual, clinical, social, and system levels that can address these different priorities.

The resource-needs care continuum and outcomes wheel can assist operational leaders in designing and implementing new interventions, evaluating their effectiveness, and planning dissemination. Early collaboration with evaluators and researchers helps ensure that programs select appropriate measures of basic resource needs and health outcomes, adopt rigorous evaluation designs, and are sufficiently large to support decisions about effectiveness and spread.

INTRODUCTION

Social factors are critical determinants of health outcomes in individuals and populations.¹⁻³ Although skilled clinicians have long recognized that they must understand their patients' social, environmental, and behavioral context when making clinical recommendations, large health care systems have only recently begun to identify and address social and economic risk factors systematically.⁴⁻⁶ These efforts are intended both to improve care for individual patients and to increase the effectiveness of population management, care coordination, quality improvement, and risk adjustment.^{7,8} Health systems that care for disadvantaged and vulnerable patients, such as safety-net institutions and

the US Department of Veterans Affairs, have emerged as leaders in this area.^{9,10} Recent Medicare and Medicaid initiatives^{5,11} have prompted private-sector health systems to develop similar programs.

Once a system commits to addressing the social and economic needs of its members or patients, it must determine which concerns to assess, establish processes to identify those needs, refer patients to appropriate resources, and track changes in those needs and related health outcomes over time. Many health systems are developing programs to assess basic resource needs such as food, housing, utilities, and transportation.¹² Although some systems have developed internal programs such as food pharmacies to address specific

needs,¹³ most rely on partnerships with community organizations that have expertise in connecting individuals with basic resources. Building collaborations between clinic and community requires careful planning to share essential information, to track referrals, and to assess outcomes of importance to both organizations.

Stakeholders in a health system may have different expectations about the outcomes that can be achieved through interventions to address basic resource needs. Patients and clinicians often assert that addressing these fundamental needs is simply the right thing to do from an ethical and humanitarian perspective. Frontline clinicians and quality leaders may add that an awareness of basic resource needs, even if they cannot be fulfilled, can help individualize care, improve clinical outcomes and quality, and reduce health disparities. For example, a clinician who becomes aware of her patient's transportation barriers may convert medication prescriptions to mail-order delivery, which can improve adherence.¹⁴ Operational leaders attuned to the bottom line may care most about the effect of these programs on patient satisfaction, utilization of services, and costs of care.

Because programs to address basic resource needs cross traditional boundaries between health care and community and their success can be gauged from many perspectives, a comprehensive framework is necessary to guide program development and evaluation. In this article, we describe the evolving framework for implementation, outcomes assessment, and dissemination of interventions to mitigate basic resource needs in Kaiser Permanente (KP). This framework combines a *care continuum* for basic resource needs, adapted from population-based management strategies

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for chronic health conditions, with an *outcomes wheel* that articulates the broad range of potential outcomes of importance to different stakeholders. Although this framework has been developed for programs that identify basic resource needs (primarily housing, food, energy/utilities, and transportation), a similar framework may apply to other programs that connect health systems with community organizations, such as diabetes prevention or postpartum home visitation programs.^{15,16}

GENERAL PRINCIPLES OF A CARE CONTINUUM

To attain optimal biopsychosocial outcomes,¹⁷ to support treatment adherence,^{18,19} or to improve the quality of care,²⁰ health systems must develop multidisciplinary programs that cross organizational reporting lines. Each step in this process is part of a larger continuum of care. In 2011, Gardner and colleagues¹⁷ described a continuum of care for individuals and populations with HIV infection that began with screening to identify HIV infection; continued through linkage to HIV care, retention in care, treatment with antiretroviral

medications, and treatment adherence; and culminated in viral suppression. This care continuum framework has been adopted as the strategy for diagnosis and treatment of HIV infection in the US population.²¹ With subsequent refinements, this model has guided HIV quality improvement interventions in the US and other countries since 2012.^{22,23} Similar care continua have been defined for other chronic diseases, including depression, hypertension, diabetes, and hepatitis C.²⁴⁻²⁷

Each step in a care continuum depends on successful completion of prior steps. Pictorially, these steps are often represented as a downward cascade¹⁷ or as progressive “voltage drops.”²⁰ Even if decrements in quality at each step are small, they can accumulate to undermine accomplishment of care goals at the population level. For example, in a hypothetical care continuum with 5 independent steps, a 10% relative decline at each step would result in achievement of the desired outcome in 59% of the population, whereas a 20% relative decline, common in clinical settings, would result in only 33% achieving that outcome. Simple estimates¹⁷ or simulation

studies²⁵ can identify specific steps in the care continuum at which interventions might optimize outcomes.

Once each step in a care continuum is defined and its importance is quantified, targeted interventions can address specific facilitators and barriers. Because chronic health problems or basic resource needs can rarely be resolved definitively, cycles of intervention and outcome assessment can identify individuals who do not complete a step in the continuum so that they can be reengaged in care.

DEVELOPMENT OF A CARE CONTINUUM FOR BASIC RESOURCE NEEDS

KP is an integrated health care system that provides preventive care, primary care, and specialty care to more than 12 million individuals in 8 geographic Regions across the US (Northern California, Southern California, Colorado, Georgia, Hawaii, the mid-Atlantic States and Washington, DC, Northwest [Oregon and southwest Washington], and Washington State). In 2016, leaders in the Kaiser Foundation Research Institute and KP Care Management Institute conducted interviews with 18 KP leaders who assessed the design, scale, and value of existing programs to address social, economic, and behavioral needs within KP. These leaders developed a preliminary intervention model for programs to link KP clinical activities with community organizations. They also identified the need for greater rigor and consistency in planning, evaluation, and dissemination of these programs.

In response, KP’s national Community Health program established the Social Needs Network for Evaluation and Translation (SONNET) in 2017. SONNET is a network of experienced KP researchers and external academic colleagues with expertise in health services research, implementation science, and clinical medicine.²⁸ SONNET first identified more than 35 interventions across KP Regions that addressed 1 or more basic resource needs. Then SONNET investigators and staff examined the development and implementation of selected early programs and confirmed the impression of organizational leaders that few of the programs had used a systematic framework to guide design, implementation, or evaluation.

Steps in Care Continuum for Basic Resource Needs

1. Plan an approach to assessment and intervention for basic resource needs

- a. Elicit patient priorities and concerns.
- b. Develop partnerships with community organizations that provide basic resources.
- c. Elicit clinician and staff priorities and concerns.
- d. Identify domains and measures to assess basic resource needs.
- e. Identify survey formats (online, automated, in person) acceptable to patients and staff.
- f. Define health outcomes of importance to diverse stakeholders.

2. Assess basic resource needs

- a. Identify populations or high-risk subgroups for systematic assessment.
- b. Assess basic resource needs systematically in targeted groups or individuals.
- c. Store information to be accessible for clinical and operational use.

3. Connect individuals with basic resource needs to community organizations

- a. Build referral workflows for frontline clinicians and staff.
- b. Complete referrals to community organizations.
- c. Share secure information between health systems and community organizations.
- d. Monitor patient use of community resources.

4. Improve health outcomes (the “outcomes wheel”)

- a. Fulfill basic resource needs.
- b. Assess impact on personal health outcomes (eg, physical and mental health status, self-care, satisfaction).
- c. Assess impact on clinical outcomes (eg, chronic disease outcomes).
- d. Assess impact on social and community health (eg, health disparities, neighborhood health).
- e. Assess impact on health system performance (eg, member retention, service utilization, costs of care).

5. Spread effective programs and approaches

- a. Spread within the health system.
- b. Share findings to promote spread across health systems.

Measures of basic resource needs or outcomes were often unstandardized, rigorous evaluations were rare, and few programs had spread beyond their initial site.

To address these concerns, SONNET proposed a resource-needs care continuum for basic resource interventions in KP. The Sidebar: Steps in Care Continuum for Basic Resource Needs identifies the 5 steps in this care continuum and defines some of the decisions and actions necessary at each step. Figure 1 illustrates these steps as an upward progression toward a set of goals rather than as a downward cascade.^{17,20} The components that we list for each step derive from the ongoing experience of program developers and evaluators. Although we use the word *should* to describe these components, it must be recognized that these recommendations are generally based on expert opinion rather than established evidence.

STEPS IN RESOURCE-NEEDS CARE CONTINUUM

Step 1: Plan

In Step 1 (“Plan”), clinical and operational leaders should collaborate with patients to prioritize their most pressing basic resource needs. They should build partnerships with community organizations that can help mitigate these heterogeneous needs. Leaders should also work with frontline clinicians and staff to identify barriers

to addressing basic resource needs in their daily work. As part of this process, leaders should assess the community resource landscape to ensure that capacity exists to address resource needs identified through clinical care or screening. Leaders should then select survey domains and measures to assess high-priority needs. They should develop alternative formats to facilitate survey completion (eg, online, telephone-assisted, tablet computer, or paper administration) in different physical settings (eg, home, waiting room, or examination room). Because patient resource needs, health system priorities, and community capacity are all dynamic, plans for periodic reassessment should be developed. Finally, leaders should anticipate Step 4 of the resource-needs care continuum (“Improve”) by identifying health outcomes that can assess the effectiveness of their interventions, and by developing plans to measure those outcomes.

Step 2: Assess

In Step 2 (“Assess”), operational leaders identify priority groups of members/patients for assessment of basic resource needs, and administer surveys to those groups. They may decide to assess an entire demographically defined population, such as families with small children or the elderly.^{29,30} Alternatively, they may limit assessment to subgroups with a

high presumed or proven prevalence of needs,³¹ such as medically complex patients or low-income patients receiving insurance through Medicaid. Survey responses should be stored in the electronic health record so that they are accessible to clinicians, staff who conduct population health activities, program evaluators, and researchers. Strategies should also be developed to assess additional social, economic, or behavioral health needs in patients who identify a “sentinel” basic resource need during screening.

Step 3: Connect

In Step 3 (“Connect”), workflows should be developed to refer patients/members to community organizations. These workflows must allow clinicians and staff to integrate assessment of basic resource needs with other care goals. Collaborative planning with community organizations can standardize referral processes and ensure secure, bidirectional transmission of protected health information. Tracking of referrals enables frontline clinicians, population health managers, and community organizations to determine whether referrals have been completed. Patients may require ongoing support from clinical or community navigators, social workers, or care managers to complete the referral process and obtain resources to mitigate their needs. Community organizations should also track the resources that patients receive and should develop outcome reports for their own use and for the referring health systems.

Step 4: Improve

Step 4 (“Improve”) is based on a 5-part “outcomes wheel” (Figure 2). This outcomes wheel encompasses individual, clinical, social, community, and health system goals for interventions to mitigate basic resource needs, and identifies potential measures to assess program effectiveness. The first “spoke” in the outcomes wheel is improvement in the underlying basic resource need. In Figure 2, resource needs are located at the top of the outcomes wheel to signify their pervasive importance to stakeholders. The ability to demonstrate that patients do obtain basic resources is critical to establish the credibility of these programs and sustain them in the face of competing operational demands.

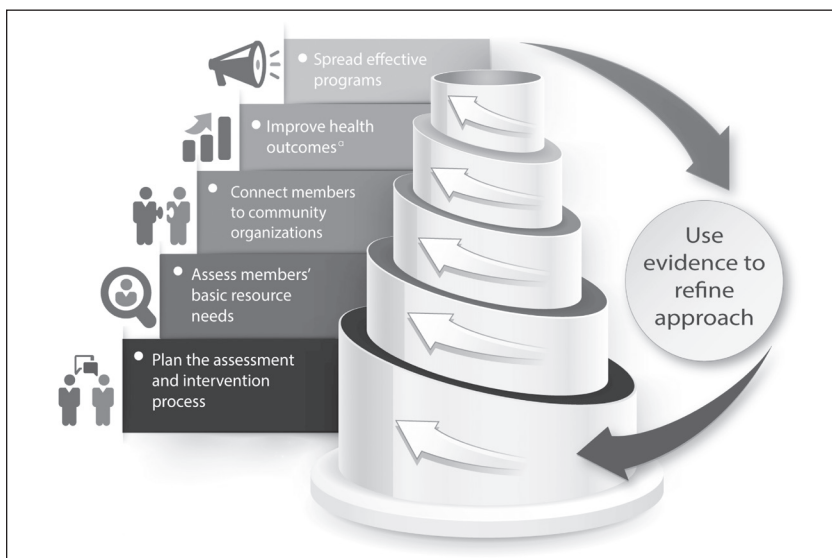


Figure 1. A care continuum for basic resource needs. The continuum consists of 5 steps that are necessary to accomplish the goals of programs designed to mitigate basic resource needs.

^a See health outcomes wheel in Figure 2.



Figure 2. Health outcomes wheel. Each of the 5 “spokes” of this wheel includes a set of health outcomes that can be used to assess the effectiveness of interventions to mitigate basic resource needs.

Identification of individuals whose basic needs have not been fulfilled despite connection to these resources in Step 3 of the care continuum can prompt further exploration of factors that limit their ability to utilize community resources, and can also identify gaps in community and governmental programs that address basic resource needs.³² If individuals do not obtain sufficient resources, leaders can reexamine prior steps in the resource-needs care continuum and develop quality improvement efforts.

Interventions to mitigate basic resource needs affect a broad array of other health outcomes.^{3,33} Personal health outcomes, the second “spoke” of the outcomes wheel, might include measures of health status and well-being, mental health, satisfaction with care, or self-care behaviors. Clinical outcomes could include use of preventive care services such as cancer screening or immunizations, adherence with health care visits and medications, or chronic disease outcomes. Social and community outcomes could include reductions in health inequities between social groups, collateral health effects on household members, or changes in neighborhood-level measures of health. System performance outcomes might include staff satisfaction, member retention, utilization of primary care, specialty and acute care services, or costs of care.

The relationship between these outcomes can be complex, and no program should be expected to measure or attain all of them. Rather, the outcomes wheel

is intended to help program developers clarify their goals; choose outcome domains and measures that address the concerns of their stakeholders; and establish evaluation criteria for spreading, refining, or terminating their initiatives.

Step 5: Spread

Step 5 (“Spread”) is an essential consideration in geographically dispersed organizations such as KP, where interventions are commonly developed and evaluated in a single clinical site. Successful single-site programs often benefit from impassioned local leadership, committed staff, and well-established relationships with mature community organizations. Because these attributes may be difficult to replicate at other sites, interventions should be designed for dissemination.³⁴ Considerations in designing a program for dissemination include incorporating stakeholders into development and testing of interventions, using established frameworks and theories to promote spread, characterizing barriers and facilitators to spread in the local “ecosystems” where an intervention is first implemented, and developing strategies to share evaluation findings with clinical and operational audiences.³⁴ Publications based on rigorously designed evaluations and research can also facilitate spread within and between health systems. Survey instruments, referral forms, and computer codes to extract and manage data can also be shared within the health care system and to other settings.

LIMITATIONS OF THE CARE CONTINUUM FRAMEWORK

The KP resource-needs care continuum framework has 5 important limitations: 1) Although the model can guide decisions about program design and evaluation, it inevitably oversimplifies complex processes in the health system and the community. Thus, it requires adaptation to each local context. 2) Patients’ ability to complete each step can be affected by clinical, behavioral, and social forces that codetermine the outcomes of interest. These moderators of effectiveness should be measured as part of evaluation efforts. 3) Frontline clinicians and staff face competing organizational priorities that may undermine the effectiveness of programs to address basic resource needs.

4) Community organizations that help mitigate basic resource needs are often inadequately funded and thus dependent on volunteer staff. They may lack robust information technology, internal quality improvement programs, or the ability to assess their own outcomes. As a result, they may have limited capacity to meet increased demand from KP and other health systems. In response, KP and other health systems are collaborating to strengthen the resource landscape in those communities. 5) To date, no KP programs to address basic resource needs have fully characterized the “voltage drops” at each step of the continuum, although some facilitators and barriers have been identified.³⁵ Thus, this care continuum will be refined as evidence accumulates from increasingly rigorous internal research and evaluations.

Experienced evaluators or researchers should be included in planning for new interventions. They can introduce the framework of the resource-needs care continuum and outcomes wheel, help develop measures to assess outcomes of importance, and estimate the number of participants necessary to demonstrate operationally significant changes in those outcomes. Rigorous evaluation designs such as randomized controlled trials or quasi-experimental studies with concurrent comparison groups can increase confidence in the effectiveness of these programs.³⁶ The planning process should also anticipate unintended consequences so that they can be avoided or addressed in program design. For example, asking overworked frontline clinicians and staff to add social needs assessments to their daily work may jeopardize other important care goals unless appropriate workflows are developed.

CONCLUSION

As the resource-needs care continuum framework is introduced in KP, we anticipate that it will prove to be useful for planning, implementation, and evaluation of interventions to mitigate the basic resource needs of KP members. Its inherent logic and specification of the steps necessary to develop and test interventions have already made it appealing to organizational leaders. The continuum also specifies evaluation and research questions that must be addressed during implementation and spread. If the

intended outcomes of an intervention are not achieved, the continuum provides a structure for qualitative and quantitative investigations to identify steps that require quality improvement interventions. We expect that the care continuum for basic resource needs and the outcomes wheel will continue to evolve as KP gains operational experience and generates evidence from these important programs. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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