CCI
CENTER FOR CARE INNOVATIONS

Innovation Hubs Final Evaluation

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Prepared for CCI by White Mountain Research Associates, LLC

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EXECUTIVE SUMMARY

The Center for Care Innovations (CCI) launched its Innovation Center for the Safety Net in August 2013. The Innovation Center is decentralized and originally consisted of three "hubs": West County Health Centers and Petaluma Health Center working jointly, The San Francisco Department of Public Health, and San Mateo Medical Center. The goals of this program are to increase value for organizations by lowering costs and improving patient health and patient experience—the triple aim. But the program also seeks to create an organizational culture of innovation, offer a model for implementing and sustaining innovations, and spread innovations more broadly across the safety net.

To date, the Innovation Center has vetted over 150 products and has tested or is actively piloting close to 30 innovations. Some of the innovations are "patient facing" while others are implemented solely as a means to improve care efficiency. These innovations fall into one or more of the following functionalities: Operational efficiency/improving access, quality of care, patient experience, health coaching, prevention, patient adherence, care management, and home monitoring. Most products tested address operational efficiency and/or patient experience. In the current innovation pipeline, 31% of innovations are active, 19% were scuttled, 19% are pending start, 15% are under contract negotiation, 8% are completed, and another 8% are either on temporary hold or under discussion.

Although a small number of pilots have been completed to date with many more in the pipeline, the results from the completed pilots have been positive. Qualities of successful innovation pilots included no required integration of the innovation with the EHR, ability to test with employee group prior to patient pilot, easy management and minimal staff time once patients are enrolled (very little operational disruption), well-defined metrics with automated data and immediate results, innovation/practice is flexible enough in design to be used for other applications, fair price structure, cost neutral, commitment from all stakeholders, alignment with the organization's strategic initiatives, and provides a solution to pain points in the organization.

All innovation teams have experienced cultural changes in the way their organizations approach innovation development and all have established innovation pathways to make innovation development and implementation a more efficient process. For example, all teams acknowledge that innovation thinking has contributed to changing the workflow of current clinical processes, they have applied design thinking to other initiatives across organization, and the innovation teams have a regular time to discuss innovation and push projects forward.

The innovation teams offer the following collective advice to other safety net organizations that wish to embark in this process:

- Treat innovation as something separate from the organization that is not beholden to the same rules and regulations

- Staff time needs to be specifically allotted for innovation
- Innovation must be part of the organization's mission
- Expose different groups in the organization to innovation opportunities to keep enthusiasm and decrease fatigue with innovation
- Categorize the different innovations to know how to approach launching the innovation
- Identify foundational blocks (executive level sponsorship/support, multidisciplinary teams, early stakeholder engagement, best ways to measure performance and set up a business case)
- Make space for both successful and unsuccessful pilots
- Have a strategy to pilot on a small scale
- In the innovation portfolio, consider only having a small number of projects that require EMR integration, as this greatly increases the time it takes to pilot

While CCI is exploring continued funding in 2016, an important goal of this effort is to ensure the hubs are sustainable after program funding ends. Teams have been working on a model for sustainability but are still early in developing revenue models. The long-range goal of this model of sustainability is for the Innovation Center to serve as a national laboratory for innovation in health and health care—an implementation incubator or "hatchery" for the health care safety net.

Background

In today's rapidly moving health care environment, safety net organizations need fresh approaches to provide their growing patient populations with high quality care at an affordable cost. These organizations face a number of challenges related to patients' limited incomes, multiple primary languages, and high rates of chronic disease.

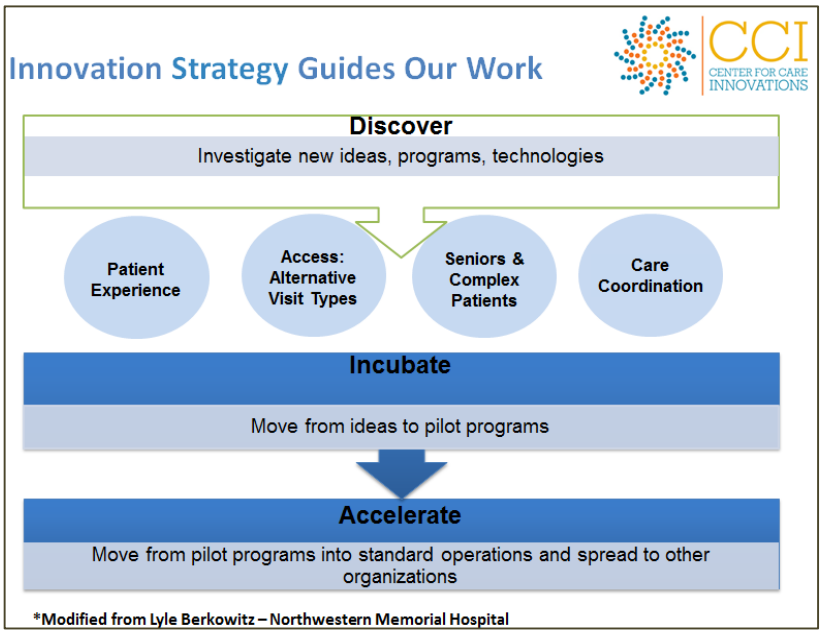
Although in the past, innovation uptake in the safety net has been lagging, the pressure of controlling costs and improving health outcomes has led safety net organizations to explore innovative services to better meet their patients' needs at affordable costs. This will likely continue as entrepreneurs explore the safety net market and safety net providers are pushed to become more innovative as competition for patients increases.[1] The Center for Care Innovations (CCI) has crafted a portfolio of programs to spur and support innovative problem solving in these settings, often using approaches and technologies that have been effective in other sectors. This portfolio is designed to build capacity for innovation and accelerate the adoption and spread of innovative practices, technologies, partnerships, and data uses in the health care safety net environment. These programs span three stages of innovation, each with a critical role to play in transforming health care. They spark new thinking and creative problem solving among leaders; seed the testing and implementation of fresh approaches by

[1] Martha Hostetter and Sarah Klein. In Focus: Innovating Care Delivery in the Safety Net. December 2014/January 2015 Issue. (Source: http://www.commonwealthfund.org/publications/newsletters/quality-matters/2014/december-2014-january-2015/in-focus).

organizational innovation teams; and spread successful innovations throughout the health care safety net.

CCI's integrated innovation model includes leadership training and development, organizational learning and culture change, and the development, testing and dissemination of creative solutions to common problems. CCI deploys grant funding, coaching, resource materials, and networking opportunities in these areas to help safety net clinicians and administrators master design thinking and try out new ways to improve their patients' care experiences and health outcomes.

CCI launched its Innovation Center for the Safety Net in August 2013. The Innovation Center is decentralized and originally consisted of three "hubs": West County Health Centers and Petaluma Health Center working jointly, The San Francisco Department of Public Health, and San Mateo Medical Center. Each hub received an initial grant for $100,000 and has been funded until December 2015.
The hubs function as the safety net world's decentralized version of the innovation centers used by many corporations to spur innovation in their companies. The goals of this program are to increase value for organizations by lowering costs and improving patient health and patient experience—the triple aim. But the program also seeks to create an organizational culture of innovation, offer a model implementing and sustaining innovations, to spread innovations more broadly across the safety net. Further, the hubs specifically work to attract and partner with entrepreneurs to develop solutions for underserved populations.



In its Innovation Center for the Safety Net program, CCI created a setting for pilot testing products and technologies in the safety net environment. The Innovation Center "hubs" are testing promising health care innovations to determine their adaptability to safety net environments. Each hub is using a different approach or model to achieve program goals:

- **San Mateo Medical Center's** (SMMC) vision is to "become a nationally recognized center to spark innovations that matter to the underserved. Bringing technology where technology has not gone before." San Mateo serves as a test bed for early stage companies that are focused on creating and supporting heath technology and need real world feedback. The innovation team is trying to codify this process in an effort to

streamline innovation implementation. The team also views the innovations as a vehicle to ultimately provide personalized care to low income/under-served patients. They are also providing feedback to startups in terms of presentation skills and communications around their products so they can gain better buy-in from the health care community.

- **West County Health Centers and Petaluma Health Center** (WCHC/PHC) originally were collaborating with a vision to "cultivate a culture of innovation that produces measurable, high impact results for patients, while being a beacon for other safety net health centers. Through this endeavor, the innovation team aims to establish a transformative and enduring partnership between PHC and WCHC." The innovation team screens projects through Health 2.0 Matchpoint events, team pitches, webinars hosted by CCI, and their own connections to health IT companies. After an initial vetting process by the core team, proposals are then presented to key stakeholders, including key decision makers from each organization, patient advisory boards, and health center staff. As the program evolved, the WCHC and PHC recognized it was difficult to collaborate as a single hub and clarified they would become two separate hubs testing different innovations.

- **San Francisco Department of Public Health's** (SFDPH) vision is to "catalyze innovation in the SFDPH health delivery system" and "attract and support innovators" to improve patient care and population health. Along with goals of testing and refining innovations to achieve the triple aim, this hub seeks to partner with payer organizations to develop better tools and methodology for collaboration, dissemination, and sustainability of new approaches. The innovation team is also facilitating partnerships between entrepreneurs and safety net organizations.

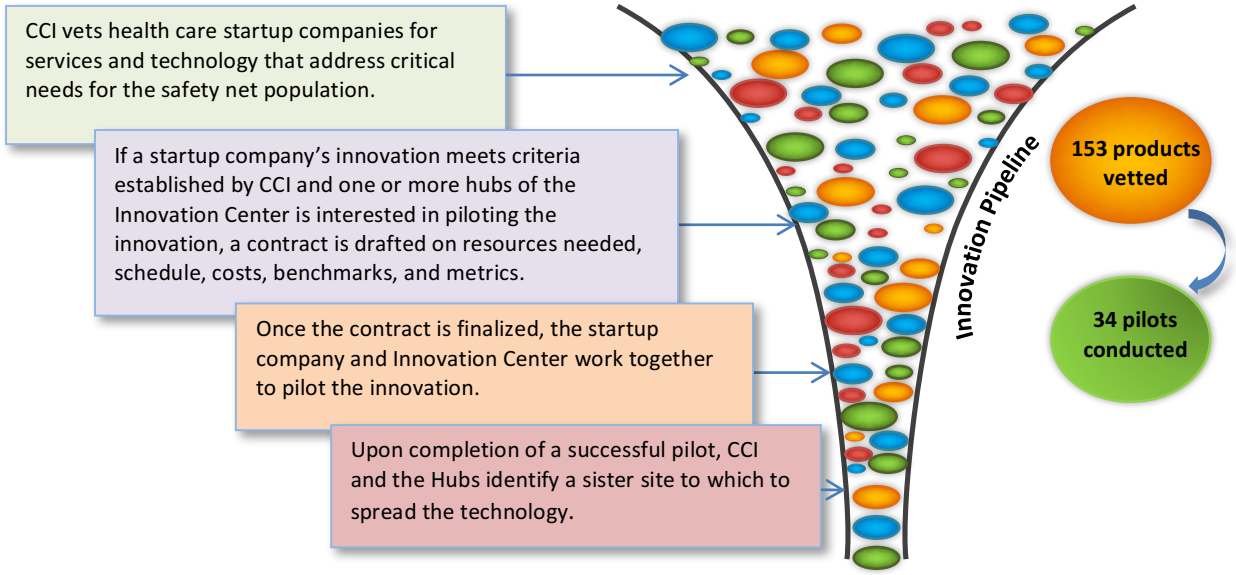
An independent evaluation of the Innovation Center has been documenting organization-wide innovation culture change for each hub and the evaluator has been working with each of the hubs to define data collection strategies and measure impact for innovations that have been launched. This report documents lessons learned from the teams based on team reports, quantitative results from surveys, and team interviews.

LESSONS LEARNED

Innovation Testing and Results

The Innovation Center is currently piloting a number of innovations. These innovations were selected to improve work flow efficiency, access to care, quality of care, and/or provider and patient experience with care. CCI staff and the hubs teams use a four-step approach to vetting and launching promising innovations[2]:

[2] http://theinnovationhubs.org/about/



To date, teams have tested or are actively piloting the following innovations, and product testing is in various stages of development. A complete listing of all products vetted can be found in the Appendix.

Product	Type of innovation	Date started	Date Ended	Project Status	Hub site
22Otters	Co-development, appointment manager, improve efficiency	Nov-2014 (initial discussions)	Ongoing	Early development, awaiting contract	SFDPH
22Otters	Patient experience, Operational efficiency, access	Jul-15	N/A	In progress	SMMC
AnalyticsMD	Operational efficiency	N/A	N/A	Pending start Q1 2016	SMMC
App Med	Operational efficiency, patient experience	Oct-13	Dec-15	Nearly Completed but will scuttle	WCHC
Carelity	Healthcare workflow BPM	Apr-15	Ongoing	Security screen, contracting	SFDPH
CareMessage	preventive screening outreach, care management			Under discussion	SFDPH
Waiting Room Concierge	Patient experience	Mar-15	Ongoing	Mid-launch	WCHC
Conversa	Operational efficiency, quality of care			Scuttled	SMMC

Dynasense	Operational efficiency, access	N/A	N/A	Pending start Q2 2016	SMMC
eCW Kiosk	Patient Experience – Efficiency	Jul-15	ongoing	Completed - Petaluma now is using this live in one of its five waiting rooms with planned expansion to all waiting rooms	PHC
Healthfinch	Efficiency, Access	Dec-13	Apr-14	Scuttled - Project/Pilot ended because they will not be able to integrate with eCW. Company was not interested in a non-integrated model.	PHC
Lumiata	Quality of care			In progress	SMMC
Omada Health	Patient Health Coaching – Pre-diabetes	Apr-15	ongoing	Small (6 participant) pilot ended. Full deployment to employees scheduled for late December 2015. 50-patient research pilot will launch January 2016.	PHC
Polyglot	UMS, patient adherence	Jul-15	Ongoing	Awaiting IT approval, contract	SFDPH Inpatient
Polyglot	Medication adherence		Nov-15	Completed - Published results reducing readmissions in 70-patient cohort from 26% to 8%.	SFDPH Ambulatory Care
Polyglot	Patient experience, Operational efficiency	Jul-15		Pending start Q4 2015	SMMC
Polyglot	Patient Experience - Health Literacy	Mar-14	ongoing	On hold for eCW issues. Plan to work to relaunch this pilot as possible.	PHC
Prepmate	Medication Adherence		Ongoing	Built product and currently testing with patients.	SFDPH
Purple Binder	Patient experience, connection to resources	Mar-14	Jun-17	In contracting. Broad coalition developed for deployment. Securing additional funding.	WCHC and PHC
Qurious	Quality of care improvement			Scuttled	SMMC
Resmed Airsense 10	Home monitoring, PAP therapy	Sep-15	Ongoing	Effector arm in place, in active practice	SFDPH

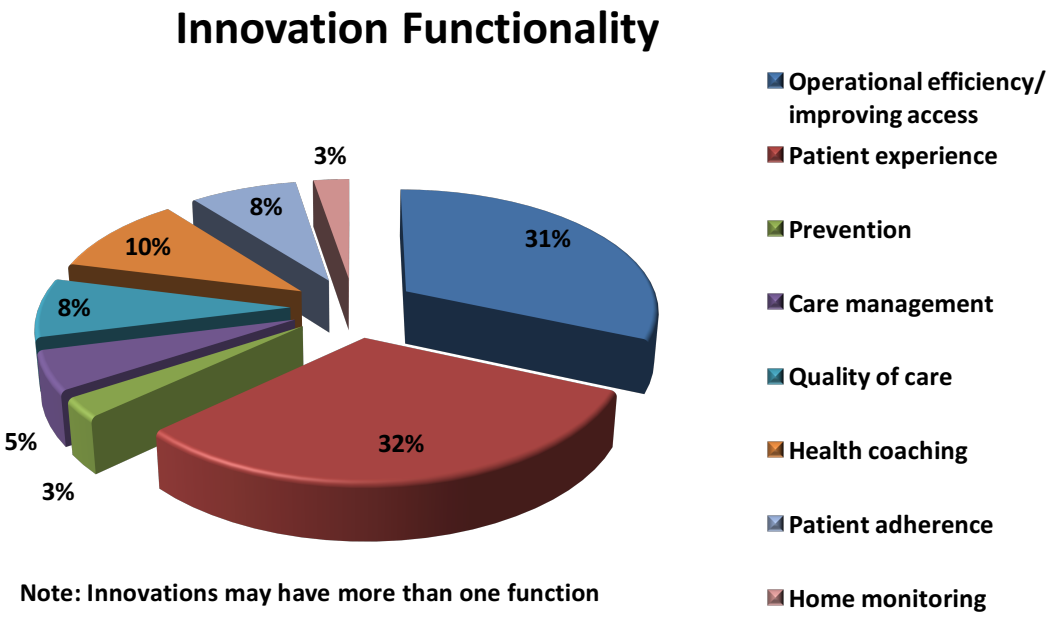
Smart Vision Labs	Patient experience, Operational efficiency, Access			Pending start Q2 2016	SMMC
TickiT	Patient Experience	Feb-15	Currently in progress	Mid-launch	SFDPH
TickiT	Patient Experience	Mar-15	Ongoing	Just launched	WCHC
Wellfx	Patient Experience,	Jun-12	Dec-14	Scuttled	WCHC
Welkin Health	Patient experience, Operational efficiency, Quality of care			Pending start Dec 2015	SMMC

Notes: Multiple listings of products indicate independent pilots focused on a different utility or function

The innovations piloted by the hubs fall into one or more of the following functionalities:

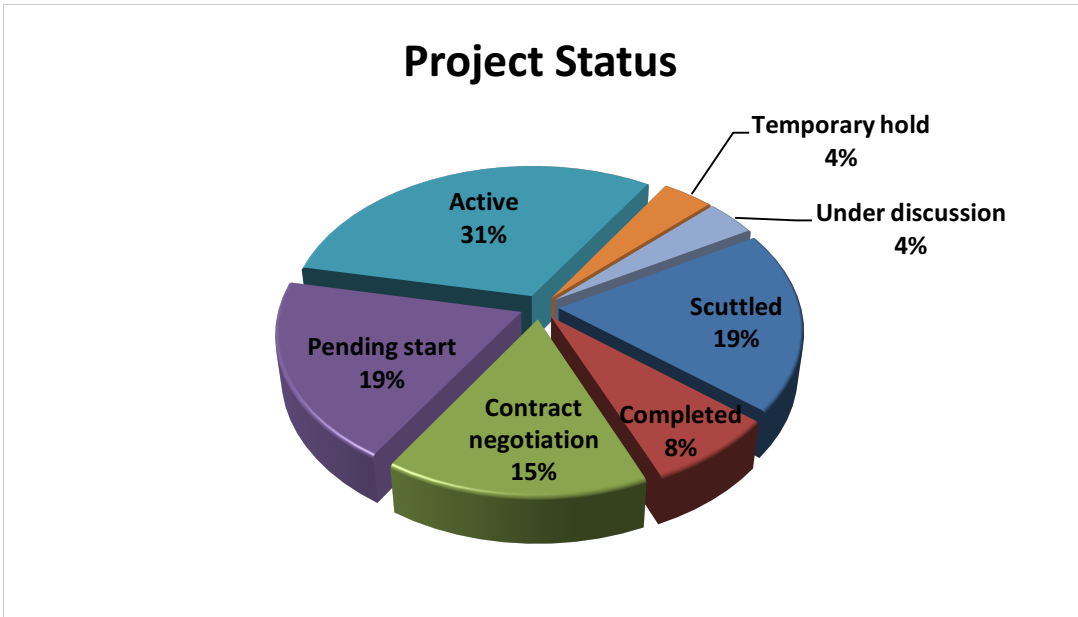
➢ Operational efficiency / Improving access	➢ Quality of care
➢ Patient experience	➢ Health coaching
➢ Prevention	➢ Patient adherence
➢ Care management	➢ Home monitoring

As illustrated in the figure below, across the innovations, most products tested address operational efficiency/improving access or patient experience. The hubs are exploring program impact to a lesser degree across other types of program functionality.



Note: Innovations may have more than one function

In the current innovation pipeline, 31% of innovations are active, 19% were scuttled, 19% are pending start, 15% are under contract negotiation, 8% are completed, and another 8% are either on temporary hold or under discussion.



Early Results from Completed Projects

Although a small number of pilots have been completed to date with many more in the pipeline, the results from the completed pilots have been positive.

Petaluma Health Center completed its health coaching employee pilot with Omada Health and is **planning full deployment to employees scheduled for late December 2015.** It considers this particular pilot to be its most successful to date. Petaluma Health Center also completed its patient experience pilot with the eCW Kiosk and is now using this live in one of its five waiting rooms with planned expansion to all waiting rooms.

"I feel very strongly that our patient population hasn't always been the first to get new technologies and experience them. The CCI grant was a great opportunity to bring technologies from the outside into our organization and benefit our patients."

--Mike Aratow, MD
Chief Medical Information Officer

San Francisco Department of Public Health completed its medication adherence pilot using Polyglot and published results reflecting **a reduction in readmissions in a 70-patient cohort from 26% to 8%.**

Early results from West County Health Center's waiting room concierge pilot are also promising. The waiting room concierge assists patients with checking in, education and engagement, and connection to ancillary services such as wellness groups and access coordinators. By putting a staff person equipped with simple effective technology in the actual waiting room rather than behind a desk the concierge has helped changed passive waiting into active care. **Ninety-three percent of patients accepted assistance from the concierge and 75% of staff thought that the concierge made it easier to do their jobs.**

San Mateo is currently piloting a colonoscopy prep service that utilizes an app and text messaging to improve colonoscopy preparation through the vendor, 22Otters. The innovation team went live with an initial phase of the service. Early data indicated that among 234 patients that were contacted, 42 patients downloaded the smartphone app, and 25 patients used the app to confirm an appointment. Among 17 patients who responded to a satisfaction survey, **60% were satisfied with the app and 62% thought the app gave them a better perception of their doctor or clinic.** The team has reported anecdotally seeing fewer cancellations.

San Francisco Department of Public Health has been piloting a technology called TickiT to better capture the voice of a wider sample of patients. The innovation team partnered with Shift Health, a company that designs innovative, easy-to-use graphic based survey tools. Patient advisors at their pilot site, Silver Avenue Family Health Center (SAFHC) worked closely with the team to develop a small set of survey questions from the CG-CAHPS. Based on positive use of the more user-friendly version of the patient experience survey, staff at SAFHC is planning on incorporating the data into quality improvement efforts and over time will further integrate the clinic-wide patient experience data into dashboards that are distributed monthly to care teams.

The evaluation team prepared infographics to showcase three of the innovation pilots. These include San Mateo Medical Center's colonoscopy prep pilot with 22Otters, San Francisco Department of Public Health's pilot on patient experience surveys using TickiT, and West County Health Center's patient experience pilot using the waiting room concierge. The infographics highlight the teams' steps in the innovation process, challenges along the way, and outcomes to date, and can be found in the Appendix.

Qualities of a Successful Pilot

We also asked teams to reflect on the qualities of their most successful versus least successful innovation pilots. The following table summarizes these findings, which should prove to be helpful to other organizations that are in the planning stages for innovation testing and adoption:

Qualities of a Successful Innovation Pilot	Qualities of an Unsuccessful Innovation Pilot
• No required integration with EHR to be valuable	• Not able to integrate with EHR (and the company was not open to a non-integrated model)
• Ability to test with employee group prior to patient pilot (this also resulted in buy-in from the executive team)	• The innovation requires significant co-development (staff did not understand the amount of development that was needed when contract was signed)
• The innovation requires little staff time once patients are enrolled (very little operational disruption)	• The innovation requires a large amount of staff time to maintain and burdens staff
• Metrics well-defined; data results automated and available immediately	• Innovation model/concept not clearly defined
• Innovation/practice is flexible enough in design to be used for other applications	• Low traction with patients
• Fair price structure	
• Easy to manage and does not require major changes to staff roles or work flows	
• Cost neutral	
• Commitment from all stakeholders	
• Aligned with the organization's strategic initiatives	
• Provide a solution to a pain point(s) in the organization	

Changes in Hubs Infrastructure to Facilitate Innovation Testing

In addition to tracking the hubs' innovation pipeline and outcomes resulting from pilot testing, it is also important to document how the sites comprising the Innovation Center have changed structurally around innovation development and deployment, so that other safety net organizations can learn from this process. This section documents these changes and provides lessons learned from each of the hubs.

San Mateo Medical Center

San Mateo Medical Center is a public hospital and clinic system fully accredited by The Joint Commission. The Medical Center operates outpatient clinics throughout San Mateo County and an acute-care hospital in San Mateo. Over the past two years, the innovation team at San Mateo has streamlined their innovation development process by establishing a series of sequential steps around innovation selection, approval and piloting. When the innovation

team initially started the hub, staff was allowed to use a Memorandum of Understanding as a vehicle for working with a vendor for a cost free pilot, but this policy was changed to the requirement of a contract, and in addition, the project approval workflow also changed significantly. The steps currently are as follows:

1. Identify an early stage company with an innovative idea that addresses a pain point of the organization and is aligned with at least one strategic initiative (this is through vetting from CCI or SMMC's networks); an early stage company also may be willing to implement the innovation free of charge
2. Innovation team meets with company to get enough details around availability of resources if the users are interested
3. Innovation team talks with potential users of the innovation to see if the innovation provides value and they would consider piloting it
4. Innovation team and users meet with the company for another presentation to determine if the users are committed to the pilot
5. Innovation team works with company to establish a Statement of Work
6. Company meets with necessary SMMC staff to establish necessary tasks for implementation
7. Innovation team works with Seth Emont (evaluator) to establish metrics for success
8. Innovation team completes a Business Requirements Document (BRD)
9. Company completes Security Assessment Survey (SAS)
10. SAS presented to Information Services Department for approval
11. BRD presented to Info Tech committee, Executive Management Team, and to IT Governance Board for approval
12. Charter created by Innovation PM
13. Charter presented to PMO for approval
14. Project plan created by Innovation PM
15. SMMC contracting works with company and SMMC legal to get a mutually agreed upon contract
16. Contract presented to Health System contracting, SMMC Director of Applications, CEO of SMMC for approval
17. Contract presented to Board of Supervisors (BoS) if over $25000 (prior to presentation, memo needs to be written to the BoS and memo placed on BoS meeting agenda)
18. Kickoff meeting with Innovation team and users

According to Mike Aratow, MD, Chief Medical Information Officer and Director of the Innovation Center at San Mateo, "Instead of having to develop from within, we reach out to bring technology in." One reason is that San Mateo is positioned within an epicenter of technology, sitting among a target-rich environment of over 7,000 digital start-ups in the San Francisco Bay Area. Another reason is that San Mateo does not have the resources to do the type of technology that Dr. Aratow believes is important to try for their population.

According to Dr. Aratow, staff at San Mateo is interested in technology that can impact the Triple Aim and decrease costs, increase quality, and improve patient and staff satisfaction.

Traditionally, it used to be that applications were hosted at the premises. Aratow believes that technology needs to go to the cloud, needs to be mobile, requires web services instead of monolithic "big client" applications, and the user interface design needs to follow basic principles rather than design principles of 30 years ago.[3]

Selected Lessons from San Mateo on Infrastructure Changes

- The innovation team has been consistent about being a test bed for early stage companies
- The innovation team sees themselves as enabling the organization to offer more personalized care to patients through the innovations
- The innovation team views their work as also supporting the start-up companies' skills in interfacing with the health care community
- The team recognizes that no matter how good the technology is, if it does not fit easily into an organization's workflow, it will fail
- The innovation team is trying to standardize its approach based on the organization's "LEAN" approach to "make it work like a factory" using templates where possible; Mike Aratow, CMIO of SMMC, adds, "We want to make it so that we can use the same effort to do four interventions as we would two interventions."

West County Health Centers

West County Health Centers (WHCH) is located in Western Sonoma County and serves the communities of Guerneville, Forestville, Sebastopol and Occidental, and their outlying areas, covering approximately 750 square miles, with an estimated 15,000 patient visits each year. As a Federally Qualified Health Center (FQHC), WCHC serves the underserved and has a fairly diverse demographic. WCHC has four primary care sites, including a dental clinic, wellness center, and teen reproductive health clinic.

In the team's initial collaborative efforts with Petaluma Health Center (PHC), the innovation team focused on using video technology in the primary care space. This work focuses on nontraditional tele-health models such as tele-health visits from primary care to patients' homes, nurse or support staff home visits, "tele-warm handoffs", and hospital-primary care transition tele-warm handoffs. These innovations help to increase access to care by overcoming barriers such as transportation/mobility, change the way care is delivered outside the four walls of the clinic, and helps patients engage in their own health management. Both sites worked on individual use cases and determined the best way to package the project in its entirety and as smaller projects for implementation outside PHC and WCHC.

[3] Source: Podcast interview with Chris Conley, host of HealthPilots, new solutions for the safety net

Recently, the innovation team became interested in opportunities that improve patient care and experience through changes in workflow and roles, specifically through implementing new technologies, according to Luke Entrup, Director of Programs and Innovation at WCHC. One of the major factors driving their innovation work in the safety net is payment reform: They are shifting away from being paid by the visit (fee for service) to a value-based model (changing the outcomes of patients). This opens all kinds of opportunities to not just treat diseases, but to "get ahead of the curve", and allows WCHC to invest in wrap-around services roles, like patient navigators, enabling services, and nurse case managers. The system is beginning to recognize these services as valuable investments. So, the culture has changed to allow staff to think about ways to reach their patients in a different way, particularly around innovative technologies.

"Building a culture of innovation at our organization comes from necessity. Being in a resource-challenged environment has forced us to solve problems differently. Rather than... throwing money at solutions, we've been forced to think differently about improving care. Being resource challenged has forced us to be more innovative."

--Luke Entrup
Director of Programs and Innovation
West County Health Centers

WCHC established a rigorous innovation development process over the past two years. The sequence of steps that follows represents a thoughtful approach to innovation development and implementation that can be operationalized by other safety net organizations. Note that some of these steps also provide valuable insights into encouraging organization-wide cultural changes around innovation development:

1. Find a solution that would bring value to patients or organization
2. Vet the financial stability and viability of the model
3. Vet the company's ability to adapt and co-design to your unique environment
4. (Optional) request a customized Proof of Concept that is unique to your environment
5. Define a SOW that includes evaluation metrics
6. Negotiate a favorable pricing model that considers your time investment and the value offered
7. Execute a contract
8. Select a project team based on willingness to engage with new technologies, ability to inspire change and lead others, willingness to be involved in a project that is not fully developed, the ability to communicate effectively and own a creative, positive outlook
9. Orient team and engage them in ideation for implementation (ideally include a patient advisor)

10. Early rapid testing with some data collection
11. Make necessary workflow adjustments after early testing
12. Begin full pilot testing with data collection at one clinical site or in one contained environment
13. Celebrate and reward the pilot testing team
14. Share findings, successes, and an engaging story across the organization and with external partners/funders
15. Select one or two other sites to roll-out as early adopters
16. Capture differences and bright spots of implementing in these new environments
17. Implement broadly by applying the solution at all sites and handing over all aspects of the solution to the operations team

Selected Lessons from West County Health Centers on Infrastructure Changes

- "We learned a valuable lesson in not selecting an innovation solely based on the solution, but to also vet their business model, financial stability, and ability to respond to our unique environment."
- The innovation team has been training and fostering innovation at both organizations for capacity building. The team brings human-centered design methods to various departments across the organizations. At this point, teams request the innovation team to facilitate meetings to help them solve persistent problems or brainstorm new ideas.
- The amount of time it takes to negotiate contracts with start-up companies is large and there is a steep learning curve around this; even WCHC's contracting and compliance department does not always know what these contracts will look like, since it is new process for them, as well.
- The team engages staff and patients in new ways based on their newly developed practice of Co-Design Sessions, which allow patient advisors and staff to become an active part of the creative development process by interacting directly with design and research.
- The innovation team has learned to celebrate and reward members of pilot project teams and honors them at larger agency meetings and features them in communications.

Petaluma Health Center

Petaluma Health Center is an FQHC that provides primary medical care and mental health services to residents of Petaluma, Rohnert Park, Cotati, Penngrove and the surrounding areas. The innovation team has recently focused its attention on programs that address patient engagement as well as social determinants of health, which allows them to explore important ways to help patients outside of the four walls of the clinic. For example, Petaluma has completed its "remote house calls" innovation to help patients transition between hospital discharge and primary care. According to Dr. Danielle Oryn, Chief Medical Informatics Officer

at Petaluma Health Center, social determinants of health need to be addressed and "...it's important to find ways to bring that into primary care so they can be addressed." Dr. Oryn also underscores a key challenge of using new technology, which is how to fit it into the current model of care—when faced with rules and billing procedures.

At Petaluma, prior to becoming a hub site, the innovation team did not have any set pathways to bring innovations or technology-related pilots to the organization. The organization now has a process for moving innovations through a pilot and evaluation. Over the course of the past two years, the team has developed a pathway for their innovation pipeline. Having that has paved the way to move more programs than prior through more efficiently. The culture of innovation has been particularly changed by the CCI Catalyst program that Petaluma staff has participated in as part of the Innovation Center. According to Dr. Danielle Oryn, "This has completely changed our approach to solving problems at our health center. We are more likely now to try (small scale) innovative solutions without knowing for sure that they will succeed."

Similar to the other hub sites, Petaluma has refined an innovation development process over the past two years:

Scanning the field

- Looking broadly at the innovation market place
- Collecting recommendations from staff for additional innovations to explore

Getting more information

- Scheduling demos of products for internal innovation team and relevant others in the organization
- Feedback from all parties in attendance is obtained

"By asking patients questions around social determinants of health, we have an opportunity to help them by addressing the root cause of the problem. For example, rather than giving a patient another medication for their asthma, what we really need to do is give them assistance so their housing can change. This is much more powerful and longer lasting, and a better solution."

--Dr. Danielle Oryn
Chief Medical Informatics

Selection

- If a product is deemed to be a good fit then it is presented the organization's Senior Management Team for approval to move forward with planning the pilot

New program form/budget mock up

- There is a new program form that is created that includes the rationale for the program and the proposed details of the pilot
- A new program budget spreadsheet is filled out
- These two forms are brought to the internal quality improvement team for approval and refinement

Board approval or notification

- Once approved by the internal quality improvement team, the pilot program is taken to the Board QI committee as informational or for approval

Pilot Testing

- The pilot is completed

Evaluation and reporting

- The pilot lead presents any progress or problems to the QI team throughout the pilot
- At the end of the pilot the QI team will evaluate the pilot and determine any next steps

Selected Lessons from Petaluma Health Center on Infrastructure Changes

- The organization now has a process for moving innovations through a pilot and evaluation; having this process has paved the way to test more innovations and in a more efficient way.
- Using innovation design approaches through the team's participation in the CCI Catalyst program and as a hub has completely changed their approach to solving problems at Petaluma.
- The innovation team is more likely now to take risks and try (small scale) innovative solutions without knowing for sure that they will succeed.
- The innovation team keeps a list of problems in their "tech parking lot" for which the team is looking for technology-related solutions

San Francisco Department of Public Health

The San Francisco Department of Public Health consists of two divisions - the Community Health Network (CHN) and Population Health and Prevention. The CHN is the City's health system and has locations throughout the City including San Francisco General Hospital Medical Center, Laguna Honda Hospital and Rehabilitation Center, and over 15 primary care health centers. The Population Health and Prevention Division has a broad focus on the communities of San Francisco and is comprised of the Community Health and Safety Branch, Community Health Promotion and Prevention Branch, and the Community Health Services Branch.

The innovation team at SFDPH continues to define its structure, while overcoming a number of barriers around IT engagement, procurement and contracting, and clinical implementation. Procurement can include a competitive process for services over $10,000. If no solicitation is performed, a Sole Source request is needed. The Sole Source process takes about 5-6 weeks for approval and different approving agencies have their own Sole Source process and those processes do not run parallel. The team has identified that the procurement process consists of no less than 16 steps between writing an initial scope of work to proposal submissions from vendors to product demonstrations and finally to contract certification.

Despite these administrative hurdles, the team has been fine-tuning its structure to include analytics support, team structuring, process of engagement, and project formalization. A working copy of the innovation's innovation process map can be found in the Appendix.

Selected Lessons from SFDPH on Infrastructure Changes

- SFDPH has made significant progress in understanding the steps in working with an external vendor within a county system and also identifying the internal leaders and stakeholders (Privacy, Security, IT, Contracts, Legal teams, etc.) whose support is needed to move forward in the process of innovation development and implementation. For example, within the contracting process, the innovation team envisions that the RFQ/RFP process could measurably shorten the contracting process and that protocols to become a city vendor can be streamlined (see SFDPH process map in Appendix).
- The team has learned that in order to pursue innovative projects, it needs: executive level sponsorship/support, transparent vetting processes, alignment with institutional priorities, multidisciplinary implementation teams, early stakeholder engagement, contract/procurement support, legal support, security support, metrics for performance and implementation assessments, business development, and marketing. Furthermore, these require dedicated support, as opposed to auxiliary efforts.
- The team has learned that there is a demand for design thinking in the SFDPH system, but also that moving these techniques into roles (e.g., needs identification, strategic thinking) will require more executive buy-in. Taking the approach of attaching to LEAN initiatives may close this gap.

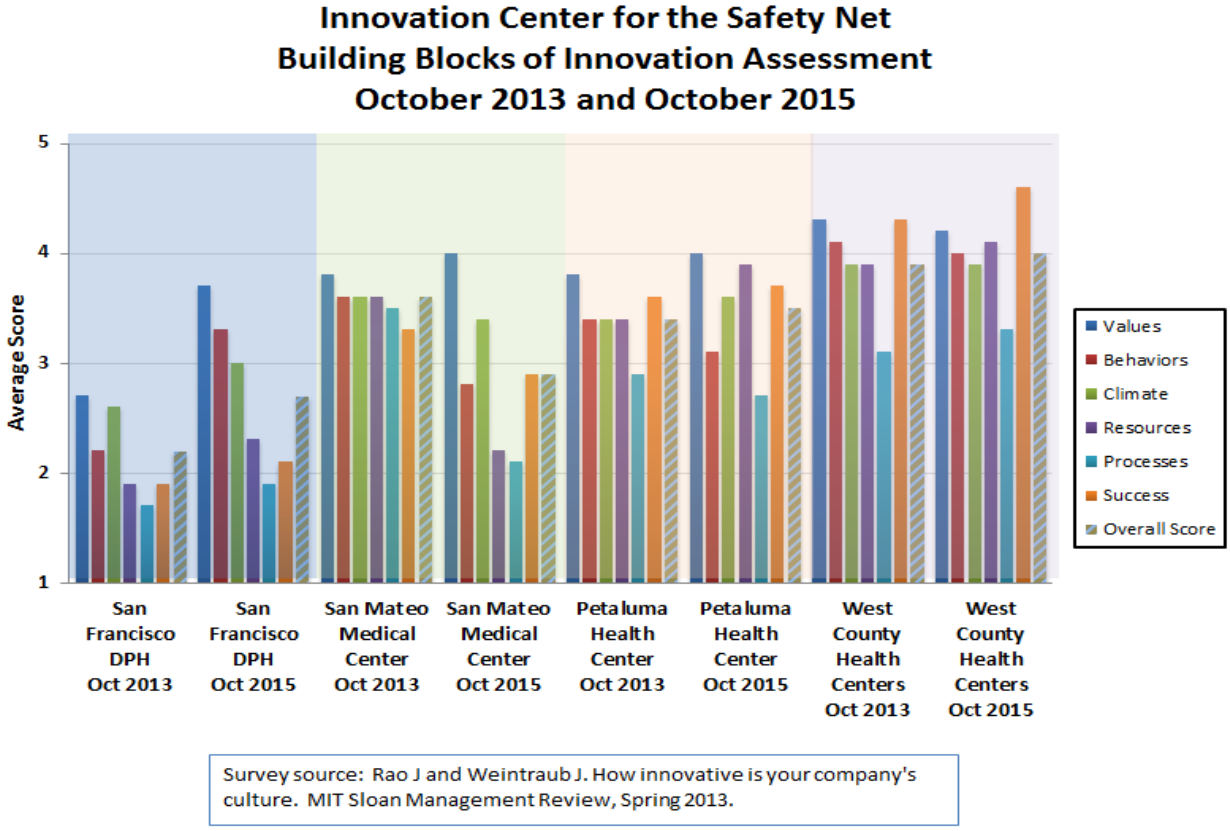
Changes in Culture of Innovation at Hubs Sites

An important "side effect" of the work of the hubs is the extent to which the innovation teams are influencing innovation development throughout their institutions. In addition to attempting to quantifying changes in the culture of innovation, we asked teams to provide examples of how they are influencing cultural change at their respective organizations.

Each hub core team completed a baseline *Building Blocks of Innovation* assessment[4] in October 2013 and then a follow-up survey in October 2015. The Building Blocks assessment is a practical 360-degree assessment tool that can help organizations pinpoint innovation strengths and weaknesses and better understand how conducive an organization's culture is to innovation. Summary results overall and for each team are provided below. Each team also has received a feedback report with more detailed results (not included here). The baseline survey indicated that all five sites rated themselves the lowest on "processes", suggesting that all sites needed to put a system in place to review, prioritize, and prototype projects, which they have all been putting into place over the past two years. In addition, all

[4] Rao J and Weintraub J. How innovative is your company's culture. MIT Sloan Management Review, Spring 2013.

teams rated themselves the highest on "values", which reflects an investment in promoting creativity and encourages continuous learning among staff (see cross-site results below and team results in Appendix).



Survey source: Rao J and Weintraub J. How innovative is your company's culture. MIT Sloan Management Review, Spring 2013.

Surprisingly, the two-year follow-up survey indicated that the majority of teams had not changed their ratings across these factors; most teams scores remained flat over two years, while one team (San Mateo) scored themselves lower at two years. Only one team, San Francisco Department of Public Health, scored themselves higher across all factors over the two-year period—however, this team scored the lowest at baseline and had more room for improvement than other teams. (Please see Appendix for definitions of these innovation factors). Notable reasons for lack of improvements in these factors include the following:

- Projects remain blocked by distracted bureaucracy and de-prioritized in favor of more "urgent" projects
- While executive support for efforts has dramatically improved, translating this support into high-profile innovation deliverables remains challenging (executives are still putting out fires, and "innovation" still is relegated to "nice-to-have" status)
- Organizational culture (system-level) is extremely difficult to change within a short amount of time (2 years); however, active "pockets of innovation" have been created
- The teams reported that "they didn't know what they didn't know" two years ago in terms of the steps involved and process for testing, implementing, and sustaining an innovation

- The team did not have experience doing innovation in this way and were optimistic and idealistic about our prospects, but now that they have gone through several cycles of setbacks and lessons learned, the innovation team has a more realistic view of its capabilities

While teams' perceptions of their own changes around culture of innovation remained stable over time, it is important to point out that teams have in fact made important strides in changing the culture of innovation at their respective institutions. In addition to how teams have operationalized innovations at their organizations as described in the previous section, some notable examples of changes in the culture of innovation include the following:

- Innovation thinking has contributed to changing the workflow of current clinical processes (all hub teams)
- Applied design thinking to other initiatives across organization (all hub teams)
- Creation of a pathway for moving innovations through the pipeline (all hub teams)
- The innovation team has a regular time to discuss innovation and to push projects forward (all hub teams)
- "We have become an entity (more than an idea)" and have been acknowledged by the Director (SFDPH)
- Creating a working definition for innovation in the context of LEAN and grant-supported projects (SFDPH)
- "We use our newly constructed Innovation Hub space and our designation as a CCI Innovation Hub site as a recruiting tool for new providers and staff. We bring them into the space to show them the physical investment we have made into one of our core values as an organization – innovation. It has become part of the story of who we are as an agency and who we aspire to be more of in the future. With this investment we are attracting people who want to be in an innovative agency and who are creative thinkers." (WCHC)
- The CCI Catalyst program in conjunction with the hubs initiative has resulted in a new approach to solving problems; the innovation team is more likely now to try (small scale) innovative solutions (Petaluma)
- The Hub innovations are now put through the same contracting and approval processes as regular projects (SMMC)
- Partnering with early stage companies to pilot innovations is becoming more familiar to leadership and is therefore making them more amenable to this method as a way to solve the organization's challenges (SMMC)

SUMMARY

These two-year findings are being used internally by CCI project staff to monitor program progress and by CHCF to assess impact of their investment. The lessons learned documented here will be useful to other safety net organizations that are exploring opportunities to incorporate innovative solutions into health care delivery. To facilitate this, findings from this

report should be disseminated through the Safety Net Innovation Network and made available as a resource through the CCI and Innovation Center web sites. In addition, CCI and hub teams should share these lessons through various outlets, including professional, leadership development, and innovation conferences and meetings, as well as through interactive resources, such as webcasting, toolkits, and podcasts.

While CCI is also exploring continued funding in 2016, an important goal of this effort is to ensure the hubs are sustainable after program funding ends. Teams have been working on a model for sustainability but are still early in developing revenue models. Over the past two years, the hubs have served as a proving ground for early stage innovations so that other safety net organizations can gain a better understanding of the resources that are needed, resources that are provided by the vendor, key metrics that should be tracked, benefits of adopting the innovation, and costs involved. The long-range goal of this model of sustainability is for the Center to serve as a national laboratory for innovation in health and health care—an implementation incubator or "hatchery" for the health care safety net.

External factors favoring the need for such a model on implementing innovative solutions include an increase in demand for services, complex patients, care coordination and patient engagement requirements, the need for improvement in patient access to appropriate care, the need to manage and objectively measure quality, effectiveness and costs of care, and document metrics that show impact. Likewise, internal constraints favoring the demand for such a model include the lack of environment to test healthcare innovations, no standardized pre-trial vetting of innovation technologies, no standardized measurement strategy for assessing effectiveness of innovations, existing effectiveness data is typically in the form of marketing materials and not objective operational measurements, inability to apply the existing metrics to a specific operational environment, little or no clarity on the work flow impact of the innovations, and difficulty in quickly assessing the impact of innovations.[5]

Finally, it is important to note that the Innovation Center model is currently being considered for implementation by the Nicholson Foundation in New Jersey. Over the past year, the Nicholson Foundation, in partnership with CCI, launched the New Jersey Innovation Catalyst Initiative based on the success of the Catalyst initiative in California. The goals of the NJ initiative are to help safety net healthcare organizations solve problems by thinking and working differently and to grow a network of trained innovators ("Catalysts") in organizations that serve New Jersey's safety net, who can lead care transformation efforts. Once Catalysts are "seeded" throughout health care delivery systems that are part of NJ's safety net, an Innovation Center model could support sustained testing of innovative ideas that have the potential to significantly improve care for safety net populations throughout the state.

[5] CCI. Presentation on the hatchery model. September 2014. (internal document)

Appendix: Companies Evaluated by Hubs

1DocWay	Doctor on Demand	Intake.Me	PhysIQ	Tableau
22 Otters	Dossia	Jointly Health	Phytel	Teladoc
Accordian Health	DoxMed	Kinsights	Polyglot	ThriveON
ActualMeds	Drchrono	Kognito	practicefusion	Thriveon
AdhereTech	Dynasense	Lantern	Predilytics	Tickit
Alere	eCaring	Lark	Prepmate	TokBox
AliveCor	EcW Kiosk	LifeQ	Prompt Outreach	Treato
Amplify Health	Ellipsis Health	Livongo	Propeller Health	Tupelo Health
AnalyticsMD	EMBI	LoseIt	Purple Binder	Tytocare
App Med	eVideon	Lumiata	QPID Health	Unify
Argusoft	Fitbug	MagnePath	Qurious	Via Health
Attensi	Flow Health	Mango Health	Rally Health	Vida Health
Augmedix	FrameHealth	Medable	Resmed Airsense 10	Vivor
Ayasdi	Gliimpse	Medalogix	Rounding Well	Vsee
Best Doctor	glucoiq	MedeAnalytics	RowdMap	Well
Bright.MD	Hale Health	medecision	RubiconMD	wellcentive
CaptureProof	Hc1.com	MedFusion Plus	RXRevu	Wellfx
Care at Hand	Heal	MediSafe	SafeUseNow	Wellkin Health
Carelity	Healogram	MedLion	Salesforce for Healthcare/Life Sciences	Welltok
CareMessage	Health Leads	Medtep	SBR Health	Wisercare
CareSpan	Health Recovery Solutions	MEMOTEXT Corp	Scanadu	Zipnosis
CareinSync	HealthCatalyst	Modernizing Medicine	Seamless Medical	Zobreus
CellScope	HealthCrowd	MyFitnessPal	SelfEcho	
Click Therapeutics	Healthfinch	mySugr	Sense Heatlh	
CloudDX	Healthify	Noona	Sense.ly	
Cognoa	Healthline	Nova Sante	Shift Health	
Concierge	Healthloop	Nuplanit	Smart Monitor	
Conversa	Healthprize	Nurx	Smart Schedule	
Curatio	Healthwise	Omada Health	Smart Vision Labs	
Curve Tomorrow	HelpAround	Patient Pop	SmartPatient	
Dacadoo	Hubble Telemedical	PatientsLikeMe	SmartStory	
Doctella	iDoc24	PersonalRN	Stroll Health	
	Infermedica	Phase Space	Symptify	