

“How to Build an Innovation Center at Your Institution”

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Mission Statement:

Empowering ACC Healthcare Innovation Section members to galvanize like-minded individuals to create Innovation Centers at their own institutions.

Background:

Recent advances in digital data, analytics, and technology, collectively termed “digital health”, are significantly changing the landscape of health care delivery. The emergence of digital health has led to unprecedented investments and development of novel digital tools and technologies in health care delivery (Figure 1).

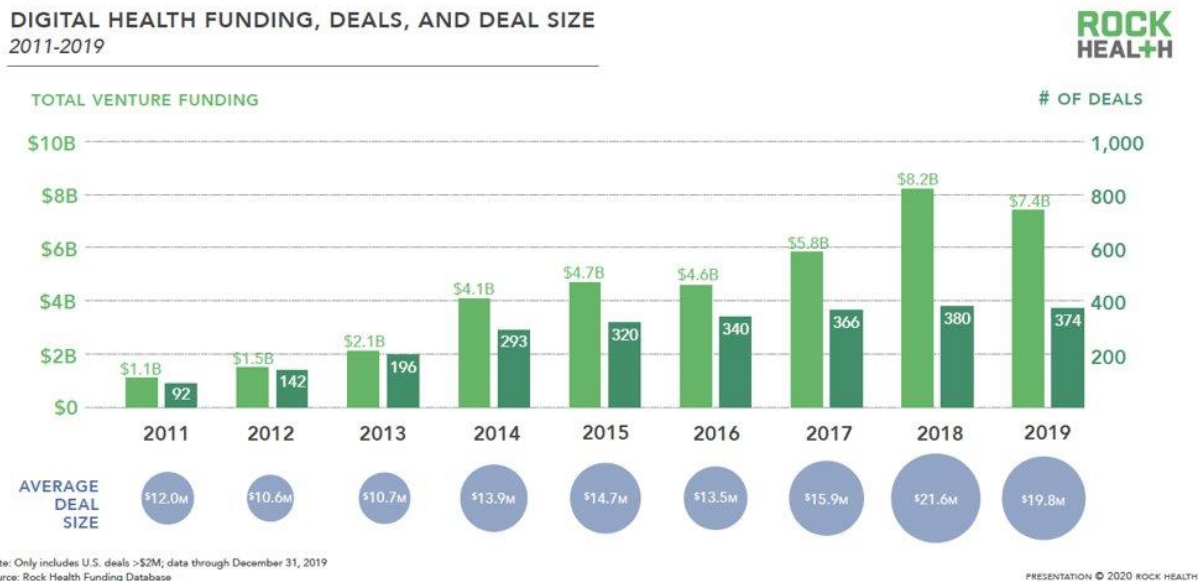


Figure 1: Total Venture Funding for Digital Health in the United States.¹

The rapid development of digital health continues to outpace health systems’ capability to rigorously evaluate their utility. Digital health companies, in turn, are struggling to build a sufficient evidence base to validate their products, particularly those with direct clinical care applications.

In an effort to understand and participate in digital health innovation, many medical centers have begun establishing institution-wide innovation labs. In fact, a 2017 survey found that >70% of larger health systems (>400 beds) have built or are planning on building an innovation lab, as have >50% of academic medical centers.²

These innovation labs typically act as semi-autonomous organizations within their health systems, engaging participants on a long-term basis to address systemic challenges across a health system. Innovation staff often hail from diverse backgrounds, applying clinical, operational, and technological expertise to drive evaluation and implementation of healthcare innovations.

While the individual goals may vary, these innovation labs are generally tasked with identifying, vetting, and implementing innovations for application into a health system to promote improved clinical, operational, and financial outcomes. In some cases, they are also charged with commercializing promising digital health applications.

A strategic priority of the ACC 2017 Roadmap to Innovation is “continuously engage a multidisciplinary group of stakeholders in an “Innovation Collaborative” to foster an understanding of how patient care guides the development and integration of new technologies.”³ Innovation labs can provide a formalized venue for such a collaborative.

The BJC HealthCare/Washington University School of Medicine Healthcare Innovation Lab (St. Louis, MO)⁴ was established in 2017 as an interdisciplinary collaborative between the two organizations - a large, non-profit, health system and a top-tier academic medical center. Based on our initial experience with the Lab, we outline the steps that we have found vital in creating and sustaining an effective institutional innovation lab.

Steps to Building an Innovation Lab:

1. Identify the Needs of your Health System for Innovation

- a. This is the “Why”. Why are you establishing an innovation lab? How do you define innovation, and what do you hope for your innovation lab to achieve?
- b. What is the scope of your lab? Will it focus on a single clinical area, such as cardiology, or across the entire health system?
- c. Once these questions are answered, then performing a **multi-stakeholder needs assessment** is a vital next step.
- d. The BJC/WU Healthcare Innovation Lab experience:
 - i. We define innovation as implementation of a new idea that creates value.

- ii. The Lab’s purpose is to develop and implement novel care delivery models to improve the health of our patients and community. We also hope to foster a culture of innovation, support research efforts in care delivery innovation, and train the next generation of care teams in developing and evaluating care delivery innovations.
- iii. Our Lab’s focus covers the entire health system and associated school of medicine.
- iv. With this vision and scope in mind, we conducted a series of initial interviews with clinical stakeholders from BJC HealthCare, Washington University School of Medicine, affiliated divisions at Washington University, and the St. Louis community, understanding healthcare and innovation needs.
- v. Stakeholder insights were aggregated into the following areas: 1) Health Data Collection, Analysis, and Clinical Use 2) Care Delivery where our patients live, work, and play, 3) Community Health Programs, and 4) Behavioral Interventions.
- vi. These “**Innovation Needs**” have subsequently shaped our project portfolio.

2. Obtain Early and Broad Buy-In

- a. This is the “Who?” Who will you involve in supporting this endeavor?
- b. There are likely already multiple players individually evaluating and implementing healthcare innovations. It is important to break down the existing “Silos of Healthcare Innovation”.
- c. Identify a multidisciplinary group of stakeholders (clinical/administrative/operational) with the common goal of promoting clinical innovations.
 - i. Early buy-in from Executive Leadership is especially key to executing the center’s vision through:
 - 1. Supporting the Lab’s role as a semi-autonomous cross-disciplinary entity
 - 2. Brokering the inevitable operational hurdles
 - 3. Providing financial support as required for innovation study/implementation
 - ii. Early establishment of **cross-disciplinary operational partners** will ease the process of integrating novel innovations and promote institutional alignment. This includes partners with expertise in:
 - 1. Information Technology (IT)
 - 2. Legal and compliance
 - 3. Supply Chain
 - 4. IRB/Research

3. Define “Innovation” and your “Innovation Focus”

- a. This is the “What.” What is your approach to healthcare innovation that will allow you meet your institutional needs?

- i. The BJC/WU Healthcare Innovation Lab experience:
 - 1. Our approach to healthcare innovation is based on **Design Thinking**:
 - a. Developing innovations that *address institutional needs*, are *technological feasibility*, and have an *associated viable business strategy*
- b. Healthcare innovation can come in a variety of phenotypes, each varying in focus and ultimate goal. It is essential to define your center's "**Innovation Focus**" given this diversity of offerings.
 - a. Two essential factors to consider when evaluating novel innovations:
 - i. **Maturity of the Innovation:**
 - 1. **Early-stage innovations** have further potential co-development and investment opportunities, however often require intensive internal resources before clinical integration.
 - 2. **Market-ready innovations** are often more mature and can be more quickly clinically integrated, however often at a higher price to the institution.
 - ii. **Innovation Development Goals:**
 - 1. **External Commercialization:** Opting to invest and develop innovations with the goal of selling to the greater healthcare market.
 - 2. **Internal Operational Value:** Opting to develop innovations with the goal for use within your own institution.
 - iii. **Figure 2** illustrates the varying "Innovation Foci " for several major health systems with innovation centers.

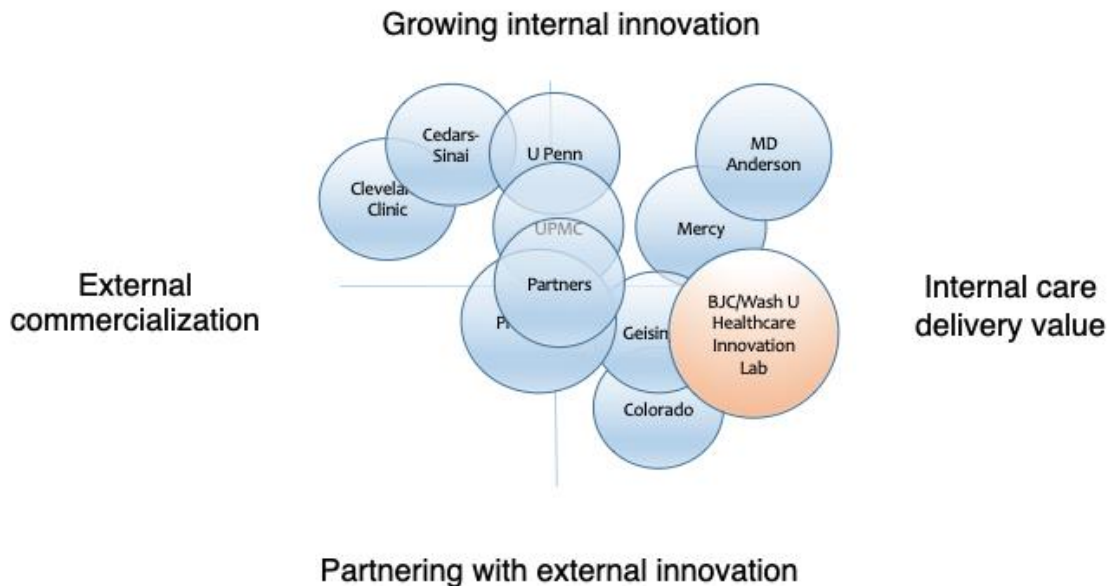


Figure 2: Defining the “Innovation Focus”⁴

4. Secure Funding Source for Innovation

- a. An essential component for the creation of an innovation lab is funding to promote the evaluation, development, and integration of novel health innovations.
- b. Potential sources include:
 - a. **Institutional**
 - i. A variety of internal sources may be viable funding sources if their goals align with those of the Innovation Lab. These sources include:
 1. Clinical Operations/Executive Leadership
 2. Individual Clinical Departments/Divisions
 3. Clinically-adjacent departments at Academic Medical Centers: Public Health, Informatics, Dissemination & Implementation, etc.
 - ii. Just as with every change in healthcare, implementing and evaluating a novel innovation takes time. Ensure that your funding is associated with a **realistic timeline** to assess results (clinical, financial, etc.). For example, most innovations will take several years to mature, so being subject to annual budget justifications may be difficult.
 - b. **External**
 - i. Private Companies

1. Private companies marketing novel healthcare technologies often attempt to pair with healthcare systems to study their products' efficacy.
 - a. Based on the terms of the partnerships, these external companies may fund these trials and provide support to innovation labs.
2. Private Companies may also provide grant support to individual research projects focused on their area of interest

5. Identify Innovation Metrics

- a. It is not easy to quantify pushing forward innovation, nor is it easy to define "success" after implementing an innovation.
- b. It is key from the outset to develop a portfolio of "Innovation Metrics" to guide the Innovation Center as a whole in its efforts to evaluate, implement, and assess novel healthcare innovations. Some representative metrics include:
 - i. **Macro-Level Metrics:**
 1. Numbers of innovations generated, evaluated, and implemented
 2. Composite return-on-investment (ROI) for all innovations receiving investment
 - ii. **Project-Specific Metrics (highly variable based on individual projects):**
 1. Adoption
 - a. Uptake of innovation by users
 - b. Percentage of eligible users using the innovation
 2. User satisfaction
 - a. Patients
 - b. Clinicians
 - c. Other operational stakeholders
 3. Clinical
 - a. Mortality, Hospitalizations, etc.
 - b. Healthcare Utilization: Length of Stay, Readmissions, etc.
 - c. Symptoms
 4. Financial
 - a. Project-specific ROI
 - b. Institution-specific cost savings
 5. If possible, associate with formal clinical research efforts when planning implementation efforts.
 - iii. This will allow for rigorous study of the current state and the direct effects of the novel innovation. This will also help to expand the evidence base for these innovations, which are often lacking in early stages.

- iv. Especially at academic medical centers, there are often many individuals eager to partake in clinical research efforts, especially related to novel technologies in practice.
- v. However, when considering pairing with formal clinical research efforts, consider how it may affect the timeline for innovation implementation. Clinical research may have multiple associated barriers delaying innovation implementation, including review by the IRB, funding for research personnel, and patient recruitment.

6. Employ a Process for Evaluating Innovative Proposals

- a. There is no shortage of novel ideas or technologies in healthcare. There is also certainly no lack of external companies hoping to market their products to healthcare systems. How do we evaluate this “World of Innovation Possibilities” and select those most likely to be successful and address pertinent needs?
- b. An essential responsibility for any Innovation Center is to develop a **rigorous approach to evaluating novel healthcare innovations**.
 - i. With a formal evaluation process in place, each novel innovation posed to your Innovation Center, whether it be internal ideas or technologies marketed by external companies, can be considered in the same objective approach.
 - i. As part of this evaluation, it is important to factor in available resources, both financial and personnel, that would be available for implementation efforts.
 - ii. The BJC/WU Healthcare Innovation Lab takes a 5-step evaluation approach (**Figure 3**).
 1. Does it align with our strategy?
 2. Does it address a problem we are trying to solve?
 3. What is the actual innovation? How does it differ from current approaches?
 4. Then for innovations that are taken on as lab projects, the next step to test in implementation.
 5. Finally, if deemed to be a successful implementation, the innovation will be scaled to the institutional level.

A World of Innovation Possibilities

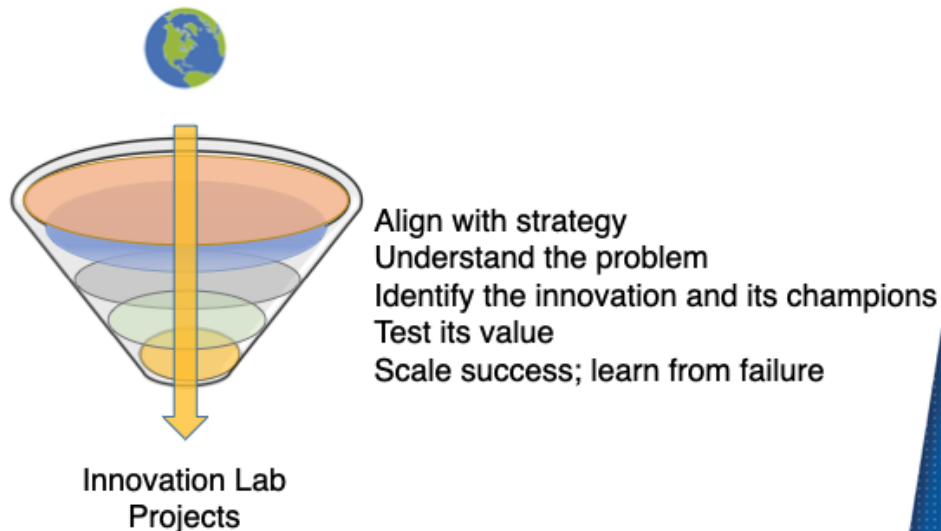


Figure 3: BIC/WU Healthcare Innovation Lab approach to evaluation novel innovations⁴

7. Who/How to Recruit

- When considering a team to test and implement healthcare innovations, **cognitive diversity** key to bridging the gap with current clinical practice.
- Innovation lab roles usually range from highly technical to more operational. An ideal team includes individuals that span these skill sets.
- Consider those with clinical knowledge (e.g. physicians, nurses), health care operations expertise, research experience, and/or facility with data and analytics.
- The “soft skills” of emotional intelligence and persuasiveness are key in innovation labs, as all innovation requires convincing people to change what they are currently doing for something new. Labs rarely have direct authority over health care operations, so “influencing” is a necessary skill.

8. Develop a strategy for successfully integrating innovation

- When planning integration of a novel healthcare innovation, an upfront **needs assessments** by all **clinical stakeholders** can lay the framework for effective integration.
- Guided by this needs assessments, employing a **User-Centered Design (Figure 4)** can be an effective approach to guiding implementation, with continual engagement of clinical stakeholders during each step of the process.

UCD process

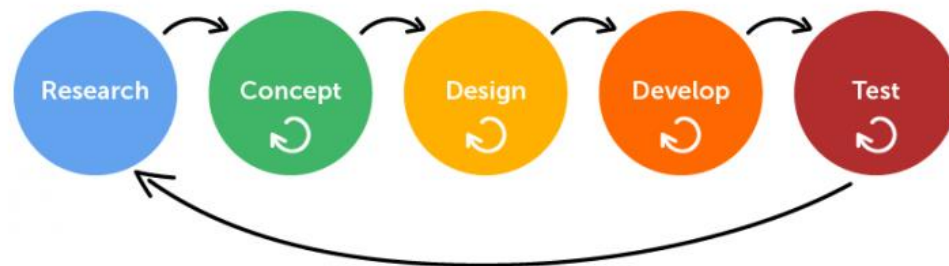


Figure 4: Healthcare innovation integration approach employing User-Centered Design with continual re-engagement of clinical stakeholders⁵

- c. Early alignment of all involved clinical entities is essential to recognize and proactively address potential hurdles in the integration process.
 - i. Identify a “Clinical Champion” to drive implementation and clinical interest.
 - ii. Engage ancillary services and understand their responsibilities regarding implementation (e.g. supply chain, legal compliance, marketing, etc.).

9. The “Hand-off” to Operational Partners

- a. While individual goals may vary, most innovation labs focus on **Identification, Evaluation, Implementation, and Assessment** of novel healthcare innovations.
- b. As such, when an innovation is deemed successful and there are plans for long-term integration, an innovation lab should identify operational partners to “**Hand-Off**” the project for continued oversight. Ideally these partners are recognized at the outset to facilitate this handoff.
- c. Transitioning successful innovations will allow an innovation lab to stay focused on evaluating new innovations, as opposed to transforming into the operational staff for the institution.

Bibliography:

1. In 2019, digital health celebrated six IPOs as venture investment edged off record highs | Rock Health. *Rock Health* <https://rockhealth.com/reports/in-2019-digital-health-celebrated-six-ipos-as-venture-investment-edged-off-record-highs/>.
2. FierceHealthcare. Hospital leaders see promise of digital innovation but struggle to overcome financial and operation barriers. <https://www.fiercehealthcare.com/mobile/hospital-leaders-see-promise-digital-innovation-but-struggle-to-overcome-financial-and>.
3. Bhavnani, S. P. *et al.* 2017 Roadmap for Innovation—ACC Health Policy Statement on Healthcare Transformation in the Era of Digital Health, Big Data, and Precision Health. *Journal of the American*

College of Cardiology vol. 70 2696–2718 (2017).

4. Healthcare Innovation Lab – Transforming care delivery with data, analytics, and technology.
<https://healthcareinnovationlab.org>.
5. UCD vs UX: What’s the difference? <https://www.justinmind.com/blog/ucd-vs-ux-whats-the-difference/>.