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The value of design in global public health

Targeted and thoughtful application of design in global public health can not only improve projects, programs, and organizations but also save lives.

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The past three decades have witnessed a remarkable evolution of design. The concept has gone from a relatively niche practice to a buzzword gracing the publications of respected thought leaders and outlets such as *Forbes* and *Harvard Business Review*. Today, design has been embraced by leading global companies such as Apple, Disney, and Johnson & Johnson (see sidebar "First thing's first: What is design?") and taught in classrooms at MIT, Stanford, and other top universities.

Successful incorporation of human-centered design in products and services has created huge value for companies. According to McKinsey's 2018 *The business value of design* report, which tracked the design practices of 300 publicly listed companies, those with top-quartile design scores had 32 percent higher revenue growth and 56 percent higher growth in total shareholder returns than comparable peers during the same five-year period.

This pattern of performance holds true across sectors, including banking, consumer packaged goods, and healthcare. The reason for this is simple: rather than imposing preconceived assumptions about the customer when creating products and services, a successful design-based approach starts with understanding the customer's needs and harnessing cross-functional perspectives to identify areas of opportunity. Design is inherently iterative and analytical in nature; with each cycle, the goal is to improve the user experience in a defined and measurable way.

Design can be similarly powerful in global health, where the user and stakeholder groups are numerous—ranging from patients to providers to suppliers to policy makers—with complex and sometimes hidden needs, preferences, and constraints. Harnessing design means focusing on better understanding individuals' needs and motivations, translating these insights into tangible ideas, and iteratively testing and refining prototypes before rolling out a fully baked solution. By taking these steps, global health leaders can bring huge value to public health projects, programs, and organizations—and, of course, to the millions of people and communities they serve.

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First things first: What is design?

Design is an iterative and creative approach that can be used to shape global health products, services, and programs that meet the needs of users and other critical stakeholders.

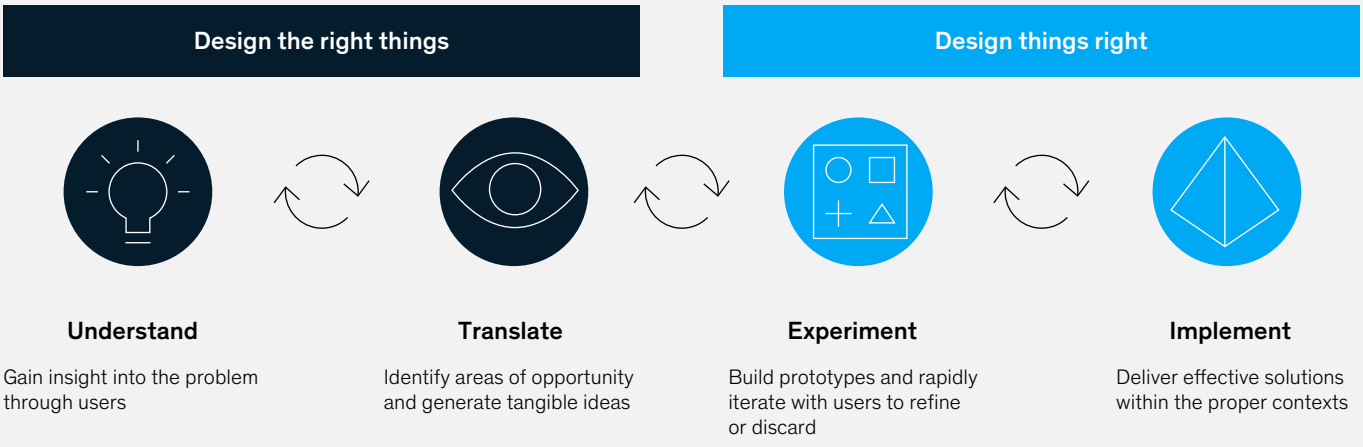
Critics of design commonly cite its unclear definition and the misuse of related words (such as "immersion" or "cocreation") as barriers to deep understanding of the concept and, thus, adoption of the approach. Indeed, depending on the context, "design" can refer to a variety of principles, activities, methods, or tools. In the context of global health, we have found it useful to define design as an iterative and creative approach that can be used to shape global health products, services, and programs that meet the needs of users and other critical stakeholders.

Many variations exist for the formulation of the design process. We break it down into four main components: understand, translate, experiment, and implement (exhibit). Each component can integrate with more traditional methods used in global health, such as cultural anthropology, behavioral economics, and sociobehavioral research. The design approach can be applied in various forms, ranging from a full end-to-end design process to one element within a broader process (for example, using design to spark creative ideas).[1]

In practice, the design approach begins with building empathy with users and

Exhibit

Design in global health is an iterative process.



Source: The Bill & Melinda Gates Foundation; Design Council; USAID; UX Collective: Medium

[1] For alternative frameworks, see *An introduction to design thinking: Process guide*, Hasso Plattner Institute of Design, 2010, dschool-old.stanford.edu; Rebecca Linke, "Design thinking, explained," MIT Sloan School of Management, September 14, 2017, mitsloan.mit.edu; and *What is Design for Health?*, Design for Health, a joint venture by the Bill & Melinda Gates Foundation and USAID's Center for Innovation and Impact, designforhealth.org.

First things first: What is design? (continued)

stakeholders to understand their needs, motivations, and behaviors. This stage should build on existing knowledge of the problem area and use techniques such as user and expert interviews, focus groups, user diaries,[2] coanalysis,[3] site visits, and ethnographic research[4] to inspire new thinking. These insights help define stakeholders' experience journeys—that is, a step-by-step visual representation of the person's physical, cognitive, and emotional interaction with the product or service in question—and their specific challenges. The design team then translates these insights into new solutions and harnesses its collective creativity to generate as many ideas as possible.

Afterward, team leaders prioritize ideas to build into prototypes, such as storyboards, 3-D models, or digital mock-ups. A broad collection of users and stakeholders then evaluates the prototypes and gives feedback to help design teams further refine the solution in rapid cycles, often in the field. The key is to use a fail-fast mentality to identify and correct obstacles to desirability and usability *before* building out the full solution and implementing it. In the end, the winning solutions are implemented at scale and further modified for different use cases.

It's worth noting that, while often presented at the conceptual level as a linear flow, the design process involves multiple cycles of iteration—revisiting understanding and translation as new insights emerge during experimentation and implementation. And even though design is primarily defined as a process, successful use of design also requires the right mind-set and skill set to lead to an effective and sustainable outcome.

[2] A diary kept by participants on what they do and need over the course of their work, which is then shared with the researchers.
[3] Participants reflect on and analyze preparatory research findings to identify richer insights.
[4] Researchers observe and interact with a study's participants in their real-life environment.

The value of design in public health

> "Human-centered design. Meeting people where they are and really taking their needs and feedback into account. When you let people participate in the design process, you find that they often have ingenious ideas about what would really help them."[1]
>
> —Melinda Gates, cochair, the Bill & Melinda Gates Foundation

Design can help craft a standout user experience and contribute to greater awareness, use, and adherence to interventions—including both products and services—that save lives and promote well-being. However, many public health leaders are not fully aware of the value and potential of design. When applied appropriately, design can add value to global health organizations in three ways: addressing the right problem by uncovering users' deep-rooted needs and challenges, building ownership from the start by engaging a broad set of stakeholders, and finding the right solution by being willing to fail fast.

Addressing the right problem by uncovering users' deep-rooted needs and challenges

To start, design can help leaders understand users' immediate needs. Consider, for example, the elements that contribute to a pregnant woman's ability to secure prenatal care. These might consist of the money to pay for it, access to transportation, permission to visit the clinic, and appointments that do not take too much time away from the workday.

[1] Caitlin Roper, "The human element: Melinda Gates and Paul Farmer on designing global health," *Wired*, November 12, 2013, wired.com.

Design can add value to global health in three ways: addressing the right problem by uncovering users' deep-rooted needs and challenges, building ownership from the start by engaging a broad set of stakeholders, and finding the right solution by being willing to fail fast.

These underlying, often auxiliary issues can materially influence the development of effective prenatal care solutions.

For example, a West African country's state ministry of health wanted to increase the usage of essential health commodities (such as clinical supplies and medicines) to improve maternal, newborn, and child health in the country. With the support of the United States Agency for International Development (USAID), a project was initiated to apply design in three states. The project developed new solutions that addressed supply-chain issues, improving availability and encouraging broad use. Through applying methodologies for the "understand" and "translate" steps of the design process in close collaboration with more than 200 health-system stakeholders—including mothers and healthcare workers—the stakeholders collectively agreed that a broad set of demand-side barriers needed to be brought into focus. These barriers included awareness about correct usage, cultural and social beliefs, and affordability. These challenges prevented patients and healthcare workers from using the medicines even if they were available. The team then pivoted to generate and prototype both the demand-side and supply-side solutions that would spur the adoption of essential commodities—including community awareness programs, health-worker training, and community-driven accountability—in addition to a more streamlined supply chain.

Building ownership from the start by engaging a broad set of stakeholders

By involving a broad variety of stakeholders and end users throughout the entire process, the design team ensures the solutions reflect the collective lived experience. In addition, such involvement creates ownership to carry forward the implementation once the design team leaves.

For example, in the case of the West African commodities project, the design team convened more than 200 stakeholders to identify the most critical improvements needed, and they generated more than 300 potential solutions. The same group of mothers, physicians, clinical staff, community representatives, and suppliers then worked in several rounds to refine the ideas into 12 solutions, which were then prototyped. Finally, the full team came together to develop implementation plans for the most promising solutions. This interactive and engaging process allowed team members to identify and educate one another on constraints likely to arise during implementation and brainstorm solutions to mitigate them. It also encouraged a high degree of ownership among the stakeholders, who soon after started the implementation process and carried it forward.

Finding the right solution by being willing to fail fast

Leaders can lean on quick cycles of experimentation to uncover issues that may derail potential solutions early in the process, thus allowing teams to refine or abandon them before investing too much time, energy, and resources. As an added benefit, this approach increases confidence that chosen approaches will be accepted by their intended users at and long after launch.

In the West African example, three regions needed to improve the transportation of medicines that require cold storage. Early on, the design team explored multiple solutions and tested the feasibility of each method using very simple prototypes. Within one week of testing with stakeholders from the communities, it became clear that a solution for one region wasn't necessarily the right response in another. As a result, one region adapted its existing supply-chain infrastructure while another established a relationship with a private-sector distributor.

Where design could be applied in global health

> "While the principles of design have been employed throughout USAID's health work broadly over decades, we saw a real opportunity to bring it in more deliberately as a complementary approach. That's what we've been exploring over the last three years."[2]
>
> —David Milestone, former acting director of USAID's Center for Accelerating Innovation and Impact

As a problem-solving approach, design can be applied at the project, program, and organization levels (exhibit). For our purposes, "projects" refer to time-bound initiatives focused on specific health products or services, "programs" refer to multiyear and systems-level health programs, and "organizations" refer to broader organizations within the global health ecosystem.

Across these applications, it is important to remember that design is just one approach among many. Realizing the value of the approach means understanding when to use design exclusively and, perhaps more importantly, when to integrate it with other methods. For example, project leaders might first generate insights from design-led interviews and observations—a small sample size. They might go on to test these hypotheses via a large-sample, traditional survey to build a more comprehensive picture.

Project level

Currently, the most common and straightforward deployment of design within global health is at the individual project level where teams can use the approach to develop a specific concept (whether

[2] Catherine Cheney, "Gates foundation and USAID team up to bring design to health," devex, June 25, 2018, devex.com.

Exhibit

Design can be targeted at different levels to drive value in global health.

Projects

Time-bound initiatives focused on specific health products or services

Example use cases

- Create or refine products or services that address a specific challenge
- Create strategies for introducing or driving uptake of a specific product or service

Programs

Multiyear and systems-level health programs

- Inform development and planning of overall programs or systems
- Improve user experience during ongoing implementation

Organizations

Broader organizations within the global health ecosystem

- Embed user insights deeply into the organization's strategic priorities
- Support human-centric cultural transformation from frontline staff to senior leadership

a product or service), support its introduction, or both—for example, to harness user or customer insights to increase uptake (see sidebar "Case study: Developing a new infant jaundice treatment device"). A growing number of global health organizations have experienced success with this type of design engagement.

Program level

Beyond the scope of an individual project, the design approach can also be used to improve the effectiveness of broader programs (see sidebar "Case study: Improving the design of care delivery for community-level health services in Mali"). These are typically multiyear health programs that encompass all or part of a larger system—for example, a health supply chain or primary healthcare system. While projects are often standalone efforts bound by a set goal and defined timeline, programs require continuous improvement over a sustained period and can benefit from design at various stages. At the program development stage, design can help fine-tune focus areas by incorporating a more comprehensive understanding of users' needs, preferences, and constraints. During implementation and scale-up, design approaches and tools can help leaders create program interventions that are not only aligned with user needs but also actively chosen and sought out by users. Thus, these solutions are often broadly adopted by end users, providers, and other stakeholders.

Project level

Case study: Developing a new infant jaundice treatment device

Context and goals. More than six million babies with jaundice are not properly cared for; meanwhile, blue-light therapy has proven to be both simple and effective in treating them.[1] D-Rev—a nonprofit organization dedicated to developing health technologies for resource-limited environments—undertook the creation of a new, high-quality, affordable device to treat infant jaundice.

Process. D-Rev partnered with Stanford University to conduct field studies in Indian and Nigerian hospitals to identify issues with current treatment devices. Key barriers appeared to be maintenance and cost, with devices costing as much as $3,500 each.[2] Deep engagement with local doctors and hospital staff in prototype testing helped identify which features of the device were critical and which were not adding meaningful value. This insight enabled D-Rev to preserve much of the look and feel of more expensive traditional devices while innovating on cost-effective and easy-to-maintain alternative components. In addition, D-Rev tested prototypes with every stakeholder who would use the device during treatment. In conjunction with the design approaches, the project team conducted a literature review and quantitative analyses to understand the total unmet need for neonatal phototherapy globally, with an emphasis on locations that lacked resources.

Results. The team developed and launched Brilliance, a device that costs about $500. According to D-Rev, as of June 2019, Brilliance has been used to treat more than 666,400 babies in 59 countries—about 567,000 of whom would not otherwise have received effective treatment. The company also estimates that 9,000 newborn deaths and disabilities have been averted since launch.

[1] "Newborn Health," D-Rev, d-rev.org.
[2] Krista Donaldson, "Designing for social impact: The D-Rev story," June 2014, McKinsey.com.

Program level

Case study: Improving the design of care delivery for community-level health services in Mali

Context and goals. Mali is at the epicenter of the child mortality crisis. When Muso, a global nonprofit dedicated to improving health, first began working with the Mali Ministry of Health and Public Hygiene in 2008, the rate of child mortality was 154 deaths per 1,000 live births. It was in this context that Muso and the MoH partnered to radically redesign health delivery, focusing on the community level.

Process. The redesign effort began through in-depth interviews with community members in a neighborhood near the capital city of Bamako. The interviews identified key barriers to the healthcare system: cost, distance to health facilities, gender inequality, and quality of care (exhibit). A frequently cited barrier was the direct cost of treatment at facilities, a finding further underscored by the global research showing nearly 100 million people are pushed into poverty each year as a result of health expenses.[1] Muso

[1] *Tracking universal health coverage: 2017 global monitoring report*, World Health Organization and the World Bank, December 2017, who.int.

Case study: Improving the design of care delivery for community-level health services in Mali (continued)

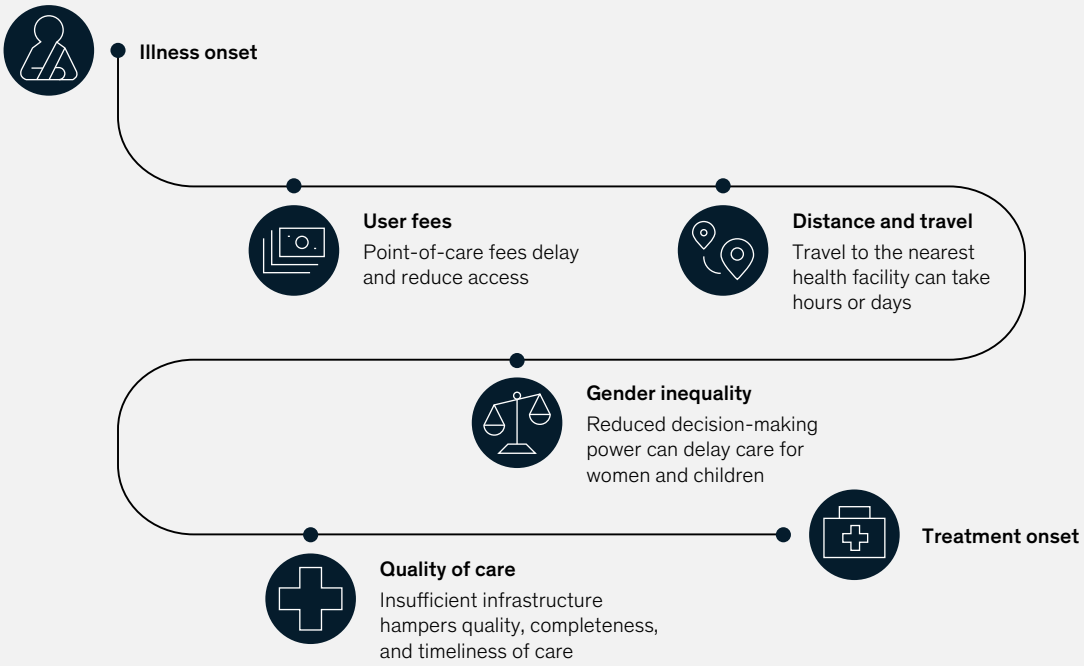
found these point-of-care fees prevented not only utilization of services by these patients but also the speed at which they were able to access those services and the completeness of the treatment they were able to receive. From this understanding, Muso and the MoH developed and refined a proactive, community-based model of care that builds on the global best practice for community health workers (CHWs) and integrated community case management (iCCM).

This proactive care model goes beyond iCCM to bypass these barriers and reach patients within hours of becoming sick. The CHWs conduct daily active-case detection visits door to door, seeking out community members in need of care. CHWs also provide a package of life-saving healthcare services at home, testing and treatment for malaria, diarrhea, and pneumonia, as well as services for family planning, pre- and post-natal care, and malnutrition. They identify patients in need of further intervention and refer or accompany them to government-run community-health clinics where Muso has improved infrastructure and augmented staff capacity. Encountering patients in their homes allows CHWs to fully comprehend the realities of those in their community and build the trust needed to deliver quality care. Furthermore, in response to the expressed needs of the community and in order to facilitate equitable access to this intervention, patients are not charged point-of-care fees at the community or facility levels. To truly ensure that care is reaching patients in time, Muso monitors the percentage of children accessing effective care within 24, 48, and 72 hours of symptom onset. Ten years after the intervention's baseline in 2008, Muso and the MoH jointly measure the effectiveness and impact through annual user surveys and continue to iterate based on community feedback.

Results. Over seven years (2008–15), child mortality dropped by more than 90 percent, with an end-line result of seven per 1,000 births—on par with the United States. During this time, the speed by which patients accessed care also increased: the early effective antimalarial treatment of children aged zero to 59 months more than doubled, from 14.7 to 35.3 percent.

Exhibit

Design identified barriers to care in Mali.



Source: Muso

Organization level

Design practices can be infused into broader strategy, culture, and processes so that user orientation becomes a more significant part of an organization's fabric. Successful deployment at this level means that decisions—whether they are strategic, operational, or organizational—are made with users in mind. Within healthcare organizations, users include the beneficiaries of a solution or offering (such as patients, community members, clinic staff, and doctors) as well as all the health system stakeholders (such as providers, purchasers, distributors, and regulators) involved in realizing its intended impact. At the organization level, embracing design to focus on a complex user group encourages new modes of collaboration across functions, making internal teams more agile and innovative (see sidebar "Case study: Embedding design into strategy development at an innovative global public health organization).

Many community-based, nongovernmental health organizations have used principles similar to design for decades. Larger institutions are also starting to adopt the approach. According to Design for Health—a coalition of global health organizations,

Organization level

Case study: Embedding design into strategy development at an innovative global public health organization

Context and goals. A global public health organization underwent a multiyear strategic planning process for its portfolio and operational footprint. It applied design to deeply understand end users and used the insights to inform new strategies for achieving greater impact in priority disease areas.

Process. The team applied design in a series of workshops, bringing together a diverse set of leaders from strategy, R&D, and customer experience who might otherwise not have had routine opportunities for engagement. To prepare for the workshop, the team conducted field visits to build several user journeys and understand the current challenges. Some of the leadership also joined these field visits to meet the users firsthand and observe the surrounding ecosystem. They identified specific disease areas to focus on and conducted cross-functional workshops to generate ideas for each area. In the workshop, leaders familiarized themselves with user journeys, brainstormed ideas for intervention, and prioritized them based on organizational strengths, sphere of influence, and broader constraints. Once priorities were set, additional disease-specific workshops were conducted to develop new service offerings and a road map to implementation, with user focus as a continued guiding principle. Throughout this work, user insights were combined and integrated with traditional quantitative methods—such as disease modeling and forecasting—as part of a multidisciplinary approach.

Results. Infusing design techniques into the strategy-development process helped unlock and identify challenges that were not being addressed by typical public health stakeholders. By using consumer insights, the organization was able to create specific interventions to tackle underlying mind-sets. This equipped leaders across different functions to develop a much stronger shared understanding of the users and a clear vision of how they might improve the experience and health outcomes for these users through the organization's global health efforts.

donors, and designers committed to amplifying impact in global health through design—more than 35 major global health projects have "used design as an essential component."[3] Additionally, multilateral organizations such as UNICEF have begun building out internal design capabilities, and leading donors such as USAID and the Bill & Melinda Gates Foundation have invested in expanding the use of design in global health.

As the growing number of design success stories in global health present an exciting opportunity to expand its use even further, there is a need for a conscious and deliberate effort to debate and adopt the best practices of applying design within the complexities of global health delivery systems. It is not enough to adopt the design process; rather the entire organization has to accept the design mind-set and put in place cross-functional talent and effective ways to encourage collaboration between them.

[3] *What is design for health?*, a joint report from the Bill & Melinda Gates Foundation and USAID, designforhealth.org.

For more information about design, check the following resources:

- Design for Health
- *The business value of design*
- "The next step for human-centered design in global public health"

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