Inspiring Healthcare Leaders
Accelerating Change

Designing the Future of Healthcare: A How-To Guide for Developing New Care Models

Part Two of a Three Part Series

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I. Introduction

Innovation in healthcare delivery is undergoing radical change, not just in velocity but in our expectations of what true innovation means. Since the beginning of this century, forward-thinking physicians and executives have focused innovation efforts on a two-prong approach: optimizing what is and acquiring new capabilities by building or buying new resources. In a fee-for-service world, this worked well for many organizations.

As cost pressures keep squeezing organizations and individuals, however, it has become clear that these improvement methodologies and economic models are not keeping up with the required rate of change.

Consider a health system, for instance, that puts all its strategic resources into building a new facility and buying a competing multi-specialty clinic. It is now locked into a fee-for-service future, where balance sheets demand that hospitals are filled. Meanwhile, the competitor across town launches a hospital-from-home service, starts offering home visits for the elderly and disabled, and shows lower per-patient costs while caring for the whole individual. Which organization seems more flexible and prepared for a rapidly changing landscape?

Next year or a decade from now, the environment will shift again. Since the only constant is change, our most important work is not to keep up with competitors but to build an innovation infrastructure that allows us to see, prepare for, and to meet the needs of new generations with new care models. Any redesign must be rooted in a new understanding of the patient experience using a whole-person mindset. This includes things that transcend the context of health conditions and treatments, such as social determinants of health, cultural beliefs, and life goals.

This paper describes our early work with organizations to build that patient-focused innovation infrastructure, which we call new care model development. Reimagining the fundamental building blocks of care, the care process, and the care team is a transformational activity filled with leadership and management challenges. What we are developing is a reliable method for creating innovation capability in an organization, tapping the talents of its people in order to continuously prepare for the future.

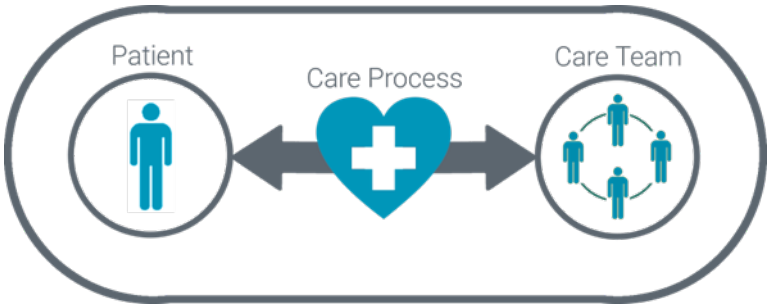


Figure 1: Fundamental Building Blocks of the Care Model. Additional layers of detail will be added to this visual throughout the paper.

Repeatable Care Model Development in Action: Two Cases

In our first paper, "Designing the Future of Healthcare: A System for New Care Model Development to Drive Breakthrough Results," (Toussaint & Knox, 2020) we outlined two examples of new care models, Care in Place at Atrius Health in Massachusetts, and Advanced Team-Based Care (aTBC) at Bellin Health in Wisconsin. Leaders at both Atrius and Bellin adopted a development system mentality, recreating essential structures in the organization to build a repeatable process to address and transform other care models in future.

Since we will continue focusing on these two organizations to illustrate how a team can redesign internal structures to manage the future and the now all at once, let us introduce two additional care model innovations they developed.

At Bellin Health, cardiologist Dr. James Rider had been unhappy with the stage-4 congestive heart failure (CHF) care model for several years. He regularly communicated his frustrations to senior leaders, asking for additional care team members to build a solution he had in mind. Leaders suggested a different approach. They would dedicate a team to develop a new stage-4 CHF care model on the condition they would use the established development framework for other care design efforts.

The VP of heart and vascular services, Andrea Werner, and operational director Kathy Kerscher began work with Dr. Rider to redesign the stage-4 CHF care model in 2014. The development team learned about complex interactions in the lives of patients with CHF. They focused on physical activity, medications, food, care utilization, mental health, and social interactions, studying the impact on patient and family behaviors. After 12 months of research and design, the team launched the new care model. Patients were empowered to co-create their own care with a broader set of care team members to treat the whole person.

Dedicated CHF RNs were assigned along with palliative care providers, dieticians, pharmacists, and RN case managers to coordinate all care processes in conjunction with the patients' primary care providers and cardiologists. They adopted a new measurement tool, the Kansas City Quality of Life Survey, to build comprehensive knowledge of how patients overall well-being was impacted by care.

After the first year, 30-day hospital readmissions dropped from 19.7% to 5.6%, and average per-member-per-month total medical expense (PMPM TME) dropped 16.2% from $2143.15 to $1797. The percentage of patients with advanced care plans on file increased from 54% to 78%. A provider survey that measured level of comfort in caring for patients with CHF improved on average from 5.5 to 8.2 on a 10-point scale. After the CHF new care model was created, Bellin went on to develop new care models for other specialty care, hospital care, and community care using the same new care model development process.

At Atrius Health, the development team began with a narrowly focused project to prevent unnecessary ER visits and hospitalizations in the elderly after uncovering the pain and anguish patients experienced during hospital stays. One patient summed it up: "I didn't think I was elderly until I went to [the hospital]. I'd rather die than go back."

This first project created Care in Place, a very successful care model that delivered urgent care at home to frail elderly patients. It was aligned with Atrius leaders' strategy of managing capitated contracts, which required managing the patient population to reduce total cost of care. They elected to widen the scope of Care in Place to create a hospital-at-home care model. They partnered with Medically Home, a for-profit startup that had been working on developing a scalable hospital-at-home model for years. Atrius dedicated a development team from their innovation center to co-develop the clinical model. Medically Home and Atrius worked together to navigate the politics of other healthcare organizations across Boston which would eventually participate.

Atrius provided the environment where the Medically Home startup could thrive. Development started in 2016 and over a multi-year period, the hybrid team of Atrius Health and Medically Home employees designed a technology-enabled home-care model that provided high quality, cost-effective acute care in spanning a broad geography in a profitable way. The care model can replace 20-30% of all inpatient visits with equivalent or better quality and safety outcomes at 70-85% of the cost. The patient experience has been life-changing, and in some cases, lifesaving. (Toussaint & Barnas, 2020)

Medically Home is now working with health systems across the country. As of the time of this writing, hundreds of patients that have experienced 30-day home hospitalization in multiple states. Recently contracts were signed with the Mayo Clinic and Kaiser Permanente to spread the model across their care delivery systems. (Muoio, 2021)

Building a system for care model development – as opposed to a single new care model – is important to achieve organizational breakthrough. The following pages are the guide to creating this. We will describe how to establish the strategic alignment and governance process which is the bedrock of the new care model development system. We will detail the five phases of the design process and explain how to build a reproducible system by focusing on capability of the development and operations teams. Our goal is for you to use this guide to customize the model to your own organization's culture and structure. Let's begin with strategy.

II. Getting Started: Strategic Alignment, Governance, and Development System

Strategic Alignment

New care models are strategic and should be prioritized as one of a small number of top-level breakthrough initiatives. Since each breakthrough cascades to many projects across all levels of the organization, it's important there are only a few, somewhere in the range of three to five.

A high-level leader reporting directly to the top executive should be designated as the administrative leader responsible for new care model development. One of the leader's main responsibilities will be to remove barriers and allocate resources as development projects move through the five phases of design.

Governance

After strategic alignment comes the formation of a governance team, which should be diverse and include senior leaders who will provide oversight and ensure the work is prioritized. The governance team ensures that the development team is free to think outside the boundaries of current operations and financial constraints, to test new ideas without traditional restrictions.

Over the course of the work, the governance team should meet with representatives from the development team at least monthly to keep the work on pace and stay connected. Meetings should be conducted in a judgment-free zone to support the team, not to criticize decisions. It should focus entirely on what has been learned, how to support the work, and where to leverage possibility. The ongoing review process should also focus on achieving the highest level of ROI, quality, and patient satisfaction. Senior leader viewpoints and knowledge must be included in the process. A standard agenda with simple questions is best. 1) What has happened since we last met? 2) What are the new learnings? 3) What are the barriers and obstacles to overcome? 4) What is the plan between now and the next governance meeting? The content shifts with different phases of the design process, as outlined below.

Development System: Seven steps required for building a new care model development system

1. Identify an Opportunity with Strategic Clarity and Leadership Support

A new care model should be strategic and meet a specific need. Identifying the right place to focus requires dialogue between senior leaders and those operationally responsible for areas of possible focus. It should be a place where repeated improvement efforts have not been able to achieve desired results. Front line care teams are more committed when they believe a pain point can be eliminated with a new process. Or, if there is a significant change in the market, that may be driving the reason to reimagine

care. In either event, an effective leadership team with a functional frontline team is a prerequisite for success.

2. Define a Design Methodology and Secure the Necessary Expertise

Developing new care models requires a different skill set than traditional operations-focused activities in health systems. Team members will be introduced to a design process that promotes exploration, new knowledge creation, creative thinking, patient focus, systems thinking, experimentation, and a deep understanding of spread and scale. The team will establish a single, standard design process for all new care model development initiatives which accelerates organizational learning by building a common language.

The governance team should support the development team by defining a design methodology upfront. Bellin Health employed a standard 9-step design process for care model design. The 9 steps included: 1. Understand the population, 2. Define the goals for the population, 3. Create the high-level design, 4. Activate the care team, 5. Engage the individual, 6. Measure outcomes, 7. Provide feedback, 8. 30-day improvement plans, and 9. recalibrate goals. Atrius Health used a standard 4-step process. The 4 steps included 1. Inspire, 2. Research, 3. Ideate & Iterate, and 4. Scale. Both processes included the same or similar activities that we will outline later in this paper. Health systems may not have the internal expertise to define a robust new care model design process on their own. In these cases, leaders will need experienced outside experts to teach the design process. Reliance on outside experts should be designed to leave capability behind with the designated internal development team and eliminate the use of the experts over time.

3. Create a Guiding Document for the Work

It is the governance teams' responsibility to document the problem or opportunity for focus. This should include the current state, desired future state, and perceived gaps and barriers. The document should capture the governance team's vision of the first new care model project. There should be a plan to not only build the new model but also the team capability. It should include a preliminary thinking on where the new care model is intended to be spread. At the time this document is created, much will still be unknown about the future care model. The vision should be broad enough to not to be overly prescriptive. The governance team should list questions and unknowns not assumptions and solutions. A standard problem solving or planning approach such as an A3 (link) or project charter template (link) should be used here.

4. Identify and Assemble the Development Team

Developing a new care model requires coordinated effort from a diverse group of subject matter experts, front-line care team members, back-office support staff, and leaders across the organization. The governance team must identify this development team, comprised of four primary types.

1. The Project Leader

The project leader must have passion and vision for the future care model and have deep subject matter expertise in those areas. The leader must be respected and have trusting relationships with key stakeholders across the organization.

The best project leader is the most influential and respected physician within the core specialty of the new care model. The individual may hold a formal leadership position within the organization but often does not. Enthusiasm for the work, curiosity, humility, and an entrepreneurial spirit are all important characteristics – as is dissatisfaction with the status quo. If there is a clear choice for who should fill this roll, it is the governance team's responsibility to recruit them.

At Bellin Health, Dr. James Rider filled this role for the stage-4 CHF care model. His passion for a different way to deliver care to stage-4 CHF patients was the driving force behind Bellin's success. Team members recognized that without his involvement, and unquestioned expertise and credibility in the area, the project would not have succeeded. At Atrius Health, Dr. Pippa Shulman, a well-respected and well-connected geriatrician, and Primary Care Physician, filled the project leader role. Again, her deep expertise and credibility in elder and end of life care was the key factor in influencing other physicians to adopt a radically different way of thinking about acute care practice.

2. The Core Development Team

The core development team is responsible for managing, facilitating, and executing the design process. Core development team members must understand each phase of the process in detail at the same time being able to navigate the complexities of getting things done. This includes data analysis, accessing the electronic health record system, navigating hospital and clinic organizational dynamics and hierarchies.

The development team should consist of people that are respected and trusted. The strategic goals will dictate who best belongs on the team but enthusiasm for the work is the number one criterion for selecting development team members. Curiosity, humility, and entrepreneurial spirit are secondary criteria. Within the core team there should be expertise in care team roles, operations, process improvement, and patient discovery research.

3. The Extended Team

Design projects require expertise from many areas across the organization. The extended team represents all the functional areas required. It should include representatives from finance, IT, clinical operations, EMR, legal, facilities, supply chain, and others depending on the project. Members of this team will consult

with the development team and attend regular governance review sessions, as needed.

Determining resourcing is not an exact science. But one way to approach it is to use an energy grid. This is a high-level view of the level of intensity of resources required from all areas of the organization. Each area of the organization is listed down the left side of a grid and strategic projects are listed across the top. Leaders determine whether there is a high, medium, or low level of resources required from each area of the organization for each strategic project. When completed, leaders can assess if any area of the organization is being overly burdened and it helps prioritize resources for the most important projects.

4. Future Operations Teams

Physicians and care givers need to be prepared to deliver care differently – even if they are outside the scope of the first project. This requires a thoughtful approach to change management. Care teams should have a chance to articulate the problems they encounter with the way things work today. Knowing there must be a better way provides the energy for envisioning a new future. In particular, the medical and operational leaders in future areas where the care model will be spread should be included early in governance team meetings, project report outs, design events, and other key activities.

5. Dedicate a Physical Space for the Work

A visual room is a convening space, where knowledge and information on the care model design is displayed. The room includes project management tools designed to achieve milestones and manage objectives. These tools should include a master schedule that lays out key dates and targets for the project, a way to organize team member tasks, visual management to track progress on experiments, and a new knowledge section where key project learnings can be clearly communicated to stakeholders. The space also allows the development team to separate themselves from the rest of the organization and nurture a culture of innovation within the team. The walls will become canvases for the development team to organize and manage the work. This cannot be achieved when information is buried in a computer. There is nothing more powerful than seeing an entire process unfold visually on a large wall.

6. Establish the Master Schedule

At the outset of a project, the governance team should lay out high-level expectations for the timing of the project. At the most basic level, this should include a start date for the project, a cadence for the governance team to convene with the development team, target dates for transitions through phases of the project, and a target completion date when the care model can be spread. These dates will most likely change over the course of the project but remain important touch points for accountability.

The process may take longer than leaders are accustomed to. Depending on scope and complexity, new care model development projects can range from 9 – 36 months in length, the latter representing a full-scale primary care redesign with spread across all sites. Leaders must be patient with the process as the new development team facilitates their first project.

7. Secure Funding

Finally, it is important for leaders to realize that certain phases of the new care model development project may require additional funding beyond the initial allocated resources. The development team will need access to funds for testing and research, and for spread of the model cell to other clinics. Capital investment may be needed for facilities, new technology, or hiring new care team members.

The size of investment required in the new care model strategy is dependent on the scope and breadth of spread of the new care model and how quickly the strategy is executed. Cost could be anywhere from a few hundred thousand dollars per year to many millions. The development team should create a plan which lays out the funding necessary with various timelines to completion. This gives leaders adequate time and information to consider the new care model development investments in the financial planning process.

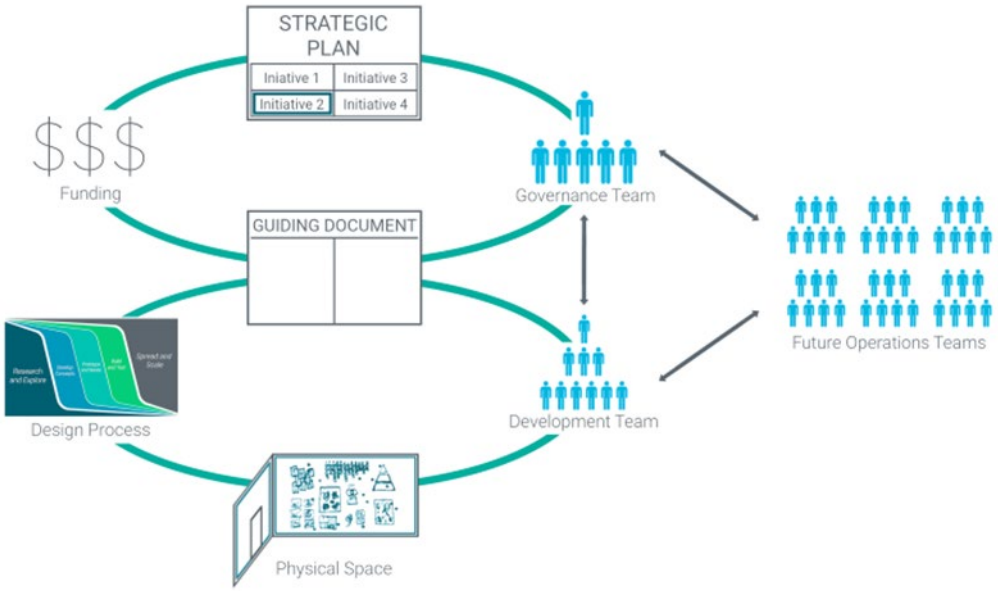


Figure 2: Elements required for New Care Model Development

III. A Design Process for Care Models

Industry has developed many systems to create new products and services. Design thinking, agile, strategic marketing, lean product and process development, design for six sigma, and lean startup are just a few. At Atrius Health and Bellin Health, team members created their own combination of the above tools, methods, and processes to build their new care model development systems.

The system we will detail below is a combination of methodologies that are specifically tailored for developing new care models. The overarching process we will use to describe the work of new care model development is shown in Figure 3. The Research and Explore phase creates new knowledge and understanding about patients and their needs. It defines the factors for success and the multiple possible paths to achieve it. The Develop Concepts phase sets a bold vision of what is possible. Prototype and Iterate employs a host of experimentation techniques to determine what is technically feasible, financially viable, and desirable. Build and Test includes the creation of a model cell which operationalizes the new care model for the first time. Spread and Scale includes spreading the model cell across the entire organization. Below we will walk through each of the five phases and share care model examples on how to accomplish the work.

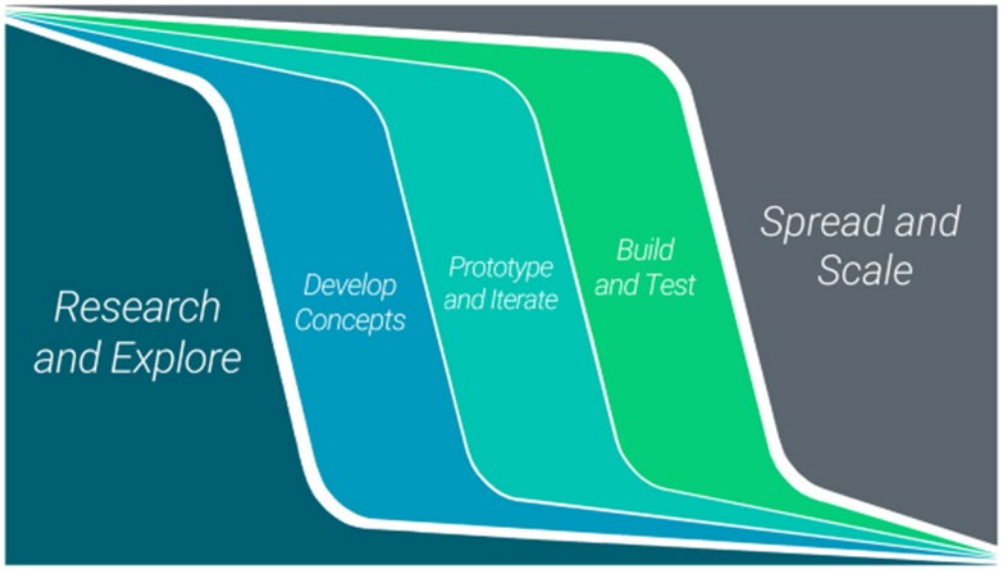
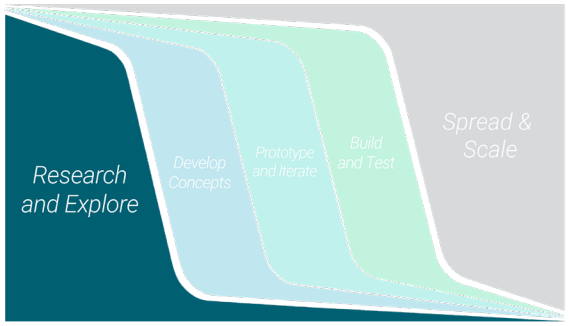


Figure 3: A Design Process

Design Process Phase 1 Research and Explore



This is where the team breaks free from existing assumptions to discover potential paths of delivering care. They begin by studying the current state of the health system, the demands of the patient population, and the external environment. Defining unanswered questions about the area being studied allows for deeper team dialogue which creates new organizational knowledge (see examples of questions below in the health demand section). The goal is to uncover unmet patient needs and opportunities to meet them.

The first phase is rigorous and may take several months to gather the knowledge necessary to understand what good looks like for the patient, the care team, and the health system. Below we will outline each of the four areas of new knowledge teams should pursue.

1. Patient Discovery: Individual Life Journey

Here, the development team considers the entire patient experience, both inside and outside the health system. Because people are more than just patients. Daily routines, relationships, habits, hobbies and interests, life goals, employment, or lack thereof, religious and cultural beliefs are all part of the investigation.

An individual's life journey includes the discrete steps patients experience when accessing healthcare as well as many other important aspects of how they live their lives and where they may have unmet needs. Knowing the individual life journey means understanding the whole person.

At Atrius Health and Medically Home, development team members interviewed a large number of patients in their homes, as well as those being discharged from the hospital, to better understand experiences with hospital care, needs, and pain points. One interview was with a woman in her eighties who had undergone a hip replacement. Overall, she was fairly healthy, and had little prior experience in hospitals. She was more critical than other patients who were in the hospital regularly. She had many complaints, but one quote summed it up. "They woke me up at four a.m. to take a sleeping pill."

This sparked curiosity. The team wondered what other strange things were happening in the hospital. The more patient stories they uncovered, the clearer it became. Processes in the hospital were designed primarily around hospital staff and physician need, not around the patient. For example, nurses woke patients up at 8 a.m. to deliver medications, even if a patient had been given a sleeping pill at 4 a.m. The team began making lists of broken processes supporting the opportunity to reimagine care. These patient stories became the unifying narrative for the development team to design a care model that was uncompromising in meeting patients' needs.

2. Current state of the delivery system

Existing care model processes and performance are often not well understood. The development team's role is to clearly articulate the current state of performance and establish the baseline against which the future care model can be evaluated.

Interviews and focus groups with current care team members will reveal many existing pain points leading to burnout. Most of the time, poor processes result in frustration and overburden of staff and clinicians. Problems such as out-of-network utilization, under-coding of encounters, lack of top-of-license work by ancillary staff, unnecessary care, and process steps that are wasteful all contribute to burnout. A current-state financial review reveals potential for new revenue streams or areas where expenses might be reduced. An internal stakeholder analysis helps plan where change management resources will be needed. The current state review anticipates the opportunities and obstacles for the work of redesign and should be reported to the governance committee. Re-prioritization of initiatives may be the result.

3. Health Demand

Health demand is the care that a defined population of patients requires across all determinants of health, including social. How we determine demand is by measuring the health status of a population. Number of conditions, medications, and social determinants are all pieces of health status, but there is no set list of elements as this is a dynamic field of inquiry within healthcare, with new measurements emerging all the time. We use health status to match the capacity of the system with the demand of the population.

Defining health demand requires a team of experts knowledgeable about population health. As an example, if the strategic focus is managing risk for a Medicare population, answering the following questions would provide insight into population attributes that impact care.

- How many people in the population have advanced directives in place?
  - ⇒ Why?
    - ⇒ Individuals with advanced directives in place have better experiences at end of life and overall cost of care is $5,000 less.
      - ⇒ Where might this data be found?
        - ⇒ In the clinical IT system.

- How many people in the population live alone and rate their overall health fair-poor?
  - ⇒ Why?
    - ⇒ People who rate their health fair to poor are 12 times more likely to end up in the hospital in the next 12 months.
      - ⇒ Where might this data be found?
        - ⇒ In the Medicare wellness exam form.

- How many people in the population are on 7 or more ongoing medications?
  - ⇒ Why?
    - ⇒ Medication cost and quality is a major issue as complexity increases.
      - ⇒ Where might this data be found?
        - ⇒ In the clinical IT system.

These data along with additional information gleaned from the electronic health record and insurance claims define the resources and capacity needs to manage the population's health. Our experience suggests the data necessary to answer meaningful population demand questions exists in most organizations, but it requires the help of support departments such as IT or analytics. Sometimes it requires going outside the walls of the health system and partnering with other organizations to get the necessary data.

4. External Landscape

The market environment for all services, not just health, is changing rapidly. Next day delivery and app-based services is what people have learned to expect. Patients don't compare their healthcare experiences with other healthcare experiences. If they receive medicine in the mail, they compare that service to Amazon's one-day delivery. Social media and the broad adoption of smartphones have also completely altered the way people behave. So, a development team must factor in the larger world – including recent and future developments – to their thinking.

Trends within the healthcare industry are also a key input to strategic decisions regarding the new care model. This could include changing financial relationships with insurers,

employers, and other payers, such as moving from volume to value-based contracts. Or it might be the supply of licensed providers (shortages or surpluses), and changes to regulations around scope of practice for licensure. The development team should identify how these trends may impact the new care model.

Preparing for Phase 4: Build & Test (the Model Cell) & Phase 5: Spread and Scale

While still in phase one, the team is also laying the groundwork for phases four and five: building the model cell and spreading it. This is done by engaging care team members and operational leaders across all areas of intended spread. Include these key people in report outs and feedback. Engaging many providers from diverse locations – who likely have different types of patients and internal dynamics – is important here. Providers will be more willing to participate later if involved early.

This is especially important for the individuals who will be a part of the model cell, which is chosen in this first phase, and the earlier the better. Often, we have found that the project leader's clinic or location of work is a good place to start.

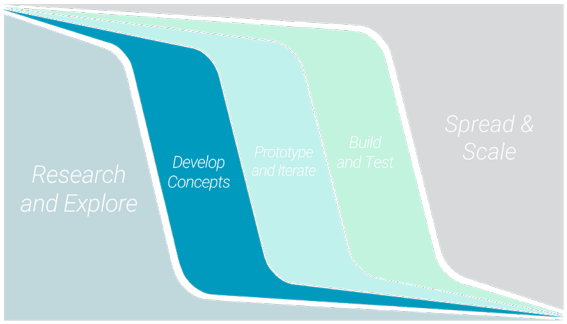
The model cell requires strong operational and medical leadership that exhibit a balance of enthusiasm for change, competence in execution, and willingness to partner with others. The development team will need to work with the governance team and senior leaders to identify committed operations leaders and to assure necessary resource allocation.

Concluding the Research and Explore Phase

During this phase, the development team continuously generates new knowledge by pursuing different paths of inquiry. And there is always something new to learn. The excitement from each new discovery can lead the development team to want to explore indefinitely. But the team must decide where to focus.

At this point, a research report is created capturing the top findings and insights. This will guide senior leader's decisions regarding the new care model project itself. It also offers insights into strategic decisions the organization is facing. The development team works with leaders to ensure the information is transmitted to other areas of the organization impacted by the new care design. The creation of the research report marks the end of the first phase of design and includes a plan for the next phases of the process.

Design Process Phase 2 Develop Concepts



There are many constraints and barriers to better patient care. It is easy to fall back on what can be done, before having a chance to address what should be done. So, starting from the ideal state and working back to what is feasible leads to bolder advancements than starting from constraints. In the words of Oscar Hammerstein II of the famous Rogers and Hammerstein, "You gotta have a dream. If you don't have a dream, how you gunna make a dream come true?" By the end of phase two, the development team should have a clear and compelling ideal state of a new care model founded on meeting the patients' needs identified in phase one.

In phase two we focus on care model attributes that would absolutely delight patients. A few weeks can be enough time for a team to find inspiring new ideas, but it may take longer if the future is a radical change. Ideal-state patient journey mapping tells the story of how patients will experience healthcare in the future. This is visual map of the steps patients will go through in the best version of the imagined future.

Asking a broader team to help generate new ideas is useful but can be challenging. Here, we need a balance of highly divergent thinkers and deep subject matter experts (SMEs). They may be one in the same, but not always. Two questions can be helpful to determine who to choose to broaden the team: How open is the future? And how different should the care model be from what exists today?

For example, a new care model project may be centered around the strategic goal of growing market share in a new geography. It is a greenfield opportunity, meaning there is no established process, department, or infrastructure. The future in this case is very open, without the inertia of existing clinical operations. Fewer SMEs may be necessary, and the team should be populated with more divergent thinkers to uncover unique ideas.

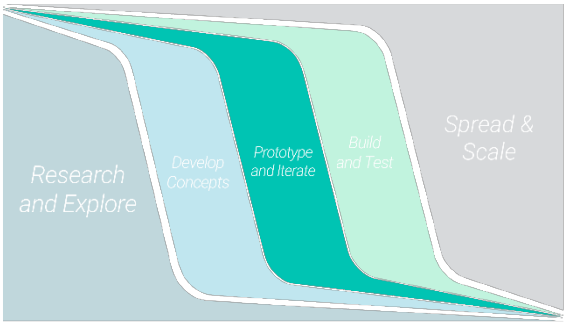
On the other hand, in a brown-field opportunity, such as redesign of a primary care model, the future is less open. The design has fewer possibilities and is grounded more heavily in the resources that already exist in the organization. In this case, divergent thinkers are still extremely important, but the brainstorming team must have a preponderance of SMEs such as primary care team members and operations leaders.

Pursuing Set-Based Design

Set-based design (SBD) is a process to test multiple ideas and options simultaneously in order to identify superior solutions. The goal is to have more than one solution concept developed at a time. This contrasts with a "point-based" design approach. Point-based design starts with one idea, and then advances that single idea forward through testing and iteration. This feels efficient, but limits possibilities for new ways of thinking. Closing the door on a possibility too early in the process can stifle the innovative mind and lead to a solution that falls short. SBD requires more investment upfront because the team explores more ideas or ways to achieve an outcome. Most of us are used to point based design so there is a learning curve to move to SBD. In the long-run set-based design delivers better results. (Kennedy, Sobek, & Kennedy, 2013)

Before moving to the next design phase, the development team should convene with senior leaders to present their ideas for new care model concepts and features and get feedback. Financial assumptions can be vetted, along with any other insights from senior leaders. This dialogue ensures that the development and leadership teams agree that the care model supports the vision and strategy of the organization.

Design Process Phase 3 Prototype & Iterate



The purpose of Prototype and Iterate is to test different design options, critical assumptions, and unknowns quickly. This avoids the risk of full project failure. Instead of building and implementing the whole solution up front, the development team creates small prototypes and runs experiments to test hypotheses. The goal is to answer critical questions as fast as possible (in a matter of days or weeks) and iterate ideas based on what is learned. (David A. Asch & Roy Rosin, 2015) Critical questions include:

- Is this desirable to patients? (patient win)
- Is this desirable to care team members? (care team win)
- Can this be financially viable to deliver over time at scale? (system win)
- Is this technically and operationally feasible?
- Will this provide the clinical and system impact that we are looking for?

Begin with a Draft of Care Model Architecture

Care model architecture is a diagram of all the subsystems and components needed for a care model to operate continuously. It is the team's best description of how everything will work. Process maps, flow charts, org charts, or any other visualization tool the team feels is necessary

can be employed to define the care model architecture. The core subsystems needed for any care model are captured in Figure 4.

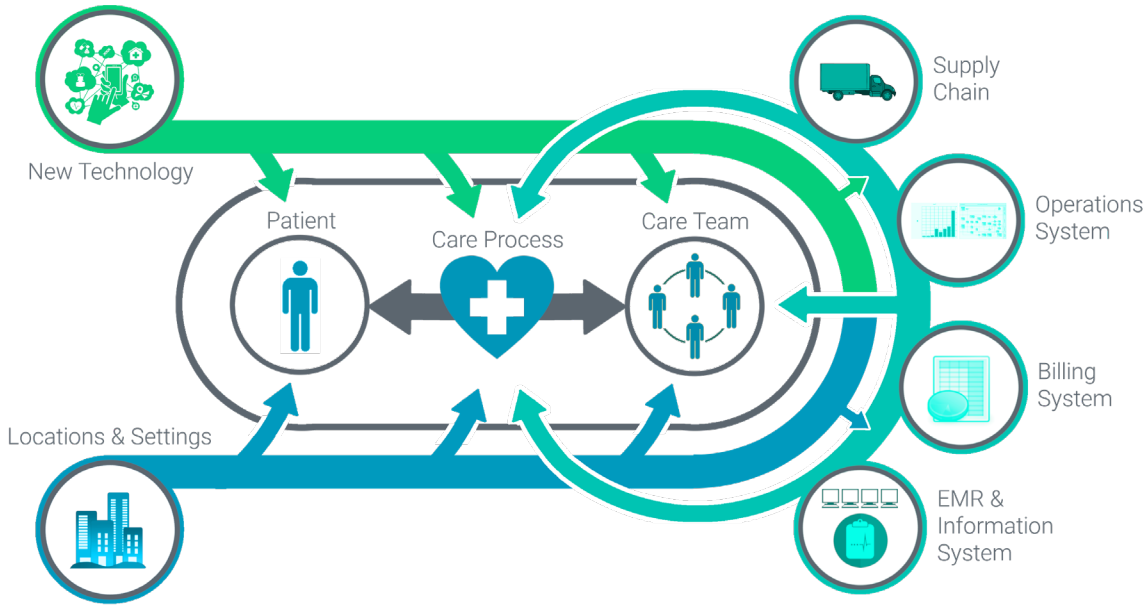


Figure 4: Core subsystems of a Care Model. Additional layers of detail will be added to this visual later in the paper.

The first care model architecture is a rough draft of the future and reveals critical unknowns and questions. Prototypes and experiments are designed to answer the unknowns and questions. There are many approaches and techniques for prototyping and experiments. We recommend starting with the fastest and cheapest techniques before pursuing slower, more resource intensive ones. This ensures that initial learning can happen quickly, while later prototypes are simultaneously being prepared. Below we outline a set of care prototyping and experiment techniques generally listed from low investment to high.

1. Garnering Patient Feedback

Regular contact with patients prevents the team from going too far down a path that does not meet patient needs. To get good feedback, we recommend creating storyboards with care model concepts or actual physical mock-ups of solutions. It's also a fast and inexpensive way to mitigate risk. It gives patients a chance to see the future ideas and share their opinions. Development team members should ask open-ended questions. Patients should be encouraged to criticize the model and explain what they really want.

At Atrius Health and Medically Home, the development team sought patient feedback by creating a physical mockup of a living room that they named "Nana's House." They had a lounge chair and a TV, fake pictures of relatives on the wall, and other artifacts to make the space feel like an elderly person's home. The space was equipped with all the future technology and equipment for the hospital-at-home model. They invited patients to take a tour of the space and asked for feedback.

People came in, sat on the couches, and were comfortable. In a hospital room, people don't know what they can touch. People liked that Nana's House felt like an actual living space – except for all that technology. The team realized that the BP cuff, oxygen tank, tablet, etc. needed to blend in with the person's living room, not the other way around. The feedback led to a design that made the hospital components less conspicuous and so maximized the home's biggest asset, its calming effect.

2. Garnering Subject Matter Experts' Feedback

Next, the development team works back from the ideal to find what is feasible. For example, wearable health tech that can make instant diagnosis of serious clinical issues, or automatic record sharing across health systems, may or may not be possible. We need SMEs as guides. This can be as simple as bringing them into the development team's workspace, immersing them in the current thinking and discussions, and getting feedback. The focus of these sessions should answer the question: What would we have to do to get this to work?

At Bellin Health, the stage-4 CHF care model development team's challenge was to make sure that all the workflows led to a seamless patient experience. On a weekly cadence, each workflow was mapped out and presented to a team of ten SMEs from the areas of the organization that would be impacted. Interdependencies and constraints were discussed each week which led to design changes in each workflow. Questions to be answered included, how was a patient's primary care doctor involved when the patient was admitted to the hospital? How would information flow in Epic? How would the pharmacist oversee medication changes? The design iterations took weeks to create the integrated sequencing and connections between all stakeholders.

3. Garnering Care Team Feedback and Support

Clinicians on the development team should meet with a broader group of clinicians for input on a regular basis. For example, one feature of a new primary care model may be clinical pharmacist support. Patients on multiple medications pose a complex clinical problem. Pharmacists should decide when their expertise should be consulted in the new process. But different provider practices also impact this design. Internists may want to manage patients with multiple medications whereas other providers may want

pharmacists' help. Understanding provider variation is important, so the clinical protocols are designed in a way that supports all care team members. If a new care model feature involves a phone triage function that directs patient care to different levels of expertise, clinical experts should design the new protocols on paper (the prototype) and then get feedback from other care team members to iterate the design before testing the new process.

At Atrius Health and Medically Home, the development team knew that moving acute hospital care into a patient's home would be a fundamental shift in the way primary care physicians practiced. They needed to understand how PCPs made clinical care decisions. At the same time, they needed to gather feedback and ideas to ensure the model did not disrupt care. The team found that trying to convince groups of physicians was leading to relentless questions and skepticism. The team shifted to a different approach, meeting each physician one at a time. Dr Shulman led each meeting and began by asking the PCP, "what do you do when your parents get sick?" Almost unanimously the physicians said they would do everything they could to keep their parents out of the hospital. Many went so far as to say that they would set-up health monitoring solutions in their parents' home and dedicate personal time helping them stay there. From there it was not a far stretch for the development team to explain that hospital at home was essentially the same concept, just in a more formalized way. With this buy-in, the development team was able to gather new ideas for the concept from the frontline of care.

4. Financial Modeling

Robust financial performance is required for long term sustainability of any care model. The new care model must maximize both revenue and expense opportunities by reducing waste through improved processes. This must be done under the unique mix of payer contracts with insurers.

Many systems today are juggling multiple payment methodologies, with both fee for service and different levels of risk-based contracting. Furthermore, there is often a diverse spread within a system's risk-based arrangements ranging from basic shared savings to full, risk-adjusted global capitation. Few organizations are advancing fully into one payment methodology or another.

The only way forward is to design a care model that can be profitable under a broad mix of payment methodologies. To be financially sustainable in many payment environments is possible but requires many changes. It impacts the care team makeup, the work done by each team member, and the billing codes used. The specifics look different for each department or clinic type because of the different financial levers at each site.

For example, in primary care 50-60% of care team members' time is often spent on activities that could accomplished by a team member with less professional training. So, we realign work within the care team to ensure each member is working at the top of their training. In value-based arrangements this reduces the overall cost of care, which results in improved financial performance. The key to maintaining fee-for-service profitability is to make sure billing codes account for the work done by the various team members. In many cases billing codes exist for RNs to deliver services that a physician would traditionally bill for. The fee-for-service reimbursement rate will be lower for an RN, but the subsequent physician time freed up can be spent on higher-level care. For specialty care, work can be shifted to ancillary team members such as nurse practitioners and physician assistants so specialists can see more consults or do more surgeries. In chronic care management, better patient outcomes lead to additional payments from Medicare risk contracts.

The development team should work closely with the finance team to create and refine a financial model for the new design. The financial model allows for different revenue and expense assumptions to see the resulting change in margins. Inputs include the mix of payment contracts, patient volume, type of care, billing rates for different care team members, provider staffing, and other drivers of revenue and expense. The goal is to model how different financial arrangements impact revenue and find a design with positive margins in any financial arrangement.

5. Simulations

Simulations allow the development team to test important aspects of their designs with limited risk and resources. The process can be as simple as walking a healthy patient through the process they would experience if they were sick. Or it could also be testing a new technology like HIPAA-compliant text messaging between care team members.

6. Live Prototypes

When the development team has received all feedback from the various stakeholders and have run simulations, it is time to begin live prototypes with providers and patients. This is an important moment for the team. They have been researching, interviewing, debating, and coming up with ideas for many months. This is their first chance to try something in the real world.

The first live prototypes should not be in a busy operations unit. The environment must allow new ideas with time for reflection. Also, most providers are tightly scheduled, and it can be difficult to free their time for prototyping. Resources may have to be borrowed from other areas. Per diem provider pools can be useful to get resources quickly. Having

access to providers in these pools can help the team test ideas quickly without impacting routine care being provided by salaried providers.

Finally, safety precautions in live prototypes are crucial. A failure modes and effects analysis (FMEA) tool can help the team anticipate potential problems and develop countermeasures before issues arise. When in doubt, it is safer to use a higher licensure care team member during prototyping than usually necessary.

At Atrius Health and Medically Home, the team had spent many months running simulations and other prototypes when the CEO of Atrius Health, Dr. Steve Strongwater, decided to set a date for the first patient admission. He had attended every project governance meeting and felt it was time to move. With a clear deadline, anything that was not related to the first live patient test was put on hold. The team worked with one of the primary care clinics, targeting patients of PCPs that had agreed to be a part of the first live tests. They engaged the PCPs as well as the urgent care doctors and operations managers in understanding the processes and design of the new model. When the first patient was admitted to the program, everyone was confident but a little nervous, too. The first test was designed with tight safety precautions and backups were ready every step of the way. For instance, the team had more in-person and video check ins than the protocols called for, making sure everything was running smoothly both clinically and from a patient experience perspective. Care activities that could possibly be delivered by RNs, paramedics, or Advanced Practice Providers were delivered by physicians just in case unexpected things happened. After the first 30-day home hospital stay ended, members of the development team interviewed everyone involved to understand how the model performed. They also interviewed the patient and the patient's family to collect detailed experience feedback that was then translated into design changes. Four additional live prototypes were run before handing the day-to-day operations of the model over to the clinic.

Activate and Engage the Future Operations Teams

Prototypes can be designed and executed with minimal disruption to a care team's daily work, but that will not be the case in the next phase of the design process. The providers, care team members, and operations leaders responsible for the future care model must be thoughtfully and methodically engaged in its design from the beginning. And they must understand, from system-level leaders, that this work is mission critical.

System leaders may need to modify compensation, allocate additional care team members, and dedicate IT resources to support the work. When a mutual agreement is reached to engage the future operations teams, they should be involved as co-design partners for the remainder of the project.

Prepare for the Model Cell: Quality Function Deployment (the "QFD")

The culmination of the prototype and iterate phase is a clear set of care model features that have been vetted against the success criteria. The essence of this design can be captured with a tool called quality function deployment (QFD) or house of quality. The prioritized list of patient needs populates the left side of the QFD. The top row is populated with the features and solution sets the team determined after prototyping. The center of the QFD highlights the relationships between customer needs and the design of the new care model. It clearly lays out the team's hypotheses for how the specific components and features of the new care model design will meet the patient's needs. The QFD ensures focus on the patient and evolves throughout the remaining phases of the design process.

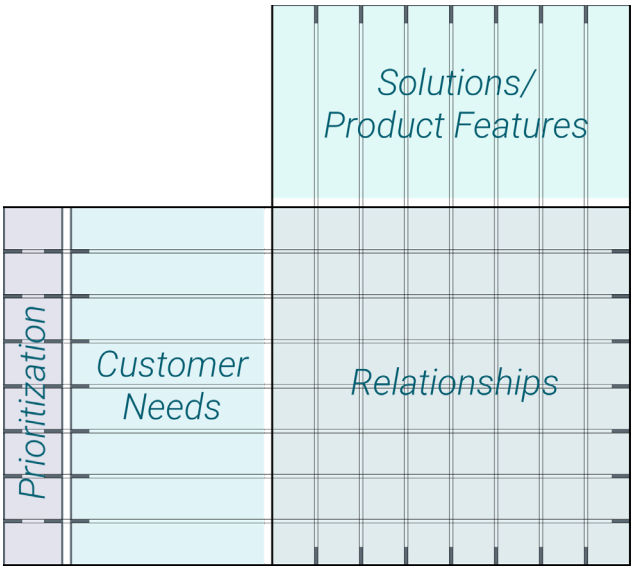
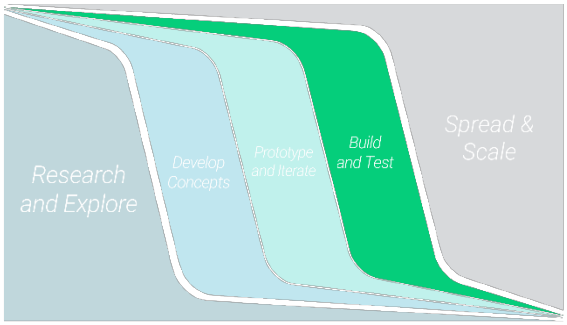


Figure 5: Example of a Simplified QFD

Design Process Phase 4 Built and Test (Model Cell)



A model cell is a small, contained, and continuously running operation of the new care model. Launching a model cell requires leadership energy and courage. They must protect the work to allow the development and model cell operations teams to test multiple ideas, build corresponding financial models, and refine solutions. This is the point where many organizations fail because organizational inertia triumphs over the fragile new model. The steps below help avoid that outcome.

1. Determine the Care Model Architecture

Here, we pause and define the care-model design in its current entirety. This is like taking a snapshot that becomes a foundation of the design. The design will evolve over the course of your model cell work, but it is crucial to have common understanding of what we have agreed to at this point.

2. Define Success Metrics

How will we measure winning for the patient, the care team, and the system? First, we review existing metrics to determine if any are appropriate for measuring success of the new care model. Most likely some new metrics will be required.

For example, a new care model may be focused on preventing unnecessary hospital care, so success is achieved when a hospital admission is prevented. Measuring the absence of a hypothetical episode requires creative thinking to develop new measures. Some of these will develop over time as the team and system leaders redefine success.

> At Atrius Health and Medically Home, the development team needed to evaluate every metric important to inpatient hospital care to determine whether it was relevant in a home-hospital environment. Metrics such as 30-day readmission rate still made good sense. But what about "length of stay," typically used to measure efficiency? Medically Home's care model included two phases – acute and restorative – with an average of 30 days total. The acute phase was a shorter high-touch, high-intensity period of care and the restorative phase was designed to gradually remove the hospital processes while the patient and loved ones gradually managed things on their own. The length of stay in Medically Home was not correlated in the same way to efficiency. Because the cost of treating someone in their home was much lower than traditional hospital care, the duration of the program could be much longer and still be cost-effective.

3. Launch the Model Cell

The model cell requires building many new workflows, usually in the EHR, billing, and supply chain that need to be created before a clinic can fully transition into the new model. The transition might be different in each functional area – whether abrupt or a gradual rollout of changes – but it must be synchronized.

4. Use Set-Based Design to Validate Success Metrics

There may be multiple concepts for the roles and relationships within the care team, multiple ideas for how to best interface with the customer, and different options for equipment needed. The team should use set-based design – in which multiple ideas are pursued in parallel, evaluated, and advanced in sets – in the model cell experiments.

The team may also want to leverage certain techniques, such as blocking or replication, to add robustness to their tests. Blocking involves keeping certain factors constant in every version of the test so the cause-and-effect relationships can be seen clearer. Replication involves testing the same set of options repeatedly to identify random errors.

The results from multiple tests over time leads the team to determine an optimal design that delivers results for the patient, care teams, and health system. By the end of the set-based design process, the team will have reached a solution that was unimagined prior and understand how the parts of the care model fit together to meet customer needs.

5. Create a Care Model Scorecard for Spread

At the end of Build & Test, a scorecard is created to define the standard for measurement for the final phase of spread and scale (Figure 6). It lays out multi-year performance targets across all sites and locations and rolls up to the performance goal for the system. It helps everyone understand the value of the new care model compared to other organizational initiatives and projects.

The scorecard should include process and outcome indicators for success. Performance targets should be established for each indicator and measured over a three-to-five-year period. It should cascade to front-line teams, meaning they will have their own scorecards with weekly, daily, or hourly goals that roll up to site and system-level targets.

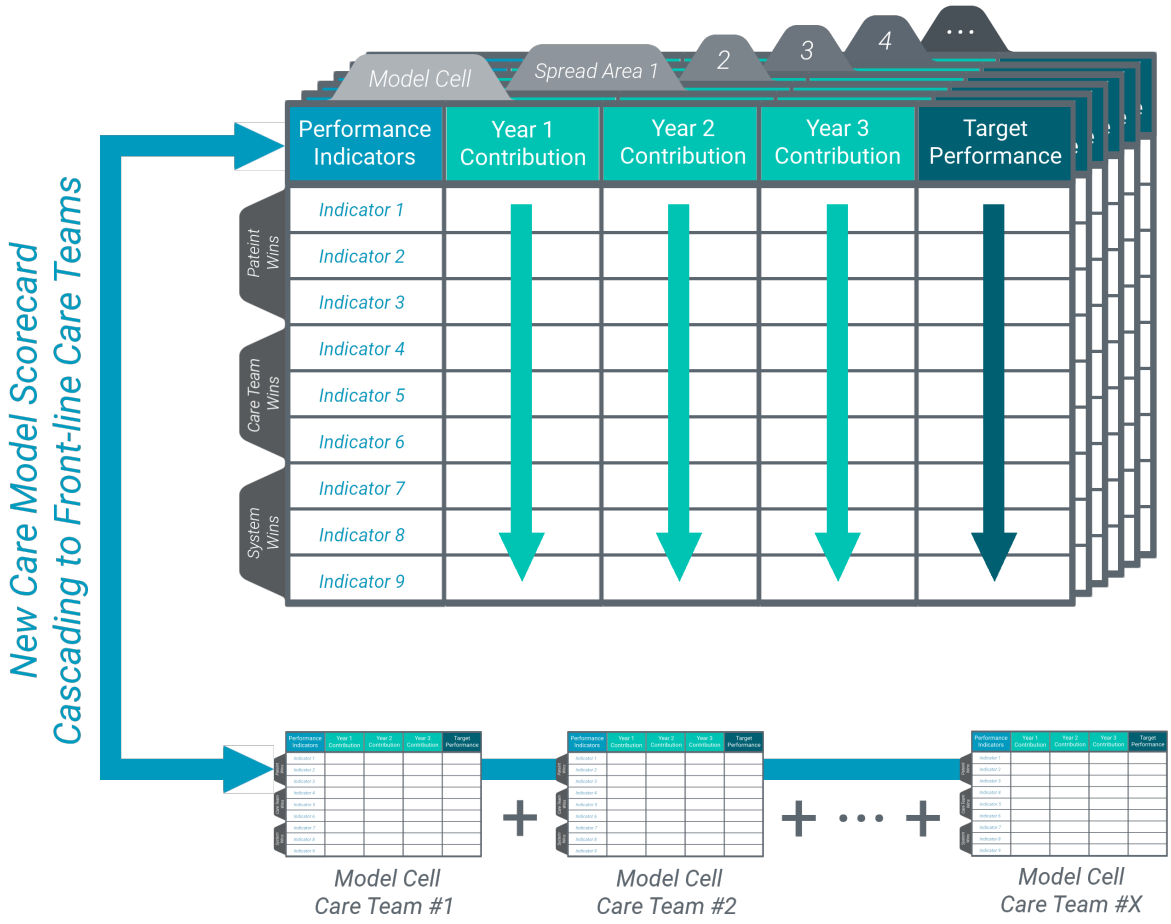
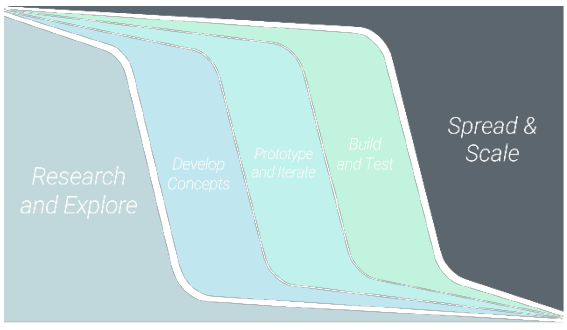


Figure 6: High-level Template for the Care Model Scorecard

The cascading scorecard for a new care model should not be confused with the process of cascading strategic metrics to the front-line for daily continuous improvement and problem solving. In the latter, it is important for front-line teams to choose the metrics that they will focus on. That is not the case for the new care model, where there must be a common standard maintained. The scorecard keeps track of how each spread location is performing and where variation exists.

Design Process Phase 5 Spread and Scale



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protect the work to allow the development and model cell operations teams to test multiple ideas, build corresponding financial models, and refine solutions. This is the point where many organizations fail because organizational inertia triumphs over the fragile new model. The steps below help avoid that outcome.

Create the Spread Plan

The spread plan includes the breadth, scope, and reach of the new care model and is regularly reviewed throughout the design process. A list of all desired areas of spread should populate the care model scorecard.

The development team should work with leaders to identify possible extensions of the new care model design. A spread that was originally planned for primary care may only require small changes to have major impacts in specialty care, employer solutions, or insurance risk management. In this way the impact of the new care model can be multiplied and compounded by taking advantage of the core elements of the design as well as the resources and people already in place. (Robertson & Ulrich, 1998) When all locations, areas, and extensions have been identified, senior leaders must set strategic pace. Aggressiveness of the spread plan is based on analysis of the competition, potential demand from customers, and where extension of the care model design meets market demand.

At Bellin Health, senior leaders and the development team saw two distinct pathways for spreading the stage-4 CHF model. The first path was to expand it to stage-3 and stage-2 CHF patients. This involved changing ownership to primary care. Overall, stage-2 and 3 CHF patients required the same set of resources and coordination as the stage-4 patients, but at a lower level of intensity. Expansion required understanding the health demand of those populations and ensuring that the appropriate resources were available to the primary care clinics. In partnership with primary care operations teams, senior leaders developed a plan for each clinic to apply the new CHF model. Each site began preparing three months ahead of their go-live date with team-building exercises, role training, and team visits to the stage-4 CHF model cell to shadow different roles. The operations teams learned from their peers about the care model.

The second path of spread was to other chronic disease populations. The hypothesis was that with much smaller upfront design effort, the stage-4 CHF care model design could be extended for diabetes care and other chronic conditions. This reaped even larger clinical and financial benefits. The new areas used about 80% of the original CHF design, while clinical experts and operations leaders designed the 20% of care that was unique to their care processes. Starting with diabetes, leaders prioritized and sequenced shorter 6-month cycles of the design process for each condition that resulted in breakthrough results for each of those populations. As an example, the extension into diabetes care moved Bellin's diabetes composite score, a bundle of critical metrics for diabetes including hemoglobin A1C, blood pressure, statin use, tobacco use, and others, from 25.4% to 48.8%.

At Atrius Health and Medically Home, spreading the hospital-at-home care model to multiple sites and locations required navigating the broader healthcare ecosystem in eastern Massachusetts. The team realized that the volume of patients in the program was impacted most heavily by the referral sources. These included Boston area hospital ER departments, skilled nursing facilities, urgent care centers, visiting nurse associations, and first responders. Developing partnerships outside of the boundaries of Atrius required time and patience.

Create the Scale Plan

The scale plan identifies infrastructure needed to support new areas. A team of experts representing all areas works with the development team here to decide which existing organizational systems will be impacted and what new support systems may need to be created. The plan should include the type and breadth of the system, how it should be configured, resource requirements, and how each element is to be sequenced. Figure 7 shows many of the infrastructure components to be considered in a scale plan related to a new care model.

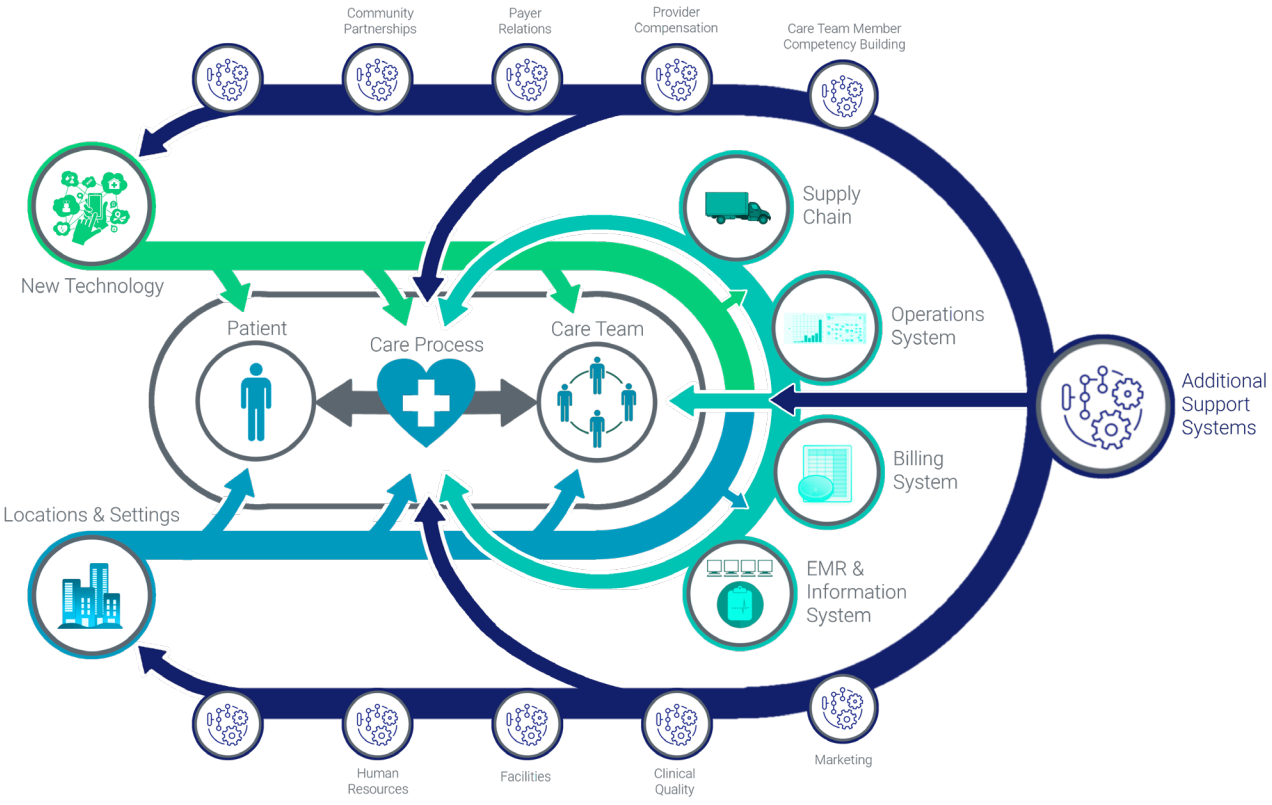

Figure 7: Infrastructure Needed for Care Model Scale

In the first phase of spread, it is usually possible to simply extend existing support systems. If that does not work, simple experimental interventions may be required. There may be ways to work around the existing IT system by using a paper document, for instance. Also, model cell

team members may be recruited to train care team in the spread area. As the spread plan expands, however, the scale plan must include building the required support systems. For example, certain facilities may need to be renovated or new construction may be required to fully support the new designs. A robust IT solution may be needed to support the new care model. A central training program may be required to handle the volume of new care team members being onboarded.

Transfer Ownership from the Development Team to Operations Teams

Once the development team has confirmed design integrity, operations teams take over daily responsibility for the work, following the spread plan. A pathway for gradual handoffs between the development team and operations should be included in the plan. In this way, both teams can be looking ahead and planning for appropriate handoffs. Key responsibilities to be transferred include measurement of key metrics, process management of the care model, responsibility for financials, and continuous daily improvement.

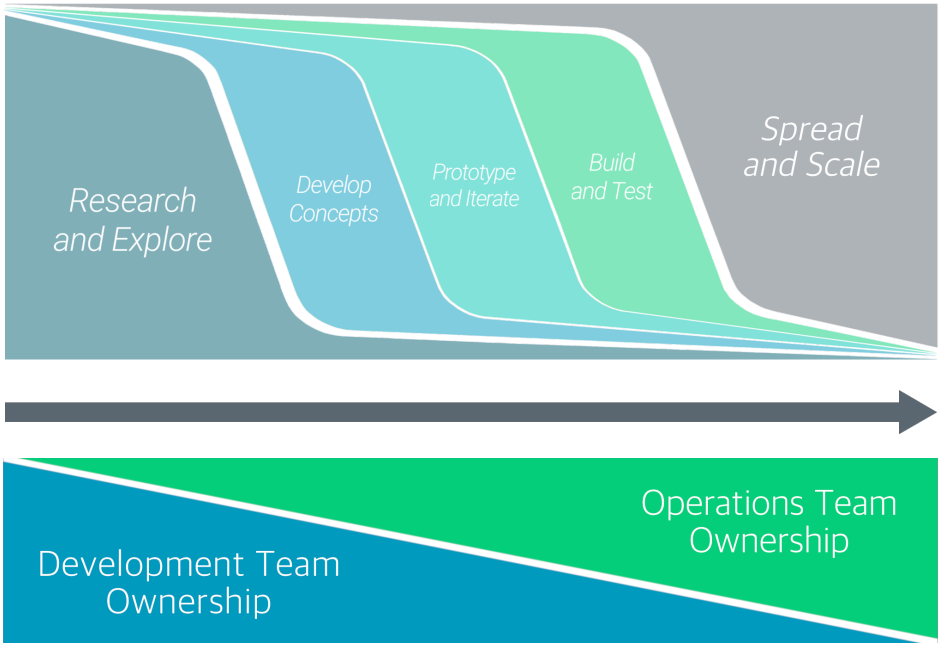

Figure 8: The Transition from Development Team to Operations Team Ownership

Over time, issues will emerge and there will be a tendency to want to move back to old ways of doing things. To maintain the integrity of the care model design, clear standards must be established, and the care model scorecard should be part of an overall management system. Indicators on the scorecard should be reviewed regularly to isolate potential problems. The development team should support the operations teams by studying the problems and collaborating on solutions while making sure the integrity of the new care model design is maintained. A standard operations management system for the new care model is necessary in facilitating this collaborative relationship. (Barnas, 2014)

IV. Building Development Capability over Time

The CHF and hospital-at-home projects were not the first care model development projects undertaken by Bellin or Atrius. After a few one-off improvements, both systems committed to building development capability.

Fostering an environment of design and innovation requires leadership commitment, strategic alignment, and organizational energy. This represents a parallel path of work for leaders. It includes developing new processes to support design, as well as identifying individuals with the skillsets to do the work and allowing them the time to be successful. It also includes relentless communication to all levels of the organization, prioritizing the work. Leaders must create a strategic roadmap that includes the infrastructure, key activities, and communications to build the capability over a multi-year period.

First, Invest in People

The tools, techniques, methods, and skills needed to execute on a new care model development system requires different thinking and must be learned. This requires investment in developing people.

People-development is primarily achieved in learning by doing. Investing in people means allowing them to spend time and energy on learning the design process and ensuring they are guided by experts. This looks different depending on the team. Core development team members need many dedicated hours to conduct patient and stakeholder interviews, collect data, and synthesize information through rigorous debate. They need to create visual manifestations of the learning before beginning the initial prototypes. They must map and build care processes and they need to be excellent facilitators, guiding people in the organization through the design process.

Members of the extended team bring expertise needed to solve design-specific problems involving complex aspects of patient care in the new care model. They may not have been exposed to the ambiguity associated with developing a new care model and will need to learn how to be open to unique ideas inconsistent with traditional care delivery.

There should be a clear and consistent design process to build common knowledge, common language, and storytelling skills. Working relationships across the organization that build trust will accelerate the design process and create a learning organization that can adapt quickly.

Creating the Development System

Completing the first design cycle for a new care model is a challenge because there is no system yet and there will be skeptics. Pay attention to organizational dynamics and find leadership champions. The development team will need to build relationships with providers. They will

need ways to access patients for ethnographic research and live prototypes. They will need access to data sources that require partnerships with EHR experts. They will need time to reflect on what is going well, what they have learned, and how the system can be improved. This is how team capability is built.

Any part of the development process that is repeatable should be captured so that future projects can move faster. Resources freed up should be reallocated to strengthen patient discovery, health demand determination, prototypes, or other areas of development. Standards should be created around five core elements of the development system:

1. The Design Process
2. The Team
3. The Space
4. The Governance Function
5. The Funding Mechanisms

V. Conclusion

The pressures facing health care leaders today are immense. The industry is on an unsustainable path. Systems are buckling under the weight of old thinking applied in a new environment. Continuing the traditional approach of asset acquisition for growth will only make things worse. A sustainable path forward requires a significant change in both leadership mindset and the approach to change.

It will require courage and creativity from leaders to envision a future where care delivery can be sustainable in multiple payment environments. It also requires deep patient discovery with a whole-person mindset to drive breakthrough experiences, and a focus on improving joy-in-work for care teams. Achieving wins for patients, care teams, and the system at the same time is possible. A reliable system for new care model development is required.

This is the second paper in a three-part series on Designing the Future of Healthcare. In our third and final paper, we will lay out how a new care model development system can be leveraged to achieve a total population health strategy.

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