



Developing a Database to Drive Ambulatory Healthcare Innovation

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

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Scholarly Report Title:

Developing a Database to Drive Ambulatory Healthcare Innovation

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Title: Developing a Database to Drive Ambulatory Healthcare Innovation

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Purpose: Based on our knowledge, there is no dominant nationwide platform for finding and sharing workflows of healthcare delivery innovation projects that addresses on-the-ground clinicians' nitty-gritty implementation needs. Characterization of diffusion patterns of healthcare delivery innovation knowledge among clinicians reveals dependence on informal networks and condition or setting-specific learning collaboratives along with time-intensive integration of information from conferences, professional organizations, and boutique consulting opportunities. The author developed CareZooming, a web-based platform for on-the-ground clinicians with the evidence and access to expert advice they need to implement their next healthcare delivery project. The CareZooming platform is comprised of 1) a database of quality improvement and healthcare delivery innovation project workflows from ambulatory care settings around the United States and 2) a network of clinical leaders who provide "eConsults for healthcare delivery" to clinicians seeking advice through the platform's CareZooming Connections service. The author will first describe the platform creation journey and then explore results of aims to 1) explore user perceptions of the utility of the CareZooming Connections "eConsults for healthcare delivery" service 2) to better understand prior knowledge of healthcare professions students who develop database content for CareZooming and 3) to explore clinician perceptions of current resources utilized in the information-gathering phase of healthcare delivery innovation.

Methods: Email surveys created on GoogleForms were administered 1) to CareZooming Connections participants categorized as "Teachers" or "Learners" directly after consulting sessions had been completed 2) to CareZooming healthcare professions student editors recruited in January 2019 to assess their prior knowledge before job training and 3) to clinician subscribers to the weekly CareZooming News e-newsletter.

Results: The CareZooming Connection Review Survey response rate was 57%. The CareZooming Student Editor Pre-Survey response rate was 80%; this data represents pre-intervention data and post-intervention data will be collected for comparison in May 2019. As of 26 February 2019, the CareZooming User Survey garnered 2 responses but is still accepting responses.

Conclusions: Our results indicate that CareZooming Connection "Learners" save on average 3 hours and \$150 with our service and are very likely to recommend the service to colleagues. Student editors rate their prior knowledge of healthcare delivery as "Poor" to "Good" but not "Excellent." The two clinicians who have responded to the CareZooming User survey to date perceive remarkably low rates of success at connecting with peer experts who are well matched to their implementation needs.

Introduction:

In the United States, the ability to create groundbreaking drugs, devices, and procedures has far outpaced the ability to effectively and efficiently deliver high quality healthcare, resulting in healthcare's overwhelming escalation of complexity and cost without corresponding improvements in outcomes. The Institute of Medicine estimates that administrative and operational inefficiencies in healthcare costs about \$320 billion each year (3% of GDP), or roughly half of the \$750 billion of US healthcare dollars wasted annually.^a Clinicians, particularly in primary care, are becoming increasingly burnt out by their mandate to take on increased administrative & data analysis duties tied to adoption of electronic medical record use and for which they feel they have little training. These tasks add, on average, 30-60 minutes of out-of-office work for every hours' worth of patients they see.ⁱⁱⁱ Wide-ranging healthcare reforms, such as the Centers for Medicare & Medicaid Services' Merit-Based Incentive Payment Program (MIPS), increasingly tie clinician compensation to performance metrics which effectively mandate clinicians to take on increasing practice improvement & healthcare delivery duties. Clinicians increasingly feel that these administrative duties, although worthwhile, take time and energy away from direct patient care and drive increasing rates of burnout and mounting provider job dissatisfaction.^{iv}

We hypothesize that one phenomenon exacerbating clinicians' frustration and burnout occurs when clinicians experience a sense of discrepancy between their awareness of the efficacy of healthcare delivery innovations as described in the health services research literature and their lived experiences of the slow pace of diffusion of innovation throughout the clinics, hospitals, and healthcare settings in which they work day to day. As Damshroder et al. aptly stated, and as clinicians know to be true: "Many interventions found to be effective in health services research studies fail to translate into meaningful patient care outcomes across multiple contexts," leading clinicians to feel as if they are constantly having to "reinvent the wheel" when it comes to adapting interventions to fit the unique context of their own clinical settings.^v

The hyper-local, fragmented nature of healthcare delivery in the United States also characterizes the nature of the implementation frameworks utilized by teams of clinicians as they seek to improve care delivery. Perhaps this stems from the reality that for clinicians on the ground implementing innovations in healthcare delivery, the processes of undergoing practice management, quality improvement, and innovation occur simultaneously while the established frameworks treat them as distinct processes. In its recent Request for Applications for the creation and utilization of Patient Safety Learning Laboratories, the United States Agency for Healthcare Research and Quality (AHRQ) offers one such framework simplified from successive phases of large-scales systems engineering that is based on a five-step methodology consisting of 1) problem analysis 2) design 3) development 4) implementation, and 5) evaluation.^{vi} Although this framework may be more prevalent than others due to the mandate of its use

within a prominent healthcare delivery innovation funding mechanism, it is far from the dominant framework. There seem to be many “sources of truth” from numerous expert organizations and professional societies when it comes to frameworks for practice management, quality improvement, and innovation, including the American Medical Association’s StepsForward Initiative^{iv} which includes a 5-step module on “Preparing Your Practice for Change” and the Institute for Healthcare Improvement’s 8-step “Model for Improvement.”^{vii} The American Association of Family Practitioners also points its members to the Six Sigma Methodology and the Lean Methodology on its “Basics of Quality Improvement” website.^{ix} It is therefore understandable with so many options that on-the-ground clinicians may have difficulty identifying a prominent framework that they can put to use in their own day-to-day work.

Our past experiences in implementing healthcare delivery innovations working as junior healthcare administrators and studying as clinical trainees have been validated by the hundreds of exploratory phone calls that we have conducted with physicians and nurses engaged in quality improvement and healthcare innovation across the United States. We hypothesized that the wide divergence that characterizes the landscape of healthcare innovation and quality improvement frameworks also characterizes the landscape of resources utilized by on-the-ground clinicians consult to chart their courses in launching and scaling healthcare innovation pilot projects. The divergence and fragmentation of the essential informational resources that clinical leaders use to assess the viability of adapting a new innovation into their clinical setting elongates the “literature review process” of studying the outcomes of previous successes to an average of six months, causing causing delays in implementation at the cost of crucial personnel buy-in and morale.

In the aforementioned AHRQ five-step methodology, the “literature review process” is a key component of the “Problem analysis” and “Design” phases of engineering new healthcare innovations. The AHRQ defines these two phases as follows:

***“Problem analysis.** Defining the problem thoroughly provides the foundation upon which all subsequent efforts are based. Too often, insufficient time and resources are given to the analysis phase, resulting in an incomplete understanding of system issues. The problem analysis will likely entail repeated trips to the clinical setting where records, risk assessments, and relevant documents can be reviewed, where clinical processes and procedures can be observed, where equipment and technology can be examined, and where front-line staff and unit leaders can be interviewed. Project teams need to learn about the requirements and preferences of patients, providers, and other stakeholders as well as a myriad of socio-technical factors (e.g., facility design features, equipment and technology, work processes and flow, and organizational,*

cultural, and contextual characteristics) that shape the clinical experience, and if neglected, can facilitate harm. Based on consultation with engineering members of the team, activities may include requirement analysis, development of concept of operations and use cases, fishbone diagrams, root cause analysis, and decision support trees to name a few. The problem analysis enables the team to set clear and specific goals to bound and scope the problem, to inform metrics that will be used to verify expected workflow processes and system performance, and to give the team a purposeful sense of direction.

Design. *Establishing design objectives is another early and critical phase of project work to be undertaken. Such objectives address what needs to be accomplished by the new system as informed by the problem analysis, goals, and necessary tasks to be performed. In high level design, the idea is to capture ideas and differing perspectives from diverse team members, taking advantage of techniques used by leading design firms such as brainstorming, living in the future, rapid prototyping, storyboarding, or foam-board mock-ups to arrive at high level capabilities of the system. The rapid prototypes undergo further testing, revision, and development and a feasible evaluation scheme is developed to determine which designs are likely to hold promise and deserve subsequent development. Detailed design lends greater specificity to the high level capabilities in terms of mapping out core and interdependent functions of the system along with inputs and expected outputs. By using block and flow diagrams, computer models, prototype graphical user interfaces, and other tools, design teams lend greater clarity to the allocation of functions and tasks to humans, hardware, and software. Usability considerations and needs for standardization, interoperability, and redundancy should inform the design process. Plans for integrating devices and separate components into a working system are formulated during this phase as well.”*

Based on our knowledge and research to date, there is no dominant nationwide platform for finding and sharing workflows of healthcare delivery innovation projects that addresses on-the-ground clinicians’ nitty-gritty implementation needs. Characterization of diffusion patterns of healthcare delivery innovation knowledge among clinicians reveals dependence on informal networks and condition or setting-specific learning collaboratives along with time- and labor-intensive integration of information from conferences, professional organizations, and boutique consulting opportunities.

To help alleviate clinician burnout we believe to be exacerbated by the previously discussed fragmentation of technical expertise and the crucial information that informs the “Problem analysis” and “Design” phases of innovation in healthcare delivery, my co-founder Lisa Rotenstein MD MBA and I

founded CareZooming in April 2018. CareZooming is a social enterprise organization which aims to connect on-the-ground clinician innovators to one another for evidence-based guidance and expertise to jumpstart their next healthcare delivery project. CareZooming consist of a web-based platform¹ for on-the-ground clinicians with the evidence and expert advice they need to implement their next healthcare delivery project. The platform consists of a publicly accessible web-based database where clinicians can access summaries of healthcare delivery projects that have been implemented from around the nation. Clinicians can search and filter these projects by criteria such as condition, care setting, technology, and budget to find examples of projects that could be adapted to the specific contextual needs of their clinical setting. CareZooming uses its database to match clinicians seeking tactical implementation advice with peers who have implemented similar projects to facilitate 30-minute conference call-based “eConsults for healthcare delivery” in its CareZooming Connections service. CareZooming also facilitates internal healthcare delivery innovation resource sharing and expert matching within integrated healthcare systems, which often struggle to coordinate implementation efforts between tens to hundreds of disparate ambulatory care sites and clinics.

The development of CareZooming has undergone numerous iterations since August 2017 and we will now describe the platform creation journey undergone by the author and her co-founder. In August 2017, Dr. Lisa Rotenstein, then a first-year resident physician at Brigham & Women’s Hospital in Internal Medicine - Primary Care, approached Ashley Shaw (the author), her former classmate at Harvard Medical School, to brainstorm a new project idea. Rotenstein and Shaw met through their work on the Harvard Medical School Center for Primary Student Leadership Committee. Rotenstein mentored Shaw as Shaw applied for the MD/MBA joint degree program at Harvard Medical School and Harvard Business School, which Rotenstein had completed in 2017. Rotenstein and Shaw had had similar work experiences previous to matriculating at Harvard Medical School in healthcare administration supporting medical directors in implementing new healthcare delivery and quality improvement projects. They also shared a passion for studying innovations in healthcare delivery. Over the phone, Rotenstein asked Shaw for her thoughts on an project Rotenstein had started during her MD/MBA program to create an online database of healthcare quality improvement projects that would help on-the-ground clinicians more easily start and scale new innovation projects in their clinics and hospitals with the ultimate aim of accelerating improvement in patient outcomes. The idea immediately resonated with Shaw, who had longed for such a resource during her days as a junior healthcare administrator in a poorly resourced urban skilled nursing facility. Over a follow-up telephone call a week later, Rotenstein asked Shaw to embark on the project as co-founder, positing that Shaw would be able to leverage the resources of the MD/MBA program she was about to begin to help inform the project. Shaw could not turn down the offer and the two started strategizing on how to begin.

Rotenstein had begun contacting clinical leaders in her personal network to validate the need for such a product and had received early and enthusiastic feedback, although the business model remained unclear. Shaw and Rotenstein re-formulated the original project idea as “creating an UpToDate for healthcare delivery” and coupling the database with a decentralized expert network that they posited as an “eConsults for healthcare delivery” service to allow on-the-ground clinicians to access the know-how and technical expertise gained from colleagues’ lived experiences with innovation in a setting that matched that of the clinician seeking advice. It was important to Shaw and Rotenstein that the product they created helped “democratize” healthcare delivery and be accessible and affordable for the everyday clinicians in all types of settings who bore the burden of implementing new healthcare delivery innovations but who often could not afford to access expensive industry conferences or to engage boutique consulting services. They decided to start covering topics in ambulatory primary care but remained agnostic to setting.

Shaw and Rotenstein began contacting their former clinical preceptors and professors at Boston-area healthcare provider organizations affiliated with Harvard Medical School whom they knew were carrying out the types of innovative projects they felt should be in the database. They developed a semi-structured interview template and recruited seven medical and undergraduate students from Harvard Medical School and Harvard College students to help conduct the interviews with clinicians. From the interviews, the students would draft “recipes” or step-by-step guides to implementing the innovative practice from idea formation through pilot implementation that could give readers a first approximation of the essential tasks and resources they might need to mobilize in their own clinic or hospital to replicate an innovation’s success. Shaw and Rotenstein focused on publishing pragmatic information such as organizational context, sources of cost, technologies utilized, and day-to-day workflows that did not often appear in academic research articles detailing the outcomes of these innovations. They also recruited the clinicians whom they interviewed to advise clinicians looking to implement similar projects in similar settings by agreeing to be matched and scheduled for 30-minute conference calls which they named their “CareZooming Connections” service.

Shaw and Rotenstein searched for a business model which would fund the expansion of their database. They identified a need for improved resource-sharing around healthcare delivery innovations between different primary care sites of large integrated health systems. They began to pursue a software-as-a-service (SaaS) business model in which large integrated health systems would purchase institutional licenses to allow their employed and contracted clinicians to share and browse reports of innovative practices undergone by colleagues at other ambulatory clinics within the same healthcare organization so that shared institutional resources could be mobilized to more rapidly scale innovations. To get feedback on this business model, they entered the 2018 Harvard Business School New Venture Competition. They

were selected as one of sixteen semi-finalists in the competition's Social Enterprise Track and delivered a live pitch in front of five social enterprise industry experts and used the feedback to refine their business model. They also developed a pitch deck and began exploratory conversations with venture capitalists.

They began advertising CareZooming by attending annual conferences hosted by the likes of organizations such as the Society for General Internal Medicine, the Institute for Healthcare Improvement, the Family Medicine Education Consortium, the Massachusetts Medical Society, Partners Healthcare Connected Health, and the National Center for Complex Care to solicit new innovation projects and experts to augment their database and CareZooming Connections capacity. They roamed poster sessions inviting poster presenters and panel speakers to have their work featured on the database.

They also began publishing a weekly e-newsletter highlighting new "recipes" to which clinicians could subscribe through the website that hosted their database. Through the newsletter and their website, they also solicited "Requests for Help" from clinicians around the country in order to test their CareZooming Connections "eConsults for healthcare delivery" service in which they would match the requesting party with a clinician whose "recipe" they had previously featured and schedule a 30-minute web-based conference call between the two parties.

CareZooming was accepted into the Harvard Venture Incubation Program for the Summer 2018 season and Shaw accepted a Rock Summer Fellowship to continue working on the product during summer 2018. CareZooming was also accepted into the Harvard Business School Rock Accelerator Program in fall of 2018. Through these programs, Shaw accessed coaches who had been serial entrepreneurs in the healthcare technology industry and innovation advisors who further helped the pair refine their business model, pitch deck, and startup strategy.

In Spring 2019, CareZooming launched a pilot implementation of its internal database & expert network product to assist the Brigham & Women's Hospital Internal Medicine Residency Program in keeping track of resident physician quality improvement projects and to help administrators better match resident physicians to grant opportunities. CareZooming also expanded its content acquisition processes to include summaries of readily available healthcare innovations research articles by establishing content partnerships in which they would cross-promote other popular platforms that featured news in healthcare delivery innovation.

As of February 2019, the CareZooming team had accomplished the following milestones:

- 54 recipes published on CareZooming.com and available to public with 40 recipes in the pipeline (See Appendix 1 for screenshot of online content library)

- 30 healthcare professions student editors recruited and trained from seven healthcare professions schools across the United States
- 7 CareZooming Connections (“eConsults for healthcare delivery”) completed out of 11 total requests
- 505 subscribers to the weekly CareZooming News e-newsletter (See Appendix 2 for screenshot of weekly e-newsletter)
- 2 poster presentations about CareZooming with 1 research award
- 1 pilot launched with 150 resident physician users
- 2 content partnerships with *Healthcare: The Journal* and the Harvard Medical School Center for Primary Care *Review of Systems Podcast*
- \$50,000 raised

To improve the efficacy of CareZooming in reducing clinician burnout by simplifying the work of healthcare delivery innovation, we sought to further characterize the pathways – both cognitive and financial – through which on-the-ground clinicians first explore new innovative practices and evaluate whether such a practice would succeed in their clinic or hospital within the organizational context of their human, technological, and financial resources. The three questions we have sought to answer so far are:

1. How do we characterize users of CareZooming Connection services?
2. What prior knowledge of healthcare delivery innovation processes do students bring to their experience as editors with CareZooming?
3. What are clinician perceptions of current resources to support the information gathering phase of healthcare delivery innovation?

Student Role:

As co-founder, Ashley Shaw engaged equally in all activities in the formation and progression of CareZooming as outlined above, including formulating strategy, product development, talent recruitment and training, establishing relationships with clinician innovators, creating the business model and pitch deck, marketing CareZooming at conferences, contributing to CareZooming research, and presenting original research at conferences and academic meetings. She also created processes to gather user feedback, including online surveys of CareZooming Connection participants, clinicians who contributed projects to the database, newsletter subscribers, and student editors, and conducted 50+ phone calls with clinician leaders to further validate the product progression. She continues to be involved in CareZooming as Co-Founder and President.

Methods:

CareZooming Connection Review Survey (Appendix 3): An online survey was created on Google Forms with separate question sets for the “Teacher,” the CareZooming Innovator who was asked to give advice based on their previous experiences, and the “Learner,” who requested the advice through CareZooming’s “Request for Help” website form. There were eight questions for the “Teacher” and twelve questions for the “Learner,” consisting of short answer, multiple choice, and Likert scale questions probing how well each party felt they had been “matched” to the opposite party’s needs, how much time and money the CareZooming Connection had saved them, what would motivate them to contribute to the platform, and general suggestions for platform improvement. The survey link was sent by e-mail to all CareZooming Connection participants (n=14) in an e-mail delivered directly after the conference call consultation had been completed. No reminder emails were sent. Eight survey responses were received for a response rate of 57%. The data was analyzed with Google Forms.

CareZooming Student Editor Pre-Survey (Appendix 4): An online survey was created with Google Forms. The survey contained 6 items that consisted of short answer and multiple choice items which probed the self-perception of prior knowledge and skills surrounding healthcare delivery innovation possessed by healthcare professions and undergraduate students who signed up in January 2019 to be CareZooming Editors to produce summaries of healthcare delivery innovation projects based on open-access healthcare services research articles. The survey was emailed to student editors (n=30) at the beginning of their remote videoconference student editor training session and students were given 5 minutes during the training session to complete the survey. 21 responses were received for a response rate of 70%.

CareZooming User Survey (Appendix 5):

We utilized startup business user research techniques validated by industry experts at the Harvard Business School Rock Center for Entrepreneurship’s Rock Accelerator Program[®], a student startup business incubator program for which CareZooming was selected for participation from August 2018 to May 2019. These user design and research techniques are largely drawn from author Erika Hall’s book *Just Enough Research*[™] and the well-known “Design Sprint” framework originated by Google Sprint Ventures[™] which are now canonical texts in the fields of design thinking and startup entrepreneurship. E-mail survey questions were drafted by Ashley Shaw and all surveys were made using Google Forms. E-mail survey questions were also reviewed by the Harvard Medical School Center for Primary Care Research team members Erin Sullivan PhD, Director of Research, and Kathleen Dwiell, Research

Manager, and Russ Phillips MD, Director. E-mail survey questions and survey design were also reviewed by the Harvard Medical School Institutional Review Board Quality Improvement Program specialists, who determined an IRB request was not required since the survey did not qualify as human subjects research. The survey was e-mailed daily to discrete batches of 10 subscriber cohorts based on date of subscriber mailing list opt in over a 4 day period, for a total of 30 clinicians surveyed. Clinicians received a \$5 Amazon eGift card upon completion of all items in the survey and were offered an additional \$10 Amazon eGift card if they agreed to a 10-minute semi-structured telephone interview with Ashley Shaw. Results of the survey were analyzed with Google Forms by Ashley Shaw.

Results:

CareZooming Connection Review Survey Results - “Teacher” Responses:

CareZooming Connection Review SURVEY QUESTIONS								
Were you the Learner or the Teacher during this CareZooming Connection?	How well did we match your expertise with your Learner's project needs / pre-defined questions?	How likely are you to recommend our CareZooming Connection service to your colleagues?	What did you like most about the CareZooming Connection?	What did you like least about the CareZooming Connection?	How can we improve future CareZooming Connections?	What would most motivate you to serve as a Teacher for another CareZooming Connection?	What would most motivate you to write another "recipe" for CareZooming?	What would you be willing to pay for a monthly subscription to CareZooming, which would include searchable content database, research assistance on demand, and 1-2 CareZooming connections per month? (For reference: UpToDate is \$40/month)
CareZooming Connection Review "TEACHER" SURVEY RESPONSES								
Teacher - "I was asked to give advice based on my previous work / expertise"	10	8	Opportunity to share ideas with someone doing similar work	My computer set up didn't connect well so I ended up calling in - it ended up working fine, but it sounds have been great to have a practice run to make sure my equipment worked	Maybe initial email can have a little more connection information	I just appreciated the chance to share our work and motivate others to expand services for MAT in primary care	Opportunity to feature your team / colleagues OR your practice	
Teacher - "I was asked to give advice based on my previous work / expertise"	10	10	interesting discussion	nothing that I can think of		funding for my program -		
Teacher - "I was asked to give advice based on my previous work / expertise"	7	10	Like preaching to the faithful			Securing a lead for a longer term paid consulting engagement	Opportunity to attract connections with like-minded colleagues	I would not be willing to pay, and I will elaborate when choosing "Other"
Teacher - "I was asked to give advice based on my previous work / expertise"	10	10	Easily facilitated with minimal logistical needs from me; interesting conversation with someone thinking about similar issues	none		Establishing a longer-term non-paid rapport with your Learner	Opportunity to feature your team / colleagues OR your practice	\$25

“Teachers” felt that they were well matched with partners, with scores ranging from 7-10. 75% of “Teachers” rated themselves as “10/10” likely to recommend the service to their colleagues. 3/4 “Teachers” selected “Opportunity to feature my team / colleagues” as the primary motivation to contribute a project to CareZooming’s database while ¾ “Teachers” stated they hoped to gain longer-term consulting relationships with Learners by serving as “Teachers” again.

CareZooming Connection Review Survey Results - “Learner” Responses:

CareZooming Connection Review "LEARNER" SURVEY QUESTIONS												
Were you the Learner or the Teacher during this CareZooming Connection?	How did you first hear about CareZooming & what led you to contact us looking for a Connection?	How applicable to your project was the information you gained during the CareZooming Connection?	How likely are you to recommend our CareZooming Connection service to your colleagues?	Without the CareZooming Connection, how much time would you have spent obtaining the information you gained?	Without the CareZooming Connection, how long would it have taken you to obtain the information or meeting that you gained?	Without the CareZooming Connection, how much money would you have spent to obtain the information or meeting that you gained?	What would you be willing to pay for a monthly subscription to CareZooming, which would include searchable content database, research assistance on demand, and 1-2 CareZooming connections per month? (For reference: UpToDate is \$40/month)	Would you be interested in learning more about a long-term project support engagement with your CareZooming Connection Teacher / their team?	What did you like most about the CareZooming Connection?	What did you like least about the CareZooming Connection?	What was the single most valuable piece of information you learned during the CareZooming Connection?	How can we improve future CareZooming Connections?
CareZooming Connection Review "LEARNER" SURVEY RESPONSES												
Learner - "I requested or was offered this connection based on my project needs"		8	10	2 - 3 hr	A few hours	\$100-200		Maybe	great way to connect with info that i needed quickly	na	Importance of finding internal champions	
Learner - "I requested or was offered this connection based on my project needs"		9	10	3 - 4 hr	A few months	\$100-200		Maybe	connected to a like minded project coordinator whom i wouldn't have met otherwise		medical systems are paying for the services we offer!	nothing to improve, the way the call was set up was awesome, thank you!
Learner - "I requested or was offered this connection based on my project needs"		10	10		A few months		\$25	Yes	being connected to someone local	zoom did not work for <u>us</u> so we did not have a face to face connectino	that we could do a time motion study at Brooksled	was perfect. thanks so much
Learner - "I requested or was offered this connection based on my project needs"	Our Medical Director forwarded a link	10	10				We have access to UTD & I'm not sure if we would utilize your company enough to warrant a subscription.	Yes	Quick & found someone that has done something similar to what we want to achieve.	No clear, what it is or provides		A little info at the beginning on who you are & what your company provides.

CareZooming Connection Review Survey Results - “Learner” Responses (continued):

“Learners” also felt they were well matched with their partners, with scores ranging from 8-10. 100% of “Learners” would “10/10” be likely to recommend the service to their colleagues. “Learners” reported that the CareZooming Connection saved them an average of 3 hours of work over a period of “weeks to months,” and reported they would have spent \$150 on average obtaining the information otherwise.

Only 50% of “Learners” signified they were interested in longer-term relationships with “Teachers,” with 50% responding “Maybe.”

Two respondents, one “Teacher” and one “Learner” stated they would be willing to pay \$25 for access to the CareZooming database bundled with access to the CareZooming Connections service.

CareZooming Student Editor Pre-Training Survey Results:

11/21 respondents were MD students, 5/21 respondents were undergraduate students, and the remainder were DMD students, NP students, or current or recent MPH students. 0/21 respondents perceived themselves to have “Excellent” understanding of the factors that determine the success of a healthcare delivery innovation, although a larger proportion of undergraduate students rated their own understanding of “Poor” as opposed to the other groups of students.

DEN PNP, DMD, and Masters in Health Informatics Student Responses:

CareZooming Student Editor Pre-Training Survey SURVEY QUESTIONS					
What training program are you in?	Please list any full time work experience you have had prior to joining CareZooming	How would you rate your understanding of the factors that determine the success of a quality improvement project?	What are the main factors a leader should consider when assessing whether a quality improvement project would work in his/her practice setting?	List the 3 most important factors you believe determine the success of a quality improvement project?	What type of career or job description do you hope to have in 10 years?
CareZooming Student Editor Pre-Training Survey SURVEY RESPONSES					
DEN PNP	Maternity simulation lab; teaching assistant MGHHP med-surg & maternity; Group fitness instructor	Good	It is important to consider whether the quality improvement project actually applies directly to the specific setting at hand. For example, a geriatric population may be resistant to increased technology incorporated into certain aspects of their healthcare routine.	Thorough investigation of current situation Multiple perspectives incorporated into QI plan Follow-up	Pediatric nurse practitioner
DMD	Work in dental offices, cashier, work in undergraduate lab	Good	Practice culture, practice employees, accessibility	Cost-effectiveness, outcome satisfaction, efficiency	Pediatric dentist
DMD	Dental Assistant, Research Assistant	Adequate	Whether all members of practice are committed, patient outcomes, cost	Involvement of entire practice, parameters of growth/improvement, patient outcomes	Specialist in dentistry + healthcare innovation
Masters in health informatics	Clinical Dentist, Founder, Clinical associate in Health IT	Good	The main factor a leader should consider is, firstly, availability of credible baseline data so that quality improvement intervention can be carried out on the available data. Secondly, availability of time, as quality improvement projects are majority iterative minimum 6 months are required to see the results from baseline data to set target indicator. Lastly, availability of monetary resources and adaptive organization to act on the recommended changes to improve quality.	The major factor determining success will be, firstly, quantifiable improvement visualized by measuring baseline data and current(actuals) data and whether the change is related to the intervention. Secondly, the reproducible process has been placed by accurate indicators so that the quality improvement intervention is not repeated completely. Lastly, specifically for HCO's the intervention should be aligned with the IHI's (Institute of Healthcare Improvement's) Triple Aim that is, improve the health of populations, reduce the per capita cost of healthcare and improve the patient experience.	I would like to work on various healthcare stakeholder's, insight oriented healthcare projects to devise a solution for optimization of patient's health or healthcare organization workflow. The projects should use patient's/organization's comprehensive data from all the possible sources like EHR, IOT and other databases and give insights of patient's current health status or organization's current performance with the use of data visualization. Ultimately, this insight should be used to create healthcare interventions which leads to change in behavior of the patient or organization and ultimately optimizing health.

Undergraduate & Recent MPH Graduate Student Responses:

CareZooming Student Editor Pre-Training Survey SURVEY QUESTIONS					
What training program are you in?	Please list any full time work experience you have had prior to joining CareZooming	How would you rate your understanding of the factors that determine the success of a quality improvement project?	What are the main factors a leader should consider when assessing whether a quality improvement project would work in his/her practice setting?	List the 3 most important factors you believe determine the success of a quality improvement project?	What type of career or job description do you hope to have in 10 years?
CareZooming Student Editor Pre-Training Survey SURVEY RESPONSES					
Recent MPH graduate	Full time clinical research coordinator (present); technical assistant/consultant at a nonprofit focused on adolescent health (1.5 years)	Good	A leader should consider their teams' capabilities and their material resources.	The most important factors for QI projects are 1) defining the problem clearly 2) having the right metrics to measure progress and 3) having buy-in from leadership and staff.	I plan to be working at the nexus of health services research and implementation after completion a PhD.
Undergrad	Library assistant, research assistant at the Harvard Spelke Lab for Developmental Studies	Adequate	One should consider the language that they are using and whether it is understandable by all involved in the product. Further, they should consider what they need to do from their part to make sure the project runs smoothly. They need to commit and communicate effectively.	Efficiency, being detailed, being clear	I hope to be a pediatrician
Undergrad	Summer camp math teacher (June - July 2018)	Poor	The amount of resources the leader's practice has (number of employees and what they are trained in, how much time/money they have, etc.)	Setting specific goals, having a timeline, good communication within the team	In 10 years, I hope to be in residency with a MD degree, I'm not sure what specialty I want to study yet.
Undergrad	Service Industry, Non Profit Work (Public Interest Research Group, Stop the Over Use of Antibiotics Campaign)	Adequate	Budget, Human Resources, Expertise	Commitment, Budget, Resources	Partner/Investor
Undergrad	Summer tutor, 2018	Adequate	Is it needed/desired by the population in the practice setting, is it practical (resources, cost), what are the possible benefits and harms	How the project was received by the community/community feedback, project outcomes, and implementation	I hope to be working to advance health care as human rights, particularly in infectious diseases, through systemic and intersectional lenses in the next 10 years
Undergrad	NA	Poor	A leader should consider the culture and the beliefs or the mindsets of their people. They should first ask the individuals what they think would be the best solution and then integrate their ideas into the the quality improvement project.	The three most important factors are people, process, and product. I think considering how the people are affect, the efficacy of the process or the means, and the impact of the product determine the success of a quality improvement project.	Oncologist, healthcare policy analyst

MD Student Responses:

CareZooming Student Editor Pre-Training Survey SURVEY QUESTIONS					
What training program are you in?	Please list any full time work experience you have had prior to joining CareZooming	How would you rate your understanding of the factors that determine the success of a quality improvement project?	What are the main factors a leader should consider when assessing whether a quality improvement project would work in his/her practice setting?	List the 3 most important factors you believe determine the success of a quality improvement project?	What type of career or job description do you hope to have in 10 years?
CareZooming Student Editor Pre-Training Survey SURVEY RESPONSES					
MD	Healthcare consulting.	Adequate	Economics, scalability, patient / target population of intervention.	Financial affordability / cost-benefit analysis; Applicability of intervention to specific patient / practice setting; Community engagement and buy-in.	Practicing clinician, with an eye for healthcare business and other ventures!
MD	None	Adequate	Culture of the organization, availability of resources, trade-off between quality and quantity	Clear/ Quantifiable markers, organizational buy-in, Innovation	Pediatric clinician and Health Policy/ System Design
MD	None	Poor	Resources available, mindset and goals of team, examples of previous changes/improvements within the practice setting	Willingness/shared goal of group, feasibility (cost, resources), clearly defined objective and plan	Medical doctor
MD	Clinical Research Coordinator for two years	Adequate	How feasible it is in the setting of his/her practice; how efficiently it can be incorporated into daily practice; if there are enough resources and personnel to carry out the project	Well-researched; feasible; cost-effective	I hope to work in an academic setting, and work in a specialty where I can carry out research alongside clinical duties
MD	1 year in a basic science lab at UC Berkeley as a Junior Research specialist working on molecular mechanisms of itch, touch, and pain.	Good	Size of the practice vs size of QI study, geographic location, sufficient trained personnel to roll out the project, buy-in from his/her practice team, concordance of practice setting (i.e. academic QI project into academic practice setting), budget to make needed changes.	1. Buy-in and enthusiasm from the team implementing the project. 2. Sufficient time and resources to properly execute the project. 3. Continuous monitoring of process measures to determine how it is going.	I hope to be a surgeon, most likely in orthopaedics, at an academic medical institution. I hope to incorporate systems improvement and quality improvement work into my career in the surgical setting.
MD	research asst at childrens hosp	Good	feasibility, cost	feasibility, usability, relevance	doctor
MD	None	Good	Goal, feasibility in the context of their constraints, resources	1. Fit of the project at addressing the unmet need 2. Adaptation of the project to the specific constraints of a setting 3. Measurement of outcomes and change of the project over time	Practicing physician with an administrative role in healthcare delivery/QI
MD		Adequate	Transferability, sustainability, cost-effectiveness, scale, outcome metrics	Sustainable, efficacious, cost-effective	Global health medical development
MD	(1) Practice Manager, Concierge Private Practice; (2) Care Coordinator, Memorial Sloan Kettering; (3) Consultant, IBM	Poor	Technological barriers, human behavior patterns, resources	Cost savings, improved knowledge/awareness, better patient outcomes	Clinician in academic medicine, advisor to healthcare start-ups
MD	Clinical Research coordinator	Good	If there is enough enthusiasm and support from everyone who may be significantly affected by the project and need to change the way they practice in order for it to work, cost, practicality and time, effort needed versus reward	PDSA cycles, understanding the current state before trying to improve upon it, recognizing the different people/teams/workflows that a potential project may effect.	Practicing physician, epidemiological and clinical research
MD		Good	Whether it would fit their patient population or is a need among their patient population, how feasible it is to implement given the resources/support available in a specific practice setting, is it sustainable and likely to make a tangible long-term impact	Better health outcomes, patient satisfaction, financial viability	I hope to have career combining clinical medicine and health policy/advocacy work

CareZooming.com User Survey Results:

CareZooming User Survey SURVEY QUESTIONS											
How did you first learn about CareZooming?	What role do you play in healthcare (if applicable)? (Physician, nurse, healthcare administrator, social worker, therapist, population health, corporate strategy)	You read about an intriguing new clinical program (i.e. telemedicine mental health visits or diabetes group visits). What 2 factors matter most to you when you evaluate whether a program will "work" in your clinic/hospital?	In a few words, walk me through your quality improvement / practice management / clinical innovation duties in a typical WEEK in your current job:	How much \$\$ will be spent on research and planning for your team's next quality improvement project?	What are you spending the majority of that \$\$ on? List your team's top three quality improvement research / planning costs.	You have an idea to start a new program in your clinic or hospital (i.e. telemedicine mental health visits or diabetes group visits). What are the top 3 online resources (i.e. Google, PubMed, NEJM, etc.) that you currently use to further research your idea?	For each of these resources, how have you used this resource to inform your innovation efforts in the past? In a few words, please give us a concrete past use case for each resource.	Using the resources you mentioned, what % of the time are you able to directly apply the information you obtained to implementing the QI project at hand?	Using the resources you mentioned, what % of the time are you able to establish contact with an innovator who may be able to offer you lived experiences?	Using the resources you mentioned, what % of the time when you are able to connect with someone are they matched well to answer your questions?	Where do you currently publish or share your projects? Please list up to five sources.
CareZooming User Survey SURVEY RESPONSES											
	Strategy, Innovation	Improved Patient/Provider Engagement / Satisfaction, Ability to Directly Bill for Project/Program	Primary care practice transformation, patient engagement, and safety	\$1001-3000	Staff time	Google, Advisory Board, GPIN, PUBMED, IHI	Searching their databases to identify best practices	6	8	5	NEJM, BMJ, HEALTH AFFAIRS
from Ashley Shaw	Physician	Tech Resources (i.e. Same EMP), Project Cost Range	weekly staff meetings--review of planned care goals and needs, Complex Care meetings for complicated/ patients with multiple needs	<\$100	patient outreach	EPIC data collection, Up to date	EPIC patient lists-- for planned care, Up to Date for rapid literature search	2	1	2	Ambulatory quality measures

CareZooming User Survey Results (continued):

One surprising finding was that the respondent with high-level clinical leadership responsibilities perceived that he or she was not able to apply information directly to implementation 40% of the time, despite being able to name more resources for information. The first respondent reported a much higher success rate (80%) at being able to connect with an innovator with lived experiences than the second respondent (10%) who identified as a Physician, but the first respondent felt that the connection made was well matched to their needs only 50% of the time.

Discussion:

The CareZooming Connection Review survey responses provide feedback on how well we are delivering on one of our core customer value propositions, which can be stated as “With our CareZooming Connections, we can help clinicians access technical expertise well matched to their needs more quickly than they would otherwise access.” As all individuals who identified as “Teachers” had previously contributed a project to the CareZooming database, we were interested in probing what would motivate them to serve as “Teachers” again and/or to promote a future project on the CareZooming database, and the results suggest that these individuals were more motivated by the opportunity to publicize their team’s and colleagues’ work than any expected value of future paid consulting engagements garnered through the website when it came to contributing a “recipe” but the opposite held true for when it came to acting again as a “Teacher” in a CareZooming Connection. The discrepancy between the qualitative answers to these two sequential items signified that “Teachers” valued contributing their time more highly than contributing their past work. That “Learners” were less likely to be interested in maintaining a long-term relationship after the CareZooming Connection than “Teachers” could signal that “Learners” viewed the CareZooming Connections serve as a source of a la carte one-time consultation instead of a service providing access to long-term relationships with experts in the field.

Two respondents, one “Teacher” and one “Learner” stated they would be willing to pay \$25 for access to the CareZooming database bundled with access to the CareZooming Connections service. If this willingness to pay is compared against the \$150 on average that “Learners” reported saving with our CareZooming Connections service they would have spent obtaining the information by other means, this estimated supportable price for one CareZooming Connection is 16% of the perceived “value” to Learners, which is in line with typical SaaS price-to-value ratios. One notable implication of this survey data, however, is that the estimated supportable price suggested by this survey of \$25/month for access to one CareZooming Connection per month would not cover the market rate of compensation for an expert consultation of \$60/hour offered by other leading expert network services such as GLG, and thus the unit economics of the eConsults service would need to be altered to support a sustainable business model.

We undertook the CareZooming Student Editor Pre-Training Survey to better understand the baseline knowledge around healthcare delivery innovation of the students we attracted from across the United States to work with CareZooming to produce “recipes.” One striking observation is that even students who had significant previous full-time work experience in healthcare operations did not rate their own prior understanding as “Excellent,” although these responses support our hypothesis that students are motivated to work for CareZooming because they want to improve their knowledge base in these topics. These results suggest that students’ current or recent undergraduate or healthcare professions education

curricula, even at the masters' level, do not prepare students to feel confident in their knowledge and skills to tackle healthcare delivery innovation challenges.

We designed the CareZooming User Survey to better understand our clinician subscribers' perceptions of the utility of current resources in the information-gathering phase that is inherent in the transition between the AHRQ "Problem Analysis" and "Design" phases of healthcare delivery innovation. We interpreted our first respondents' results to signify that this clinical leader would agree with this statement: "Despite my extensive knowledge, expertise, and experience in clinical transformation and quality improvement, I am no more likely than not to be able to connect with someone through my existing resources who can satisfactorily answer the questions I need answered to start my next healthcare delivery implementation."

We designed the final three CareZooming User Survey questions – "Using the resources you mentioned, what % of the time are you able to directly apply the information you obtained to implementing the QI project at hand?," "Using the resources you mentioned, what % of the time are you able to establish contact with an innovator who may be able to offer you lived experiences?," and "Using the resources you mentioned, what % of the time when you are able to connect with someone are they matched well to answer your questions?" to reflect our hypothesis that finding relevant information, using that information to connect with an expert, and evaluating the utility of the information provided by the expert to the task at hand represent a sequence of events that increase a clinicians' chances of succeeding at implementing a healthcare delivery innovation project if these steps are completed efficiently and in order. With this assumption in mind, if we interpret our respondents' answers to these questions as their % success rate at completing each step in this essential sequence of events, then a remarkable pattern emerges. By multiplying the perceived probabilities of success, one can extrapolate that our "quality improvement leader" respondent succeeds in completing this sequence of events to her satisfaction only 25% of the time, and the "everyday physician" respondent succeeds in completing this sequence of events to his satisfaction only 0.4% of the time. As the capability to engage in and lead quality improvement initiatives becomes a core clinician responsibility in the age of value-based healthcare, increasing population health management, and panel management duties, these extrapolated % success rates of completing this sequence of events seems remarkably low. These extrapolated % success rates suggest that our respondents have had past experiences where they felt ill-prepared by their current resources to succeed in these preliminary tasks that may be essential to implementation of a new healthcare delivery intervention. We believe that the discrepancy between the expectations of success inherent in their core job responsibilities as clinical leaders (i.e. they are expected to perform this duty successfully 90-100% of the time) and their perceptions of their low actual success rate in completing these essential tasks (0.04%

to 25%) may also contribute to frustration, feelings of burnout, and a sense of helplessness at the scope of the problem.

Limitations: The sample sizes for all three surveys are small and results may not be generalizable. CareZooming Student Editor Pre-Training Survey results are anonymous and correlations of any changes in knowledge captured by the anticipated Post-Intervention Survey results will be difficult to attribute to individual student editors' trajectories. CareZooming Student Editor Pre-Training Survey responses neglected to distinguish between pre-clinical and advanced MD students, which may form an important distinction in terms of exposure to healthcare delivery innovation in the formal medical school curricula. The CareZooming User survey is still accepting responses.

Suggestions for Future Work:

Future work studying the CareZooming Connections participants should include demographic characterization of "Learners," most frequent topics for which "Teachers" are requested, and more nuanced willingness to pay questions.

Future work studying CareZooming Student Editors includes conducting a "Post-Intervention" survey at the end of the academic semester in May 2019 when students decide whether or not to continue working as a CareZooming Student Editor. Future work studying the CareZooming student editors' pre-training and post-intervention survey responses should probe whether achieving a certain degree of healthcare professions education (i.e. MD, DMD vs. MPH or undergraduate) is correlated with self-perception of understanding of the factors involved in healthcare delivery innovation and/or performance as a CareZooming Student Editor as determined by the Co-Founders and our Director of Content. . Further work benchmarking responses of clinical leaders to the question "Using the resources you mentioned, what % of the time when you are able to connect with someone are they matched well to answer your questions?" to client satisfaction rates with healthcare consulting services and general consulting services is warranted to determine whether healthcare delivery clients are uniquely underserved in the quality of technical expertise matching services.

Further research directions include exploration of the correlation between clinician provider satisfaction, burnout, and self-perceptions of competence at completing other core clinical leadership tasks and responsibilities are warranted. Further validation of the actual set of tasks and sequence of events expected of clinicians engaging in quality improvement is also warranted.

In terms of expanding CareZooming, future work to better understand the needs of our target customers and users will include installing website data analytics to track individual recipe "views" to better understand most appealing topics; developing a dashboard to track metrics such as # of recipes

featured by clinical setting, topic area, technology, and budget range; automating identification of subscriber types to better understand the breakdown between user subtypes that form our subscriber base, including clinical, administrative, innovation, strategy, research, academic, director, executive, and C-suite level subtypes; and studying geographic demographics of our subscriber base. Future product features currently in the pipeline include automation of content screening from PubMed and ClinicalTrials.gov, ability to convert text from PDF research poster files into text that can be inputted into our “recipe” format, a scalable CareZooming Connections platform, and authorized user sign-in functionality for our internal learning platform product.

Conclusions:

We have proven the feasibility of developing a database to drive ambulatory healthcare and that such a database can not only attract a diverse set of contributors but can also fuel organic subscriber growth. We have proven that both undergraduate and healthcare professions students from across the nation can satisfactorily produce content pieces highlighting healthcare delivery innovation projects that are interesting to clinicians.

Our survey results indicate that CareZooming Connection “Learners” save on average 3 hours and \$150 with our service and are very likely to recommend the service to colleagues, while CareZooming Connection “Teachers” value contributing their time spent advising others over a conference call more highly in terms of future economic payout than they value time spent promoting past work on the CareZooming database. Student editors rate their prior knowledge of healthcare delivery before training as “Poor” to “Good” but not “Excellent” despite having had extensive full-time work experience in healthcare settings. The two clinicians who have responded to the CareZooming User survey to date perceive remarkably low rates of success at connecting with peer experts who are well matched to their implementation needs.

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Appendix 1: CareZooming.com Content Library – Accessed 21 February 2019

Making Healthcare Better, Faster

CareZooming

RECIPES TEAM INNOVATORS ADD PROJECT CONNECTING ADVISORS METRICS REGISTER LOGIN Q

Recipes

Search ...

Tags

Tech

Org Type

Budget

Filter

Improving Multicultural Depression Screening and Follow-up via Multilingual and Standardized Tools @ Harrisonburg Community Health Center

This quality improvement project aimed to improve depression management by offering both universal screening in several languages and additional tools for treatment decision-making and follow-up...

Engaging Substance Use Disorder (SUD) Patients in Outpatient Care via Implementation of ‘Recovery Coaches Building the Bridge for Care Transition’ @ Arms Acres

This project aimed to demonstrate the value of adding recovery coaches to the multidisciplinary team at Arms Acres in order to improve transitions of care...

Expanding Nursing Role via RN “Co-Visit” Model @ Clinica Family Health

A multi-site community health center implemented a care model expanding nurses’ roles in intake, documentation, and care plan communication, working alongside providers in “co-visits.”

Achieving IBD Clinical Trial Recruitment in a Day via Digital Medicine Platform @ Mount Sinai Health System

Digital recruitment of patients for clinical trials is an efficient, effective way to enroll patients more quickly in clinical trials for inflammatory bowel disease (IBD).

Need research help or advice?

Looking to answer healthcare delivery questions i.e. *"Who's done work like this in diabetes/weight management/behavioral health integration before?" "How much will this cost?" "What types of patients are best served?"*

We can help - [Email us a few bullet points about your project needs!](#)

[View this email in your browser](#)



CareZooming is a tool that connects clinical leaders to the knowledge and expertise they need to improve care delivery.

[Learn more.](#)

Improving Depression Screening & Follow Up in a Multicultural Setting

Did you know depression screening and follow-up ranks among the lowest-reported measures of the [Medicaid Adult Core Set](#), despite being a measure endorsed by the [National Quality Forum](#) and [Healthy People 2020](#)? Many of you know from experience that screening for and treating depression in a multicultural patient population requires more nuance, and this population can experience under-diagnosis and under-treatment. [Check out our primer by Jacqueline You on the efforts of the team at Harrisonburg Community Health Center, a Federally Qualified Health Center located in central Virginia in the rural town of Harrisonburg, which improved depression management by offering both universal screening in several languages and additional tech-based tools for treatment decision-making and follow-up tracking.](#)

Implemented your own depression screening + follow up intervention? We would love to feature it - tell us about it [here!](#)

Top Challenge?

"While the options in the shared decision-making tools were well-received by patients, there was uncertainty about the purpose of a referral to behavioral health."

Top Benefit?

"PHQ screening rates increased from 32.5% at baseline to 85.2% at the end of the project."

Looking for something else?

We have collections of "how-to" recipes on [practice management](#), [social determinants of health](#), [diabetes management](#), [digital health + tech integration](#), [opioid management](#)

Appendix 3:

CareZooming Connection Review Survey – Google Forms, Accessed 25 February 2019

QUESTIONS

RESPONSES

Section 1 of 3

CareZooming Connection Review

Form description

Were you the Learner or the Teacher during this CareZooming Connection?

☐ Learner - "I requested or was offered this..."

☐ Teacher - "I was asked to give advice ba..."

☐ Both

Continue to next section

Section 2 of 3

CareZooming Connection - Teacher Review

Description (optional)

How well did we match your expertise with your Learner's project needs / pre-defined questions?

0 1 2 3 4 5 6 7 8 9 10

Not well at all

You matched us perfectly!

How likely are you to recommend our CareZooming Connection service to your colleagues?

0 1 2 3 4 5 6 7 8 9 10

Not likely at all

Extremely likely

What did you like most about the CareZooming Connection?

Short answer text

What did you like least about the CareZooming Connection?

Short answer text

How can we improve future CareZooming Connections?

Long answer text

What would most motivate you to serve as a Teacher for another CareZooming Connection?

☐ Getting paid for time spent on the CareZ...

☐ Securing a lead for a longer term paid co...

☐ Establishing a longer-term non-paid rapp...

☐ Publicity for your work that has been fea...

☐ Other...

What would most motivate you to write another "recipe" for CareZooming?

☐ Securing leads for a longer term paid co...

☐ Opportunity to attract connections with l...

☐ Publicity for your work or clinic featured ...

☐ Opportunity to feature your team / collea...

☐ Other...

What would you be willing to pay for a monthly subscription to CareZooming, which would include searchable content database, research assistance on demand, and 1-2 CareZooming connections per month? (For reference: UpToDate is \$40/month)

☐ \$15

☐ \$25

☐ \$40

☐ \$50+

☐ I would not be willing to pay, and I will el...

☐ Other...

Submit form

Section 3 of 3

CareZooming Connection - Learner Review

Description (optional)

How did you first hear about CareZooming & what led you to contact us looking for a Connection?

Short answer text

How applicable to your project was the information you gained during the CareZooming Connection?

0 1 2 3 4 5 6 7 8 9 10

Not applicable at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 100% applicable

How likely are you to recommend our CareZooming Connection service to your colleagues?

0 1 2 3 4 5 6 7 8 9 10

Not likely at all ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Extremely likely

Without the CareZooming Connection, how much time would you have spent obtaining the information you gained?

- ☐ 0 - 1 hr
- ☐ 1 - 2 hr
- ☐ 2 - 3 hr
- ☐ 3 - 4 hr
- ☐ 4 - 5 hr
- ☐ More than 5 hrs

Without the CareZooming Connection, how long would it have taken you to obtain the information or meeting that you gained?

- ☐ A few hours
- ☐ A few days
- ☐ A few weeks
- ☐ A few months

Without the CareZooming Connection, how much money would your practice have spent to obtain the information or meeting that you gained?

- ☐ \$0
- ☐ \$0-100
- ☐ \$100-200
- ☐ \$200-300
- ☐ \$300+

What would you be willing to pay for a monthly subscription to CareZooming, which would include searchable content database, research assistance on demand, and 1-2 CareZooming connections per month? (For reference: UpToDate is \$40/month)

- ☐ \$15
- ☐ \$25
- ☐ \$40
- ☐ \$50+
- ☐ I would not be willing to pay, and I will el...
- ☐ Other...

Would you be interested in learning more about a long-term project support engagement with your CareZooming Connection Teacher / their team?

- ☐ Yes
- ☐ No
- ☐ Maybe

What did you like most about the CareZooming Connection?

Short answer text

What did you like least about the CareZooming Connection?

Short answer text

What was the single most valuable piece of information you learned during the CareZooming Connection?

Long answer text

How can we improve future CareZooming Connections?

Long answer text

Appendix 4:

CareZooming Student Editor Pre-Survey – Google Forms, Accessed 25 February 2019

CareZooming Editor Pre-Survey

Thanks for taking this brief survey - your responses will help us enhance the CareZooming experience for all editors.

What training program are you in?

- ☐ Undergrad
- ☐ MD
- ☐ MPH
- ☐ Other:

Please list any full time work experience you have had prior to joining CareZooming

Your answer

How would you rate your understanding of the factors that determine the success of a quality improvement project?

- ☐ Poor
- ☐ Adequate
- ☐ Good
- ☐ Excellent

What are the main factors a leader should consider when assessing whether a quality improvement project would work in his/her practice setting?

Your answer

List the 3 most important factors you believe determine the success of a quality improvement project?

Your answer

What type of career or job description do you hope to have in 10 years?

Your answer

Appendix 5:

CareZooming.com User Survey – Google Forms, Accessed 21 February 2019

CareZooming.com User Survey

For all questions referencing CareZooming content, you can visit [CareZooming.com/recipes](https://carezooming.com/recipes).

This survey should take 5 minutes to complete.

Please forward this survey to your colleagues in the workplace to give them a chance to earn a \$5 Amazon eGift Card as well!

*** Required**

Please enter the e-mail address where you would like our \$5 Amazon eGift Card to be sent upon completion of all items in this survey. *

Your answer

Would you like to sign up for CareZooming News, our weekly e-newsletter? *

☐ YES

☐ NO

☐ ALREADY SUBSCRIBED

Would you be willing to speak over telephone to a CareZooming team member for 10 minutes and earn an additional \$10 Amazon gift card? If YES, please sign up for a telephone slot at your convenience at calendly.com/ashleyyshaw. *

☐ YES

☐ NO

How did you first learn about CareZooming? *

Your answer _____

What role do you play in healthcare (if applicable)? (Physician, nurse, healthcare administrator, social worker, therapist, population health, corporate strategy) *

☐ Healthcare Administrator

☐ Physician

☐ Nursing

☐ Social Work

☐ Case Management

☐ Strategy

☐ Innovation

☐ Other: _____

You read about an intriguing new clinical program (i.e. telemedicine mental health visits or diabetes group visits). What 2 factors matter most to you when you evaluate whether a program will "work" in your clinic/hospital? *

- ☐ Tech Resources (i.e. Same EMR)
- ☐ Same Specialty
- ☐ Similar Clinical Setting (AMC, Community Hospital, Outpatient Clinic)
- ☐ Improved Quality Metric Performance
- ☐ Ability to Directly Bill for Project/Program
- ☐ Project Cost Range
- ☐ Improved Patient Outcomes
- ☐ Improved Patient/Provider Engagement / Satisfaction
- ☐ Personnel Resources (i.e. You also have PAs/MAs/PTs/NPs/CHWs/PHMs in your practice)
- ☐ Similar Patient Population (Demographic, Payer Source)
- ☐ Other: _____

In a few words, walk me through your quality improvement / practice management / clinical innovation duties in a typical WEEK in your current job: *

Your answer _____

How much \$\$ will be spent on research and planning for your team's next quality improvement project? *

- ☐ <\$100
- ☐ \$100-500
- ☐ \$501-1000
- ☐ \$1001-3000
- ☐ \$3001+

What are you spending the majority of that \$\$ on? List your team's top three quality improvement research / planning costs.
*

Your answer

You have an idea to start a new program in your clinic or hospital (i.e. telemedicine mental health visits or diabetes group visits). What are the top 3 online resources (i.e. Google, PubMed, NEJM, etc.) that you currently use to further research your idea? *

Your answer

For each of these resources, how have you used this resource to inform your innovation efforts in the past? In a few words, please give us a concrete past use case for each resource. *

Your answer

Using the resources you mentioned, what % of the time are you able to directly apply the information you obtained to implementing the QI project at hand? *

0 1 2 3 4 5 6 7 8 9 10

0% of the time ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 100% of the time

Using the resources you mentioned, what % of the time are you able to establish contact with an innovator who may be able to offer you lived experiences? *

0 1 2 3 4 5 6 7 8 9 10

0% of the time ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 100% of the time

Using the resources you mentioned, what % of the time when you are able to connect with someone are they matched well to answer your questions? *

0 1 2 3 4 5 6 7 8 9 10

0% of the time ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ 100% of the time

Where do you currently publish or share your projects? Please list up to five sources. *

Your answer _____

Know colleagues who would like the chance to earn a \$5 Amazon eGift Card by answering this survey? Enter their e-mail addresses below and we will send it to them!

Your answer

SUBMIT

Page 1 of 1

Never submit passwords through Google Forms.

Endnotes

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· “The sprint is a five-day process for answering critical business questions through design, prototyping, and testing ideas with customers. Developed at GV, it’s a “greatest hits” of business strategy, innovation, behavior science, design thinking, and more—packaged into a battle-tested process that any team can use.” Accessed on <https://www.gv.com/sprint/> on 21 February 2019.