Lessons learned from co-creating solutions with users
Overview

Often the simplest solutions can make the biggest impact for health care workers (HCWs) service, efficient processes, and streamlined products. When PATH’s Living Labs observed health facilities that were using the same methods but were not achieving the outcomes expected, we saw an opportunity to change practices and streamline resources to be utilized to the fullest. Likewise, we needed to better frame the challenges upfront, and co-design solutions with users for better service and greater demand. To solve these challenges, Living Labs used a human-centered design (HCD) approach to create sustainable, impactful health solutions. By co-creating with users—including individuals, HCWs, and decision-makers/influencers—to rapidly design, test, and scale solutions to their long-standing challenges, Living Labs accelerates the pace of health innovation. The Living Labs team has engaged over 160 facilities, built a network of at least 1,600 users, and tested 166 prototypes in Kenya and Zambia since 2019.

Living Labs co-developed solutions to motivate frontline immunization HCWs to carry out their critical work to ensure that children receive full immunization coverage. Additionally, our work and expertise span a wide range of health areas including maternal health, infectious diseases management, chronic disease care, nutrition, digital health, and more. Through strategic partnerships, innovative approaches, and a team of skilled professionals, we aim to make a transformative impact on health care systems. Our unwavering commitment to evidence-based practices ensures that we provide effective solutions tailored to unique challenges.

From our collaborative efforts with various stakeholders to address their challenges, Living Labs has compiled valuable lessons learned and actionable recommendations for adoption and ownership by HCWs, ministries of health (MOHs), and other stakeholders.

Process

Living Labs employs a comprehensive “4D” (Discovery, Define, Dream, Design) methodology for co-creation. During Discovery, we diligently identify and understand the problem and user needs, gaining crucial insights into the underlying challenges. During Define, we categorize and highlight the key themes and core insights, building upon the insights gathered from users. During Dream, we prioritize and envision potential solutions and ideas together with the users. And finally, during Design, we build prototypes with users, iterating until a version is accepted.
The following lessons learned apply across the Living Labs methodology. Lessons from specific projects are noted where applicable.

Cross-cutting lessons

Stakeholder involvement

**Communication is key**
Maintain communication with the stakeholders through channels of their choice (e.g., WhatsApp groups). This allows us to keep engagements up to date so that any upcoming activities are not slowed down by reinitiating conversation. While maintaining the same users over time, periodically add new ones who might introduce new perspectives.

**Include local officials**
To allow for ownership and to foster collaboration, the MOH and local authorities need to be involved from the planning to the execution of activities.

**Involve users throughout the process**
It is important to involve users in all four design stages. Their insight at every stage mitigates the risks of making assumptions. During the engagement period, health care providers expressed how encouraging it was for them to get an opportunity to share their challenges and suggest ideas to solve those challenges. (Projects: Bill & Melinda Gates Foundation Immunization, MfM, NNDAK, MD4MD, M-RITE, Diabetes CarePak, ECD, Ellavi UBT, Merck RSV, MR-MAP, IAVI, Shigella, CN-18; see Annex for project descriptions)

**Project highlight**
For the Neonatal Nutrition Digital Adaptation Kit, a digital solution to address inpatient clinical decision-making for support of maternal lactation and newborn nutrition, we used low-fidelity paper sketches to get user feedback before doing the high-fidelity user interfaces. Regularly seeking feedback from users in all stages of design allows quick iterations on low-fidelity prototypes before investing time and resources in high-fidelity prototypes.
Empower stakeholders for HCD progress

All stakeholders in a health system need to learn about the HCD process. Learning about and awareness of the HCD process is important for the continuity of engagement. At several HCD orientations, providers shared advice on the best ways to engage with them. Different cadres of providers in the health care system have unique lessons to share and learn from each other. They are open to learning from one another and utilize any opportunity to share lessons on the improvement of maternal and child care when brought together. This requires skilled facilitation to ensure a safe space is both created and maintained for all users involved.

HCD is agile. While its fluidity ensures that it rightly remains responsive to the context and specific needs of the user, it also requires constant adaptation of approaches and tools, making standardization difficult. It is important to document such changes because they form an important part of the HCD story and highlight how every HCD implementation is, arguably, unique.

Leverage HCW interactions for HCD advancement

It is important to identify influential individuals through interactions with HCWs and harness their passion and influence to advance HCD work (e.g., setting up and managing a community of expert users that may be employed as a source of quick, reliable feedback on various topics).

Incorporate interactive elements during the process

Open innovation requires facilitators to be intentional about including engaging, interactive activities in workshops, such as games and role-playing, to bring the content to life.

Project highlight

Intense co-creation workshops for the Living Labs project to increase immunization HCW motivation required that users focus and work together in teams for long periods of time; hence, they reported low energy. We learned that facilitators need to build in energizer sessions to keep the participants alert and fully immersed in the creative session.
In this initial phase, we diligently identify and understand the specific problem and user needs, gaining crucial insights into the underlying challenges. The following lessons apply to this initial phase.
Enthusiastic HCW engagement results in quality insights

Engaging with a mix of HCWs from different districts allows for knowledge exchange. However, having a few enthusiastic HCWs or champions gives richer insights than engaging with many unenthusiastic ones. Choose quality over quantity.

During our interactions with Early Childhood Development project users in Siaya County, we learned that establishing trust in the confidentiality of shared information is a cornerstone of successful user engagement. Users must feel assured that their data will be handled with utmost sensitivity and safeguarded against any unauthorized disclosure. By empathizing with users, fostering open communication, and involving them as active participants, we cultivated a sense of collaboration and transparency. Addressing any data privacy concerns and offering user control demonstrated a commitment to their well-being. The result is a user experience that feels respectful, reliable, and genuinely dedicated to users’ best interests.

Foster ownership

Involve stakeholders to foster ownership of the HCD process and outcomes to ensure that solutions are contextual and, if necessary, in alignment with the policies and strategies of authorities for easier uptake. For example, the orientation of subnational and national stakeholders in HCD and the inclusion of MOH in the planning and execution of project activities have been critical in mapping out key activities.

“While developing the data management tool for Africa, PATH’s Living Labs engaged frontline health care workers as well as district, provincial, and national ministry of health stakeholders to not just understand needs but also to co-create the product, from design to usability testing.”
— Tony Mapulanga, Design and Innovation Specialist

Identify scalable solutions

Before your engagement, identify preexisting solutions that can be scaled to other facilities. This may help to streamline solution development and to leverage and enhance tested approaches that may have a higher chance of addressing user needs. (BMGF Immunization)

Address HCW motivation factors for holistic solutions

In seeking to address factors affecting health worker motivation, it is important to consider both intrinsic and extrinsic influences and how they interact. A clear understanding of these "triggers" helps designers to create holistic solutions or, at least, brings attention to systemic challenges that may require external intervention. (BMGF Immunization)

Reassess assumptions

Consider identifying and noting assumptions before engaging users and commencing a project because many assumptions can end up not being true, even if they are the HCW’s own. The process of identifying, acknowledging, and validating assumptions is a critical aspect of successful HCD. By recognizing that assumptions might be inaccurate and taking deliberate steps to test them, you enhance the likelihood of creating solutions that genuinely serve users’ needs, resulting in more user-centric and impactful outcomes.
Building upon the insights gathered from users, we categorize and highlight the key themes and core insights, forming a solid foundation for co-creation. The following are lessons learned from the define phase.
Balance stakeholder priorities for informed solutions

Conduct desk research to understand the scope of the problems identified. Many diverse stakeholders and viewpoints require dedicating a balance in prioritizing challenges and opportunities. For instance, what managers and policymakers are interested in may be at odds with what the actual users (i.e., HCWs) are interested in. (NNDAK, CN-18, MfM)

Persistent user engagement results in enhanced insights

User engagement should be continuous. HCWs with whom we have engaged for a prolonged time understand the processes and our expectations.

Tailor tools to contexts

Encourage the trained participants to use tools and procedures that are ideal for their situation and challenge. During this stage you may have identified insights and themes outside of your focus area; hence, it is useful to create a method of identifying what insights will proceed to the next stage if not open for all. This could be done through prioritization. (BMGF Immunization, MD4MD, NNDAK, MfM, Diabetes CarePak)

Project highlight

For Living Labs to increase demand for specific antigen immunization coverage, we had to adjust some of the tools that we previously used. For example, to understand the user, we adjusted the journey maps to fit the current need of understanding the user and thus the adaptation of the journey to health map. The map allows the designers to understand how caregivers’ economic/social situation affects immunization uptake and in turn, the coverage in their area. It helps the designers to understand where the highlights and the pain points in their “map” are. These then become opportunities for innovation.
Dream

This phase involves close collaboration with our users to envision potential solutions and ideas. Following this creative phase, we prioritize the most promising concepts to test. The following are lessons learned from the dream phase.
**Multi-cadre collaboration for tailored solutions**

Convening different cadres of participants to co-create solutions creates targeted solutions that speak to their needs. It is also productive when the different cadres ideate and prioritize the solutions separately for the same design challenge and then reflect on the similarities and differences in the ideas. (BMGF Immunization, NNDAK, MfM, MD4MD, Diabetes CarePak)

**Encourage creative ideation**

Use interactive and engaging icebreakers to allow participants to feel comfortable coming up with wild ideas. For example, a good practice exercise for ideation that helps with building users’ creative confidence would be to share eight ways you could make your home more child friendly.

**Refine and sharing solutions**

Before co-creating a solution, check with the HCWs if they have something similar because some HCWs proactively created innovative solutions to their challenges, and such solutions simply required refinement and introduction to other facilities. (BMGF Immunization, MfM)

**Project highlight**

Users are proactive in finding solutions to their challenges. When engaging with users, find out if there are any previous solutions that have been tried out to solve the same solution. Learn about the experiences and challenges the users experienced and how it can inform the new design. In the MD4MD project, we learned that Kilifi County wanted to implement a similar solution but stalled at funding.
Our user-centric approach continues as we work side by side with users as we develop prototypes that align with their preferences and requirements. Subsequently, we engage in a continuous iterative process, refining the design until we arrive at an accepted version. The following are lessons learned from the design phase.
Engaging MOH officials
Involve the national and county/district MOH officials in the design process. They not only approve field activities but are key in successfully testing, implementing, and sustaining the solutions we develop. (BMGF Immunization, NNDAK, MD4MD)

Encourage honest feedback
Encourage honest and authentic feedback from users on the prototyped solutions. This could be done by reminding them that the solutions should fit their needs and use cases. Authenticity could be achieved by allowing individual and anonymous feedback.

Bridging design and user interaction
Usability testing is crucial to understand design assumptions by revealing differences between how designers expect users to interact with a digital system and how they actually do. Understanding these differences ensures that designs align with user behavior when using a system. (NNDAK)

Efficient user feedback for rapid prototyping
Create avenues and platforms for users to facilitate efficient feedback after every iteration made on the developed solution, such as the immunization appointment diaries we created in Homa Bay and Vihiga counties. This could be in-person or virtual sessions based on the context of users. This feedback enables rapid prototyping.

Leveraging trusted participants
Identify participants who stand out and use them as a trusted resource for quick feedback (e.g., during iteration). This may save time and other resources in feedback-gathering efforts for follow-on interventions. In line with these participants, ensure to engage more than one HCW from each facility for continuity. This limits the effects of staff turnover.

Project highlight
Strategic documentation
Carefully document the iteration process and different changes made to your design as the different versions of the solution can be used in other contexts. For example, one concept developed at Living Labs required the presence of an influential leader for it to solve the health facilities problem while a different facility with a similar problem mentioned that the concept would only be effective if the influential leader was not a part of it. (BMGF Immunization)

In the Measles-Rubella Microarray Patches study design, it was possible to get quality and individual feedback from users by carefully taking the time to ask questions that seek to understand the user’s experience. We also let them know that the study was focusing on understanding the device drawbacks and challenges and that their contribution helped us identify and document those drawbacks and challenges. Group settings for such feedback hindered participation of everyone, as previously experienced in our HCW motivation project concept validation workshops.
Recommendations

These lessons describe several examples from Living Labs that illustrate the challenges stakeholders face and what we learned in improving the quality of essential health service delivery. Frontline HCWs are often motivated to improve the quality of their care, but they do not always know the standards, measurements, and approaches of quality assurance, nor the methods that will achieve and sustain quality improvement.

Living Labs, together with HCWs, provided comprehensive and coherent approaches for addressing key issues in health care delivery. We established a common vision and a forum in which health care stakeholders could collectively discuss matters of concern, as well as a mechanism to connect the activities of health care partners.

Based upon the observations and reflections noted above, the Living Labs team made the following recommendations directed to countries, regions, and global partners:

• Build on Living Labs’ lessons learned, ensuring timely and comprehensive implementation at national levels.
• Have a key focus on countries by placing countries at the center of strategy development and implementation to ensure context specificity and relevance.
• Promote the use of research by countries to accelerate the uptake of vaccines and other health technologies.
• Be flexible to detect and respond to emerging issues.
• Promote the use of data to stimulate and guide action and to inform decision-making.
• Strengthen monitoring and evaluation at the national and subnational levels to promote greater accountability.

Ensuring that HCWs, health care volunteers, and other stakeholders are all motivated to assure and improve the quality of care is critical to promoting better health outcomes. Using the approaches outlined in these lessons, stakeholders can ensure that health care stakeholders have the tools, knowledge, skills, and abilities they need to invest in strategies to achieve a high standard of quality in their practices.

Living Labs, a trusted partner in Kenya and Zambia, is currently exploring expansion into the Democratic Republic of the Congo, Ethiopia, India, Nigeria, Vietnam, and Senegal. Stay up to date on our activities by visiting our website at path.org/livinglabs.
Bill & Melinda Gates Foundation Immunization HCW Motivation: This grant was used to fund iterative testing of innovative user-driven solutions that motivate and support frontline providers to improve the delivery of immunization services at points of access in Kenya and Zambia.

CN-18 Covid Data Backlog Enhancement (CN-18): Although COVID-19 data backlogs are a common challenge across countries, the root causes are multifaceted and need to be further understood in each country’s context to be appropriately addressed. Digital Square conducted a root cause analysis to diagnose the root causes of COVID-19 vaccination data backlogs in Kenya, Senegal, and Tanzania. Living Labs supported the data collection exercise for Kenya. Digital Square used the findings from each focus country to develop unique packages of interventions that can be implemented by country decision-makers.

Diabetes CarePak: Using a human-centered, service design methodology, Living Labs aimed to determine how to increase access to high quality diabetes self-care. Through a multi-sectoral collaboration, Living Labs focused on the needs of people living with diabetes, as well as the constraints they experienced within their ecosystem to ensure that we were solving the system-level root cause issues. As Living Labs designed and tested a holistic solution, in partnership with people living with diabetes and ecosystem stakeholders, we iterated and refined the solution to ensure we were increasing access to safe administration of insulin for PLWD.

Early Childhood Development (ECD): The PATH ECD program has been operating within Siaya County for multiple years with a primary objective to enhance the promotion of Nurturing Care for Early Childhood Development practices in the county.

Ellavi UBT: Together, PATH and Sinapi biomedical have developed the first uterine balloon tamponade (UBT) specifically designed for the management of severe postpartum hemorrhage in low- and middle-income countries—the Ellavi UBT. The Living Labs team is carrying out landscaping analysis and focus group discussions to prepare for the rollout of the Ellavi UBT device.

Exploring the value of a Shigella-containing vaccine: PATH conducted a research study about potential vaccines that may be available in the future to prevent diarrhea. The Living Labs team held in-depth interviews with national stakeholders to get their perceptions of a Shigella-containing vaccine.

Global Health Labs: Living Labs’ collaboration with Global Health Labs focused on reimagining the primary health care (PHC) landscape of countries by understanding their policies and guidelines on health diagnostics. Countries are transitioning from universal health care to PHC due to the increasing need to have a preventive instead of curative health system. A PHC landscaping analysis was done in Ghana, Kenya, Tanzania, Rwanda, Zambia, and Nigeria. The analysis involved data collection to understand the transition of health landscapes by looking at changes in health policies and financing of health care in the selected countries. The research findings from the six countries were presented to Global Health Labs and we are looking forward to the next steps of the study in promoting PHC across the continent.
International AIDS Vaccine Initiative (IAVI): The COVID-19 pandemic highlighted the urgency for rapid and equitable global vaccine access. A vaccine that can be delivered intranasally has the potential to expand global access and transform the vaccine delivery landscape. PATH was funded by IAVI to evaluate two different types of intranasal delivery devices to understand their usability and potential acceptability and feasibility for vaccine delivery in the global pandemic.

Market Dynamics for Medical Devices (MD4MD): Living Labs worked with PATH's Market Dynamics team, the MOH, the Biomedical Department, and county-level health management teams to understand medical device management (the key people, processes, and technologies involved) in Kenyan hospitals focusing on procurement, maintenance, repairs, inventory management, and recommendations of the existing problems. We engaged with stakeholders to prioritize opportunities and fine-tune recommendations; designed or recommended a device management system; generated technical user specifications; and disseminated the findings to the MOH.

Measles-Rubella Microarray Patches (MR-MAP): Microarray patches (MAPs) have the potential to increase Measles and rubella (MR) vaccination coverage and improve health equity. Due to their ease of use, potential thermostability, and size, MAPs could enable new vaccine delivery scenarios including vaccine delivery by lower-level health care providers and house-to-house vaccinations as well as reduce missed opportunities for vaccinations. PATH is serving as a neutral third party to evaluate both MR-MAP technologies in clinical trials, thermostability studies, and programmatic fit/human factors evaluation.

Merck for Mothers (MfM): Postpartum hemorrhage is a top contributor to maternal and newborn mortality globally. Merck for Mothers/MSD for Mothers partnered with PATH's Living Labs to engage health care workers in Kenya to understand barriers and opportunities associated with prevention and management of postpartum hemorrhage.

Merck RSV: This project aims to inform Merck’s infant respiratory syncytial virus (RSV) monoclonal antibody product development efforts by reviewing and collecting feedback on potential delivery systems for RSV immunization of infants.

MOMENTUM (Moving Integrated, Quality Maternal, Newborn, and Child Health and Family Planning and Reproductive Health) Routine Immunization Transformation and Equity (M-RITE): To strengthen routine immunization programs to overcome the entrenched obstacles contributing to stagnating and declining immunization rates and address the barriers to reaching zero-dose and underimmunized children with lifesaving vaccines, Living Labs supported MOMENTUM. In light of the COVID-19 pandemic and resulting disruption of immunization services, M-RITE also supports the MOH in Kenya in maintaining and adapting immunization services and provides strategic support for COVID-19 vaccine introduction and rollout.

Newborn Nutrition Digital Adaptation Kit (NNDAK): PATH Living Labs, in collaboration with stakeholders from Pumwani Maternity Hospital and support from Phillips Foundation, developed the NNDAK to provide data-informed guidance for improved practice to optimize critical feeding and save newborn lives. This will increase and streamline data collected to optimize impactful decision-making in practice and provide real-time feedback to rapidly address issues and adapt practices based on results.