

Integrating Human-Centered Design in a Multidisciplinary Effort to Address Provider Bias: The Beyond Bias Experience

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Part 2
of 3



Introduction

The Beyond Bias project seeks to ensure that young people between 15 and 24 years of age have access to empathetic, non-judgmental, quality counseling and provision of a full range of contraceptive methods, regardless of their marital status or parity. By bringing together providers and the young people they serve, Beyond Bias works to design and test scalable solutions that address provider bias and improve contraceptive counseling and services. Led by Pathfinder International, Beyond Bias partners include Camber Collective, YLabs, and the Behavioral Economics in Reproductive Health Initiative (BERI). Beyond Bias is active in Pakistan, Tanzania, and Burkina Faso, with funding from the Bill & Melinda Gates Foundation (BMGF). Beyond Bias is innovative in its multidisciplinary approach, which brings together experts in adolescent and youth sexual reproductive health (AYSRH), social and behavior change communication (SBCC), human-centered design (HCD), behavioral economics, and segmentation analysis. These complementary approaches enable a nuanced understanding of the drivers, manifestations, and outcomes of provider bias and inform tailored interventions to address that bias.

Despite increasingly frequent application of HCD in global health programs, there is limited published material on the process of doing so. Aiming to help expand that knowledge base, the Beyond Bias project has documented, in a three-part series, its experience using HCD as part of a multidisciplinary approach to develop effective and scalable AYSRH interventions: (1) The executive summary* provides high-level overviews of HCD and how it was applied in Beyond Bias, key lessons learned from the integration of HCD in the project, and AYSRH solutions generated and tested by the project. (2) This document details how Beyond Bias integrated HCD, how that experience fits in the larger HCD ecosystem, and the project's key lessons learned from applying HCD. (3) Part 3* of this series, "Adolescent and Youth Sexual and Reproductive Health Solutions Generated and Tested by Beyond Bias," documents the SRH/AYSRH interventions that Beyond Bias is currently implementing, and key insights, ideas, and solutions that informed those interventions.

While HCD is multidimensional, and its comprehensive history is beyond the scope of this document, the next two sections of this brief aim to orient a reader who is unfamiliar with the discipline.



* To download the executive summary, visit: <https://www.pathfinder.org/publications/hcd-part-1-executive-summary/>; to download part 3: <https://www.pathfinder.org/publications/hcd-part-3-solutions/>

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What Is HCD?

HCD is a creative, iterative, and participatory innovation process. Like participatory action research, and drawing on ethnographic research principles, HCD seeks to engage participants in the design, development, and testing of potential solutions. It relies on real-world solution prototyping and rapid iteration of those solutions based on participant feedback.

HCD emerged from the fields of ergonomics, computer science, and artificial intelligence and has been used for decades to develop and market products, technologies, and services. It is being increasingly applied to public health challenges and used to develop medical products, health services, and digital health technologies.^{1,2,3,4,5} Evidence is emerging, and evaluations are forthcoming, on HCD programs to improve access to reproductive health and family planning information and services for youth, including the evaluation of the Beyond Bias intervention.^{6,7,8,9} Recent years have also seen the emergence of communities of practice to guide HCD work in public health, such as Design for Health,¹⁰ MeasuredD,¹¹ and the HCDEXchange,¹² which focuses on AYSRH. HCD methods emphasize activities to map the needs, preferences, and behavioral drivers of potential users and the development and prototyping of tailored solutions that respond to the needs of these users through a process of building to learn that is, generating a range of ideas and then testing them in iterative prototyping cycles with minimal material and monetary investment. Prototyping seeks to answer essential questions about potential solutions' desirability and feasibility. In summary, though this is an emerging field with a need for robust evaluation of design as applied to global public health challenges, emerging data suggest that HCD can result in products, communications, or service models that improve health outcomes and strengthen community engagement in program development and implementation. The Beyond Bias project seeks to contribute to the evidence base on HCD as applied to AYSRH.^{1,6,13,14}

"If you don't meet youth in family planning, you meet them in labor."

—Nurse participant in Beyond Bias prototyping, Tanzania



Photo: YLabs, with written consent from participants

How Is HCD Different?

HCD aligns with conventional wisdom in global health about the importance of interventions tailored to different contexts and target populations, and meaningful stakeholder engagement to ensure sustainability.

Conceptually, HCD—particularly the principle of user-centeredness—also shares aspects of familiar practices in public health, such as participatory research, implementation science, socio-behavioral research, and patient-centered or differentiated service delivery. In global public health, HCD is relatively new and it is applied on a spectrum. Implementers and donors alike are using the term HCD to describe activities ranging from simply considering a user's perspective when designing a product or service to testing client satisfaction with an existing product or service, to using a user-driven solution-development process from research to idea generation and through to implementation. Several of the communities of practice cited above have or are generating guidance to support quality practice in HCD as applied to global health^{15,16,17} and improved documentation of the design process.¹⁷ Varied levels of investment in HCD or even basic "design thinking" (the mindsets used and promoted by HCD practitioners) can be helpful in virtually any project at any stage to bring more creativity and collaboration to a process.¹⁸ For example, an organization interested in creating a new digital family planning decision job aide for their health care workers might apply HCD to refine the design and user experience of the new tool. This is an example of a relatively narrow application, where the solution has been defined, and HCD is applied only to refine the solution's usability. However, when tackling enduring or "sticky" challenges where promising solutions are ill-defined, a more intensive and comprehensive HCD approach is worth exploring.



HCD is relatively new in global health and is applied on a spectrum.

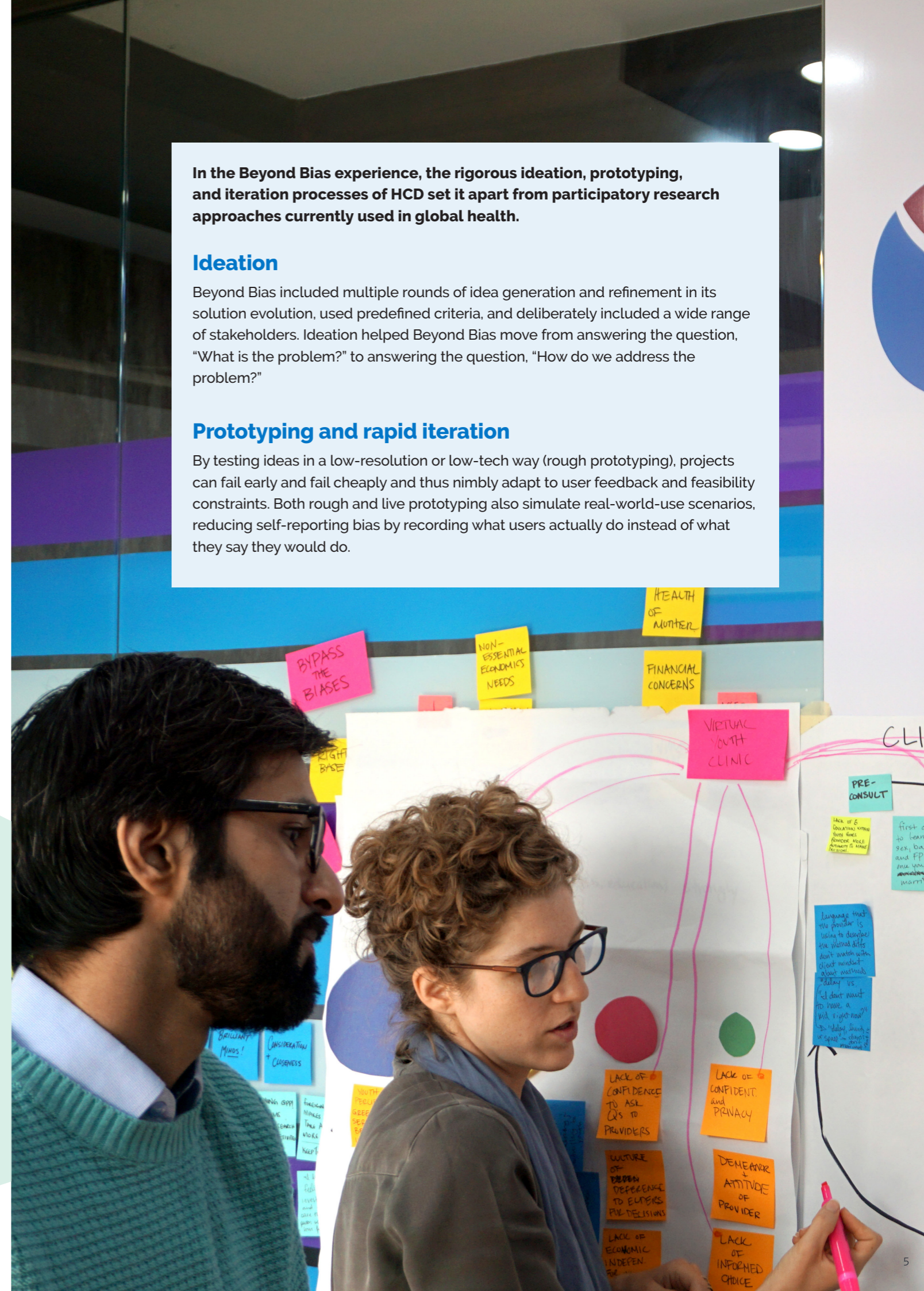
In the Beyond Bias experience, the rigorous ideation, prototyping, and iteration processes of HCD set it apart from participatory research approaches currently used in global health.

Ideation

Beyond Bias included multiple rounds of idea generation and refinement in its solution evolution, used predefined criteria, and deliberately included a wide range of stakeholders. Ideation helped Beyond Bias move from answering the question, "What is the problem?" to answering the question, "How do we address the problem?"

Prototyping and rapid iteration

By testing ideas in a low-resolution or low-tech way (rough prototyping), projects can fail early and fail cheaply and thus nimbly adapt to user feedback and feasibility constraints. Both rough and live prototyping also simulate real-world-use scenarios, reducing self-reporting bias by recording what users actually do instead of what they say they would do.



HCD in Beyond Bias: An Integrated Process

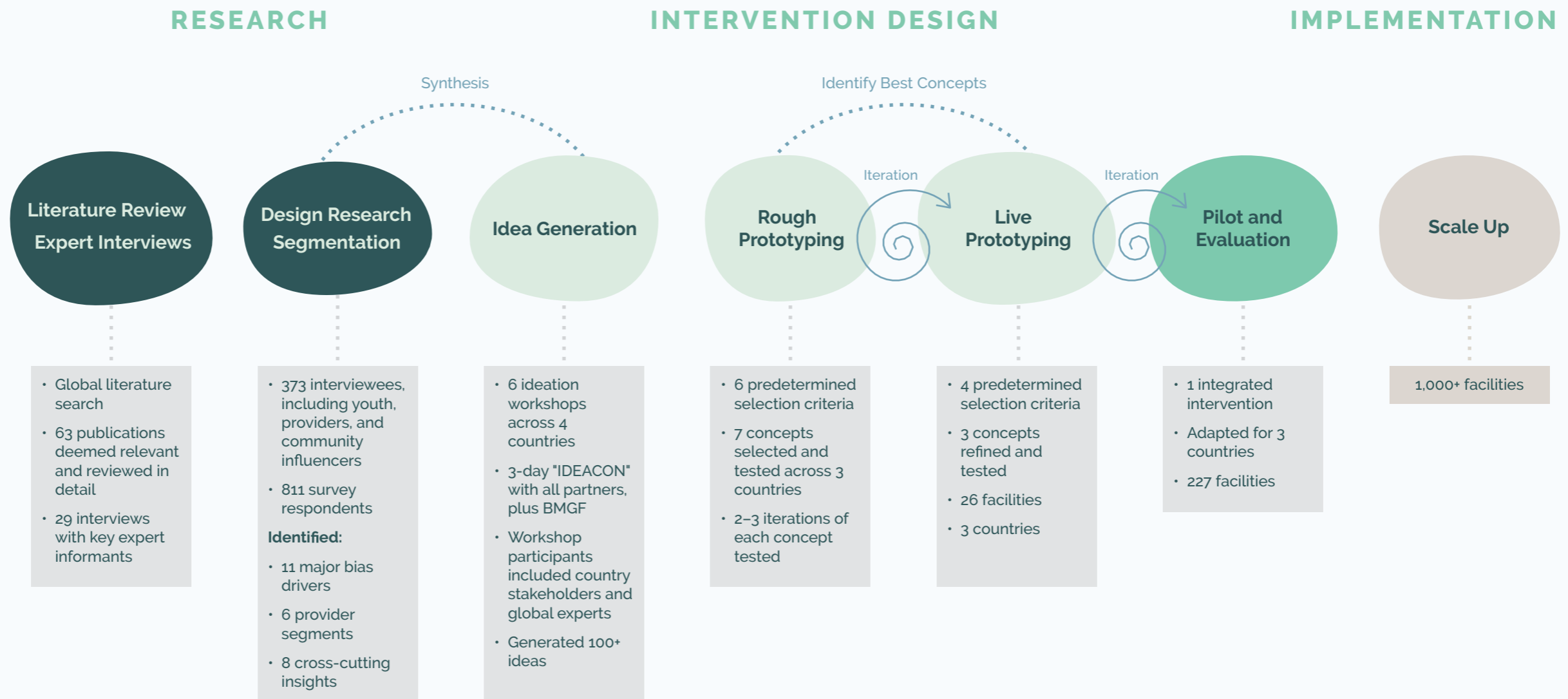
Bias of any kind is complex and often deeply rooted.

Targeted interventions and responses are required to effectively address different drivers of bias and to change behavior. Furthermore, decades of training and supervision have been insufficient to address biases held by AYSRH providers.

Recognizing this reality and seeing the potential value of employing comprehensive HCD to address such an enduring problem, Beyond Bias integrated an intensive HCD process into its multidisciplinary design. This section of the brief describes how Beyond Bias employed HCD—one of any number of ways a project might integrate HCD into its work.

Subsequent sections describe the lessons learned and challenges encountered through that process. >

Figure 1. Beyond Bias's Integrated Process for Addressing Provider Bias in AYSRH



Research & Insights

Research

Beyond Bias's research phase employed mixed methods, integrating quantitative segmentation research with qualitative design research to produce a robust approach to solution exploration with providers (Figure 1).

The project began with **expert interviews and a literature review** of evidence on provider bias and past interventions to reduce such bias. This foundational evidence informed the creation of a quantitative **segmentation survey**. Beyond Bias used this information to identify major behavioral and attitudinal drivers of provider bias and to define provider profiles (segments) across the three project countries (see Beyond Bias: Provider Survey and Segmentation Findings*). In parallel with the segmentation survey work, Beyond Bias conducted qualitative **design research** interviews in each country.

Segmentation is, at its core, a process of dividing a heterogeneous group of individuals into relatively homogenous segments based on parameters such as geographic, demographic, psychographic, and behavioral characteristics. Segmentation helps to account for diversity within a group and to tailor interventions accordingly.

* To download the Segmentation Survey visit: <https://www.pathfinder.org/publications/beyond-bias-segmentation>

Insights

Based on qualitative and quantitative data analyses, Beyond Bias distilled key insights about provider and youth behavior and motivation.

In HCD, insights are realizations supported by qualitative data from the foundational design research phase. Insights provide a new perspective on the users (in this case, providers and youth) and their environment. They can shed new light on an old problem or bring clarity to a past interpretation of the problem or existing solution. Insights might contradict conventional wisdom with valid supporting data. Rather than solely characterizing the problem, insights are action-focused and intended to spark ideas for solution directions.

Beyond Bias gathered initial insights during the design research phase and revised and refined insights after rough prototyping. The insights complemented the segmentation analysis by revealing ways the Beyond Bias team could address bias in a user-centered way. For example, one insight revealed that a provider wanting what is best for a young person can be a driver of bias. In response, the team explored ways to connect providers emotionally with the later consequences of their good intentions on a young person's life. Ultimately, this insight shaped the tone and approach of Summit, one of the three pillars of the final intervention (described in Part 2, where insights are also listed). Provider segments and insights into the behavior and motivation of youth and providers deeply informed the subsequent phases of Beyond Bias.



Intervention Design

Beyond Bias used HCD to generate more than 100 early brainstorming ideas and to winnow them into one integrated intervention through multiple rounds of testing, selection, and iteration. As of the time of writing, this intervention is being piloted and evaluated in 227 facilities across 3 countries.

Idea Generation

YLabs employed a structured and systematic approach for facilitating HCD in Beyond Bias. Using provider segments, drivers of bias, and qualitative findings, Beyond Bias country teams and partners facilitated **six ideation workshops across four countries** (Tanzania, Pakistan, Burkina Faso, and the United States) to generate a wide range of early brainstorming ideas to address provider bias. Brainstorming participants included clinical managers, local stakeholders, providers, and youth.

While terminology may vary across practitioners, this document uses the word **idea** to describe a simple headline thought and the word **concept** for a more fleshed-out idea that includes a preliminary behavior-change hypothesis and a set of articulated assumptions that can be tested with users through prototyping. **Concepts** are tested and refined (and sometimes combined) into **solutions**.

A summary of global research on drivers of bias, along with primary research, including segmentation analysis and findings from design research interviews in each of the three countries, informed the workshops. The workshops consisted of multiple rounds of brainstorming, using "How might we...?" statements.

Each ideation workshop was guided by three overarching design prompts:

How might we help providers guide informed contraceptive choice by youth?

How might we support providers to have the time and space to honor young people's needs in the clinic?

How might we measure and reward quality service for youth?

For each country context, the project team created several additional design prompts. The combination of overarching and country-specific design prompts helped ensure that the idea generation process would produce ideas that had potential for scale across contexts but that responded to the nuanced differences among the three focus countries. Each brief considered the dominant segments in each >

Intervention Design

country and the key drivers of bias identified through the segmentation analysis. At the end of each workshop, participants selected their top five ideas using a predetermined set of criteria (Table 1). Across the workshops, a total of 30 ideas advanced to the next round of ideation, dubbed "IDEACON."

Since it can be impractical to empirically vet all initial brainstorming ideas (100+ in Beyond Bias), idea selection in the HCD process relies on the internal heuristics and expertise of the participants. This is one reason why it is valuable to have a diverse set of perspectives involved in idea generation, and why it is crucial that every participant is deeply familiar with the insights and evidence produced from the research phase. In Beyond Bias, the following types of expertise were represented: AYSRH, behavioral economics, SBCC, design, country-level clinical implementation, and the lived experience of youth and providers.

All Beyond Bias partners, including BMGF, convened for IDEACON, a three-day, in-person workshop at which each country team presented their top ideas, and attendees participated in additional rounds of brainstorming to

combine earlier ideas and identify new ideas using the same three design prompt questions from the six small ideation workshops. The updated segmentation analysis results, which had not been available before the ideation workshops, were presented at this workshop, and the Beyond Bias partners brainstormed around two provider segments that were not yet well-represented in the pool of ideas. In Beyond Bias, the early ideas (and then concepts) aimed to address the primary drivers of provider bias and were subsequently tailored by segment.

From this pool of ideas, Beyond Bias used predetermined criteria (Table 1) to select seven concepts to advance to the rough-prototyping stage.^a The concepts were often fusions of multiple ideas, combined by Beyond Bias partners during IDEACON to create a stronger whole that could perform better against the selection criteria. These concepts and three youth-facing solutions tested during a subsequent rough-prototyping stage are described in Part 3. On the final day of IDEACON, the partners created prototyping plans for the seven concepts and conducted a risk analysis to anticipate ethical, safety, and community-perception challenges that might arise during prototyping. The Beyond Bias team rapidly developed rough prototyping materials to test the concepts with providers and youth in each country one month later.

^a Initially, six concepts were selected for advancement; however, YLabs and Pathfinder determined that one idea was too complex to effectively test in a simple way, and thus separated the idea into two ideas (Virtual Youth Clinic and Interactive Narratives) for rough prototyping. These are described in Part 3.

Table 1. Predetermined Criteria for Solution Evolution

Criteria for Advancement from Idea Generation to Rough Prototyping

Grounded in evidence:

Ideas that were linked to the design research insights and provider segmentation analysis

Potential desirability:

Ideas that had potential to be well-received by providers and youth, assessed by the Beyond Bias team members present in the design research sessions

Feasibility:

Ideas that were feasible to implement within the project timeframe and budget, assessed qualitatively by Pathfinder experts with input from BMGF

Scalability:

Ideas that had theoretical potential to scale that is, for replication or integration (the ExpandNet concept of scale), assessed qualitatively by the Beyond Bias partners

Potential for impact:

Ideas that, if realized, would significantly shift provider behaviors and attitudes toward young, unmarried clients, assessed qualitatively by Pathfinder experts with input from BMGF

Novelty:

Ideas had not yet been tried to address provider bias, as assessed by Pathfinder and BMGF experts

Criteria for Advancement from Rough Prototyping to Live Prototyping and Implementation

Feasibility:

Ideas that were feasible to implement within the project timeframe and budget, with preference given to ideas that, for ease of implementation, could be adapted for all countries, as assessed qualitatively by Pathfinder experts, with input from BMGF

Desirability:

Ideas that users found to be desirable and valuable, assessed through in-person testing and feedback sessions with youth and providers

Scalability:

Ideas that had theoretical potential to scale that is, for replication or integration (the ExpandNet concept of scale), assessed qualitatively by Pathfinder experts, with input from BMGF

Potential for impact:

Ideas that, if realized, would significantly shift provider behaviors and attitudes toward young, unmarried clients, assessed based on the preliminary qualitative and quantitative data collected during rough and live prototyping on shifts in provider attitudes and behavior



Rough and Live Prototyping

In an HCD process, the purpose of rough prototyping is to explore a wide range of early ideas and to collaborate with users to rapidly adapt and change the ideas.

Rough prototypes are often built from simple materials like cardboard and are intentionally rudimentary so that users feel more comfortable candidly critiquing them. In the live prototyping phase, ideas that showed promise in the rough prototyping phase are refined and tested in the settings where the intervention will happen (e.g., clinics). Live prototypes are designed to feel real and polished to the users. Live prototyping is like a small pilot, except that concepts and solutions are changed in real-time based on user feedback and data.

Beyond Bias conducted **rough prototyping** rapidly and sequentially in Pakistan, Tanzania, and Burkina Faso. In each participating country, Beyond Bias teams tested rough prototypes over a two-week period and used feedback to rapidly iterate and improve the appeal of the prototypes. Each rough prototype went through

two or three iterations. Iteration based on data is a core part of the HCD process. After rough prototyping, the Beyond Bias team analyzed the qualitative data for all rough prototyping sessions to identify which concepts seemed promising in terms of predetermined criteria (Table 1). Pathfinder's Technical Review Board (see Built-in mechanisms in the next section) ensured that the recommendations were grounded in evidence and best practice. Complementary ideas were combined based on their strengths and turned into three refined concepts to move forward into live prototyping. The project team conducted additional rapid literature reviews and expert interviews to assess what existing evidence supported or contradicted the behavior-change hypothesis for each of the three prototypes selected for advancement. The behavior-change mechanisms

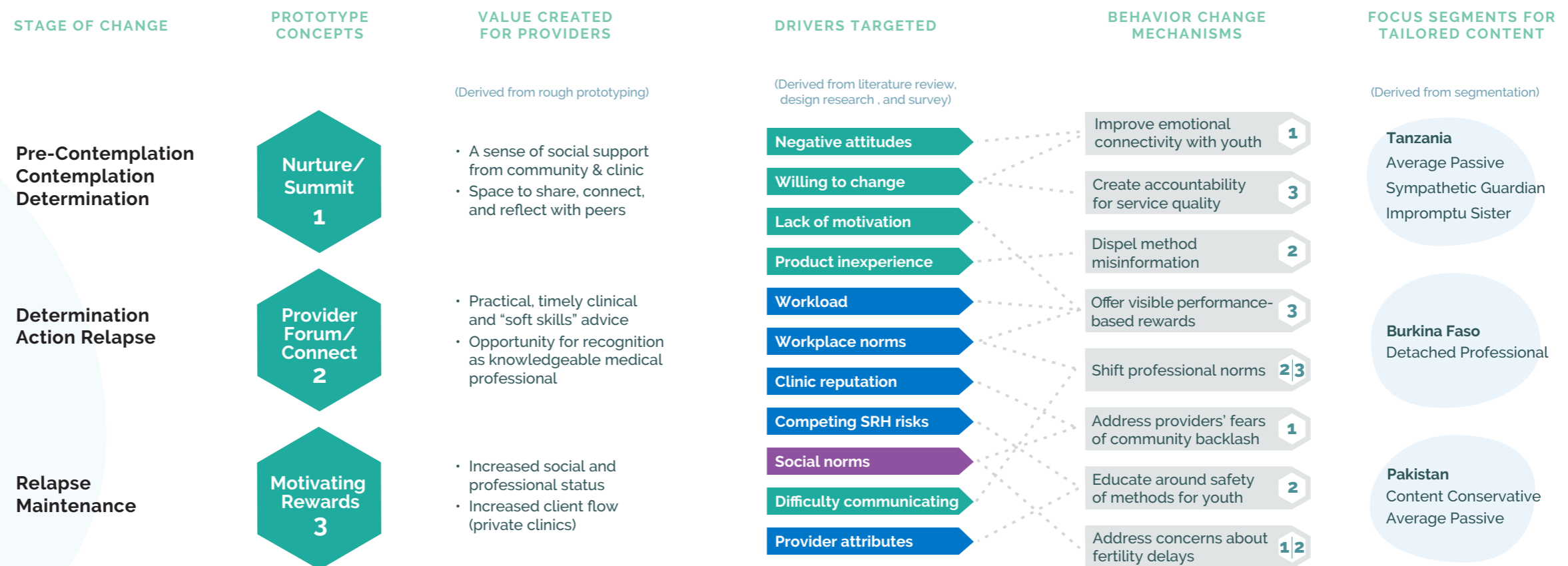
for each prototype were linked back to the drivers of bias derived from the segmentation analysis (Figure 2). The prototypes were then further adjusted before going to live prototyping to better address drivers that the team deemed were under-targeted.

The project tested these solutions over approximately three months of **live prototyping** in each country, repeatedly changing and refining materials and program delivery over that time period. During live prototyping, the Beyond Bias team used multiple qualitative and quantitative data sources to gather feedback about the three prototypes' desirability to providers, acceptability to key stakeholders such as facility managers, feasibility to implement, potential impact on provider behavior and attitudes, and scalability within and across country contexts. The project also involved young people as mystery clients and real clients in the live-prototyping stage to collect data on the prototypes' preliminary effect on provider behavior.

At the end of live prototyping, Beyond Bias partners reviewed the resulting qualitative and quantitative data on desirability, feasibility, impact potential, and scalability. These findings informed the final intervention design and implementation materials, which Beyond Bias advanced to the pilot phase. Part 3 describes each solution selected for rough and live prototyping, and the integrated intervention implemented in each country.

How much iteration is enough? There is no hard-and-fast rule dictating when rough or live prototyping should end in a given project. Logistics such as project budget and funder-mandated timelines are often determining factors, and iterations will eventually hit a point of saturation when feedback is less substantial, stimulating minor adjustments to the solution direction rather than providing notable new information. This saturation point is difficult to define, but experienced HCD partners can help to identify it, and projects can build in pause points at which to consider whether iteration continues to add value. In Beyond Bias, the decision to conclude prototyping was made in partnership with the Technical Review Board and with consideration of budget constraints and the available data from live prototyping.

Figure 2. Beyond Bias Concepts Advanced from Rough to Live Prototyping



Finalized Solution Design

From the integrated HCD process, Beyond Bias developed a three-pillared intervention designed to support health care providers at every phase of their journey, from developing awareness of their own bias to becoming advocates for improving contraceptive services for youth in their community.

The intervention uses the Stages of Change behavioral model^b as an underlying theoretical framework. At the time of this writing, Beyond Bias is **piloting** its integrated interventions, after which the project will **evaluate** the interventions in a randomized control trial (RCT) and document and disseminate findings in a separate brief. The Beyond Bias experience, data, and materials will then inform subsequent adoption and adaptation of interventions, enabling **scale-up** of efforts to address provider bias and improve AYSRH services globally. Beyond Bias aimed to test and develop interventions for provider bias that could be effective across three diverse country contexts.

The overall intervention strategy is uniform across the three countries to increase scalability; however, Beyond Bias used the provider segmentation analysis^{*} to tailor the program for each country in order to increase the likelihood of behavior-change impact. For example, one pillar of the intervention uses discussion-driven case studies to help providers identify how to apply unbiased practices in their own work (see Part 3^{*} for details). In Pakistan, the case studies are mostly focused on recently married youth clients and highlight the safety of long-acting reversible contraceptive methods to address prevalent infertility myths among the dominant provider segment in Pakistan. For Tanzanian providers, in contrast, the case studies often focus on unmarried clients and seek to highlight the safety of hormonal methods, a concern for the dominant segment there.

Program-delivery methods also vary slightly by country to accommodate provider context and need. In Pakistan, the case study discussion is delivered and facilitated entirely via a WhatsApp group since all providers have smartphones and prefer a digital forum. In Tanzania, not all providers have smartphones, and data costs are higher. While WhatsApp is used as a celebration space to highlight small wins and success stories across facilities, the in-depth case study discussions happen in person at the facility level. Beyond Bias will document localized lessons learned from the implementation phase of the project, including evaluation findings, in a future brief.

^b Stages of Change hail from the transtheoretical model of intentional behavior change that considers an individual's readiness to to adopt or act on a new behavior.

^{*} To download the Segmentation Survey, visit: <https://www.pathfinder.org/publications/beyond-bias-segmentation>; to download Part 3: <https://www.pathfinder.org/publications/hcd-part-3-solutions/>



Photos: YLabs, with written consent from participants



Challenges and Opportunities in Integrating HCD into a Multidisciplinary Project

Several aspects of HCD implementation in Beyond Bias proved valuable to the quality of design outcomes and of general project operations. These are not necessarily unique to Beyond Bias; we present them here to highlight how they added value to our experience and for consideration by donors and other implementers.

What worked well in using HCD for the Beyond Bias project?

Interventions grounded in existing evidence. Beyond Bias leveraged existing evidence on AYSRH and provider bias to inform the design research approach and to stress-test HCD findings at every stage of development, testing, and refinement. The literature review preceded the formative research phase and informed qualitative research design with providers, youth, and community members. During synthesis of the qualitative data, the project team compared emerging themes with existing literature to identify what was confirmed versus what was new to the field. Additional rapid literature reviews conducted on specific subtopics (e.g., the role of empathy in motivating behavior change) during the prototyping phases helped to ensure that the intervention design drew from current evidence and best practice.

Design with an ecosystem lens. The intended end beneficiary of Beyond Bias was young people, particularly those who were unmarried and nulliparous; however, the end user of the designed intervention was providers. Beyond Bias recognized that young people exist in an ecosystem of providers, parents, partners, and peers. To be successful, the design process needed to consider and involve this ecosystem of users from the beginning. From design research through live prototyping, Beyond Bias included youth, providers, parents, and other key gatekeepers, such as clinic managers, in the interviews, ideation sessions, and prototyping. This ecosystem approach increased the robustness, acceptability, and feasibility of the intervention when it came time to launch the pilot.

Built-in mechanisms for collaboration among designers, technical experts, and end users. Beyond Bias created project mechanisms to ensure collaboration among multidisciplinary technical experts and designers at every step of the project. Designers collaborated closely with Pathfinder's technical experts and other external experts. For example, a social psychologist at Stanford University reviewed the behavioral hypotheses of several ideas selected for rough prototyping and identified those

supported by existing social psychology literature. Pathfinder's AYSRH technical experts—including an SBCC advisor—and field offices closely reviewed and helped to develop the technical content of all the live prototypes.

The Technical Review Board (TRB) was an essential collaborative mechanism. The TRB, a committee of Pathfinder SRH experts, convened at key project decision points (e.g., after rough prototyping and after live prototyping) to press HCD findings against existing evidence, best practices, and implementation knowledge. This process helped identify ways to improve and refine the intervention strategies, with a particular focus on increasing feasibility and scalability of the emerging solution approach after the prototyping phases. The TRB's familiarity with existing SRH programming within and beyond Pathfinder also helped Beyond Bias identify how it could complement existing initiatives and tools, such as the values clarification and attitudes training (VCAT). Additionally, in each country, Beyond Bias convened advisory boards of regional and national stakeholders from the public and private sectors. After each HCD phase, the project incorporated feedback from these boards into prototyping and design decisions.

Sensitivity to participation and power. Beyond Bias facilitators encouraged providers and youth to actively participate in design research and rough prototyping phases, rather than to validate foregone conclusions. Creating an enabling environment that supported providers and youth to bring their expertise, ideas, creativity, and critique was central to the design process. In all three contexts, a significant power imbalance exists between providers and youth clients; providers have social and professional authority, and youth usually defer to them. To account for this power differential and to ensure that both user groups could express themselves freely, Beyond Bias facilitators conducted participatory research and prototyping sessions with only providers, only youth, and then a few joint sessions. Both groups engaged in participatory methods (e.g., roleplay, card-sorting, journey-mapping of their ideal clinic experience) during design research. Both providers and youth (in separate sessions)



participated in idea-generation workshops, and then in codesign sessions during rough prototyping, where facilitators guided them to actively change prototypes and build new ones. During design research, Beyond Bias also brought young people and providers together in youth-led workshops where young people roleplayed with each other their experiences of talking with a provider about sex and contraception, while providers had the opportunity to watch, listen, and better understand young people's experiences of bias, exclusion, and paternalism in clinics. These powerful cross-learning sessions set the stage for aspects of the final intervention, such as youth storytelling. (See the description of Summit in Part 3.) Several young people also were hired to be part of the research and design team during key phases, participating in conducting interviews, facilitating focus groups with youth, and testing prototypes with both youth and providers.

Intentional efforts to balance context-specific and scalable, cross-context ideas. Throughout research and testing, country-level Beyond Bias team members participated in activities in their country and in at least one other country (e.g., Pakistan team members joined activities in Tanzania). Similar cross-country participation occurred during rough- and live-prototyping phases. This approach enabled rich cross-contextual learning and helped reveal patterns (and thus opportunities for scalability) within the intervention design. Additionally, as the first step of Beyond Bias's structured idea-generation process, each country team received the summary of research from each of the three countries and led a local idea-generation workshop. This approach created a mix of country-specific and cross-context ideas for the Beyond Bias team to work with during the idea testing stage. It also allowed country teams and local stakeholders to give context-specific insight on the feasibility of various ideas.

Use of risk analysis tools and ethical guardrails at each stage of the HCD process. HCD supports rapid learning and creative thinking; however, projects applying HCD do not always prioritize consideration of ethical and safeguarding risks during the research and prototyping phases or use rigorous assessment tools. Beyond Bias employed measures throughout the HCD process to anticipate and mitigate these risks. The project obtained institutional review board (IRB) approval for all research and prototyping activities and conducted a risk analysis with a safeguarding lens with all partners before research, rough prototyping, live prototyping, and implementation. Shared expectations among partners and protocols established by the project ensured that safeguarding issues that arose during the project were quickly addressed.

Use of HCD to explore user-centered data collection modalities. To determine whether project interventions helped providers deliver impartial AYSRH services, Beyond Bias needed to collect adequate and accurate data from youth clients about their experiences with providers. Possible data collection modalities included SMS, interactive voice response surveys, unattended tablet computers, and human enumerators. The project used HCD iterative testing cycles to determine that youth would respond most consistently and honestly if surveyed by facility-based youth enumerators using tablets to administer the exit survey to clients.

What were the challenges? Recommendations?

No project is without challenges. Beyond Bias learned several valuable lessons about integrating HCD into its multidisciplinary work and identified ways to address those challenges.

We offer these challenges and recommendations for consideration while acknowledging that they reflect the Beyond Bias experience and are not necessarily universal.

Managing intense and complex collaborations. Effective multidisciplinary and multicountry projects require substantial coordination and collaboration among project stakeholders. While coordinating activities and building consensus across cultures and time zones is common in global development work, the Beyond Bias team found that the HCD process profoundly magnified this challenge. The HCD methodology is, by design, rapid, iterative, and collaborative. Using HCD to create quality, integrated solutions requires significantly more effort from all partners than traditional global health project design. Further, the HCD processes of prototyping and rapid iteration were new to many members of the project team, making it necessary for YLabs (the design partner) to dedicate substantial time to strengthening team capacity in this area.

Recommendations. To effectively manage collaboration across disciplines and partners, projects integrating HCD in their intervention design processes should consider the following:

- *Recruit and budget for a dedicated project coordinator or liaison at two or three times the allocation estimated for a traditional project. An ideal candidate should be familiar with HCD and well-versed in AYSRH and family planning. This support will reduce the stress on project team members and increase the efficiency of communication and workflow across partners.*
- *Budget and plan for review meetings to help ensure effective cross-partner planning and to build trust and camaraderie among global project partners and country teams.*
- *Schedule and budget cautiously to account for the back-and-forth of prototyping and iteration processes; while essential, these processes remain time- and resource-intensive. It is particularly important to have these conversations when partners have different billing structures (e.g., based on deliverables versus billable time).*

- *Use visual design to clarify concepts and to promote shared understanding among partners. As the design partner, YLabs used visual communication techniques at each stage to synthesize and simplify the complexities of the project data and processes into diagrams that all partners could understand and reference. For example, YLabs created a user-journey diagram that included the Stages of Change behavioral model, which helped other partners consider the designed intervention using a commonly understood framework.*

Adopting a new way of working. The HCD process moves rapidly from data collection to solution testing—particularly when compared to traditional methods of research and implementation—and the idea-generation process goes deliberately broad and encourages unorthodox suggestions. The design process is driven by responding to the feedback of end users, rather than by pushing forward a predetermined intervention. This means that the nature and structure of the intervention to be implemented is wholly unknown to all partners at the beginning of the project, which is atypical when compared to traditional implementation models. Participants (including project design and implementing partners) may be unsure how to proceed within their context or discipline.

Recommendations. To ensure that all participants and partners understand and are comfortable with the rapid experimentation and iterative approach of HCD, projects integrating HCD in their intervention design should consider the following:

- *Set clear expectations early in the process. Demonstrate how the HCD process diverges from traditional program development and build enthusiasm for the process by communicating the positive impact HCD has produced in other projects. Case studies of how HCD has been used by similar types of partners or to tackle similar public health challenges will lend partners new to HCD a more tangible idea of what lies ahead.¹⁷*
- *Build a shared vision of the impact goals and encourage partners to be open to new or nontraditional approaches to achieve that vision.*
- *Establish and nurture trust and clear communication among partners early in the project lifecycle to enable frank and even uncomfortable discussions when inevitable difficulties arise.*

- *Clearly document decision-making rationale throughout the project.*
- *Build in opportunities for all partners to reflect, offer input, and review evidence after each project phase. This helps ensure that HCD is grounded in evidence, and that each partner's expertise is respected and incorporated in the process.*

Budgeting for the unknown. Accurately budgeting for multiple years of project activities is difficult when the exact design of the intervention is deliberately unknown at the start of the project. A key feature of the HCD process is that interventions emerge through iterative user testing and refinement. While this process increases the likelihood that projects develop effective, sustainable interventions, traditional funding models are based on budgeting for a predefined solution. Adhering to traditional budgeting approaches for a project with substantial HCD can leave a promising, well-designed project with inadequate funds for implementation and can divert organizational resources (human and material) to additional fundraising.

Recommendations. To ensure that well-designed projects can sustain momentum from design to implementation, projects integrating HCD in their intervention design should consider the following:

- *Innovation funding models, with initial seed funding, and larger phased funding at pilot and scale-up phases are more flexible and seem more practical for exploratory HCD-driven projects. This could include program reviews after key milestones (e.g., completion of design research, rough prototyping, or live prototyping), at which point partners collaboratively develop a budget for the next phase based on agreed-upon goals and needs identified in the previous phase or phases.*
- *Work with the HCD partner to define the scope of work for the design phase and collaborate closely on project budgeting. Even without knowing what proposed solutions will advance to the next stage, an experienced HCD partner can estimate the level of effort and timeline needed to build, test, and assess a given number of prototypes. Key budget variables typically include the number and type of sites or countries, the desired level of data rigor, the number of distinct solutions to explore, and whether the solutions are digital or analog. To ensure transparency across the consortium, all partners should agree in advance on the criteria that will be used to prioritize solutions and how many solutions will be tested with users.*

Aligning expectations about novelty and innovation. The terms novelty and innovation are often used when people talk about HCD. This is because HCD is increasingly used to develop creative solutions for problems where conventional approaches have failed to deliver the expected impact. However, it is important to remember that novelty is not synonymous with innovation. Beyond Bias defines novelty as an idea that has not been tried before to address provider bias. An innovative solution, on the

other hand, is one that disproportionately outperforms status quo approaches in delivering desired results. The idea underlying an innovative solution may not be new, but the manner of execution may be new and far more effective. True innovation changes the way a sector or industry operates. A frequently cited example of this is the search engine Google. At the time that Google was developed, it was not the first internet search engine. However, its developers identified the ways that current products were not delivering what people needed from a search engine and created a new product that had both superior backend technology and a more streamlined frontend search experience for users. By outperforming the status quo options for users, the Google search engine became widely adopted, and an entirely new market arena—online data analytics—was created.

Recommendation: A good HCD approach builds from existing evidence and responds to data from direct user research. Looking for novel solutions can indeed be helpful in prompting out-of-the-box ideas and in encouraging creativity, particularly in the early stages of the design process. However, promising solutions should be judged on their potential to achieve the desired outcomes, and not on their newness. Projects integrating HCD in their intervention design should work to differentiate between, and to align stakeholders' understanding of, novelty and innovation. Projects and HCD participants should be encouraged to explore ways to improve existing solution approaches, in addition to coming up with entirely new ideas.

Using the right approach for each situation. HCD enriched Beyond Bias's intervention design and helped the project select data-collection modalities to evaluate the intervention; however, HCD may not be appropriate for every facet of a project, particularly when it comes to development or testing of quantitative tools. Classic research approaches use qualitative findings to design a survey, followed by a rigorous validation process to test reliability of the questions in different contexts. To create additional efficiency, Beyond Bias attempted to use an HCD-driven rapid prototyping process to test the reliability of a draft client exit survey adapted from existing tools. Despite promising early results, the survey did not work as desired when rolled out across a larger number of facilities. In response, the project defaulted to standard survey development and validation procedures.

Recommendation: HCD is a useful approach to develop engaging and user-centered interventions. However, implementers should not assume that HCD is a panacea for all dimensions of the project, particularly when classic research and evaluation approaches are proven to be effective. Qualitative findings from HCD research can be used to inform evaluation tools, but HCD is not a replacement for methodical, proven approaches to developing and validating survey instruments. It is worthwhile for project partners to align their expectations (early and continuously) for HCD and what it can realistically achieve.

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