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**Strengthening Human Resources for Health Capacity in the  
Republic of Rwanda under the  
President's Emergency Plan for AIDS Relief**

**Evaluation Protocol: Summary Excerpt**

The U.S. National Academies of Sciences, Engineering, and Medicine has been tasked by the U.S. Centers for Disease Control and Prevention to evaluate and document PEPFAR's investments in human resources for health in Rwanda. This is an excerpt from the evaluation protocol approved by the Rwanda National Ethics Committee, the National Academies' Committee to Review Studies on Human Subjects, and the CDC Associate Director for Science. This summary provides an overview of the evaluation objectives, approach, and methodological design. An ad hoc committee established by the National Academies is conducting the study. Data collection and analysis for the evaluation are being performed by EnCompass LLC. The full protocol is available via written request by contacting study staff at [rwandahrhstudy@nas.edu](mailto:rwandahrhstudy@nas.edu).

## PROJECT SUMMARY

The Rwanda Human Resources for Health (HRH) Program, funded in part by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR), was originally designed as an 8-year program (2011-2019) to respond to four key barriers the Government of Rwanda (GOR) had identified as preventing the provision of adequate health care, namely: (1) a shortage of skilled health workers; (2) poor quality of health worker education; (3) inadequate infrastructure and equipment for health worker training; and (4) inadequate management across different health facilities. In addition to the U.S. Centers for Disease Control and Prevention (CDC), other major funders of the Program included the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) and the Rwandan Ministry of Health (MOH). The HRH Program, which was designed, managed, and implemented by the GOR's MOH, established partnerships with U.S. medical, nursing, dental, and public health training institutions across each of these four disciplinary areas to build institutional capacity at the University of Rwanda College of Medicine and Health Sciences (CMHS), and to augment and increase the capacity of the country's health care workforce. PEPFAR funding of the Program ended in 2017, due to changes in PEPFAR's global strategy.

A retrospective, concurrent mixed-methods evaluation design will be applied to (1) describe PEPFAR's investments in HRH over time; (2) describe PEPFAR-supported HRH activities in Rwanda in relation to programmatic priorities, outputs, and outcomes; (3) examine the impact of PEPFAR funding for the HRH Program on HRH outcomes and patient- or population-level, HIV-related outcomes; and (4) provide recommendations to inform future HRH investments that support people living with HIV (PLHIV) and advance PEPFAR's mission. The evaluation of PEPFAR's investment in the HRH Program in Rwanda will be predominantly descriptive, building on appreciative and utilization-focused principles and employing a socio-ecological framework. Contribution analysis will facilitate the examination, to the extent feasible within the context of multiple funding sources, the impact of PEPFAR funding for the HRH Program on HRH and HIV-related outcomes.

Document review will inform the extent to which the HRH Program implemented activities as planned during the time period of PEPFAR's support (2012-2017), and situate the HRH Program within the broader HRH and HIV context in Rwanda and globally. Following the HRH Program trainees'<sup>1</sup> professional trajectories will identify where they were placed by geography, cadre, and role in the facilities. This information will inform selection of the in-depth examination of the facility microsystem<sup>2</sup> and guide categorization of facilities by degrees of exposure for quantitative analysis of HRH and HIV indicators. Secondary data for national-level HRH and HIV outcomes indicators will be analyzed for trends over time. Interviews with key respondents with specialized knowledge of the HRH Program—its inception, implementation, management, and closeout—will address the first two evaluation objectives and facilitate interpretation of quantitative findings. Two in-depth

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<sup>1</sup> Not all new health care professionals are considered part of the intervention. Only those who have received HRH Program-related education or training will be included.

<sup>2</sup> A facility microsystem is comprised of a facility that receives referral patients from a lower level facility, using the referral system as an indicator of the system's functionality.

examinations, one at the University of Rwanda and one within a facility microsystem, will be applied to provide a more holistic understanding of the effects of the HRH Program on the capacity to produce a workforce of sufficient quantity and quality to meet the needs of the Rwandan population and on HIV service delivery.

The findings, conclusions, and recommendations generated from this evaluation are expected to inform future HRH investments in Rwanda and elsewhere.

## **JUSTIFICATION FOR EVALUATION**

At the direction of the U.S. Global AIDS Coordinator, the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine (NASEM) was asked to undertake this evaluation in a single-source Request for Application through the CDC (CDC-RFA-GH18-1850). The National Academies are nonprofit institutions called upon by the terms of a U.S. Congressional Charter (36 U.S.C.A. 150301-150305) to act as an official, yet independent, advisor to the federal government. The Health and Medicine Division (formerly called the Institute of Medicine [IOM]) has been called upon previously to evaluate the implementation and impact of PEPFAR programs (IOM, 2007, 2013).

For the current effort, the statement of task, as laid out by the sponsor, requires an ad hoc committee [to] evaluate and document PEPFAR's investments in HRH in Rwanda (see "Evaluation Objectives and Questions" for the full statement of task). The purpose of the evaluation is to understand how the CDC PEPFAR funded MOH HRH Program (funded 2012 – 2017) affected morbidity and mortality outcomes for PLHIV. In responding to this statement of task, the evaluation provides an opportunity to describe and understand how PEPFAR's recent investment to build capacity for health professional education in Rwanda, as part of efforts to address health workforce needs, relates to key HRH and service delivery outcomes and contributes to effects on the health of PLHIV. The evaluation is being conducted as a NASEM consensus study by a committee carefully composed to ensure the requisite expertise and avoid conflicts of interest. The committee's conclusions and recommendations will provide objective, expert advice that can be used to inform how future investments to improve and increase the health workforce can support PLHIV and advance PEPFAR's mission. The members of the committee, study staff, and consultants who form the evaluation team are listed at the end of this document.

## **EVALUATION OBJECTIVES AND QUESTIONS**

In order to respond to the statement of task's overall goal, the objectives of this evaluation are, to the extent feasible, to:

1. Describe PEPFAR investments in HRH in Rwanda over time, including support for the MOH's efforts to address HRH needs and the broader context in which these investments were made.
2. Describe PEPFAR-supported HRH activities in Rwanda in relation to programmatic priorities, outputs, and outcomes.

3. Examine the impact of PEPFAR funding for the HRH Program on HRH outcomes and patient- or population-level HIV-related outcomes.
4. Provide recommendations to inform future HRH investments that support PLHIV and advance PEPFAR's mission.

To address these four objectives, the study poses the following evaluation questions:

Objective	Evaluation Question
Describe PEPFAR investments in HRH in Rwanda over time, including its support for the MOH's efforts to address HRH needs as well as the broader context in which these investments were made.	What investments has PEPFAR contributed to HRH in Rwanda since the beginning of the HRH Program in 2011?
	How did changes in PEPFAR and global health contexts influence PEPFAR's HRH investments since the beginning of the HRH Program in 2012?
	How did Rwandan contextual factors interact with or influence PEPFAR's HRH investments?
Describe PEPFAR-supported HRH activities in Rwanda in relation to programmatic priorities, outputs, and outcomes.	To what extent did the PEPFAR-supported elements of the HRH Program accomplish their programmatic priorities, outputs, and outcomes within the project's implementation time frame, specifically with respect to the investments in the twinning program and equipment procurement?
	How did programmatic priorities and activities change over the life of the implementation period? What factors influenced these changes?
	To what extent did the HRH Program contribute to institutionalizing improved health professional education in Rwanda?
Examine the impact of PEPFAR funding for the HRH Program on HRH outcomes and patient- or population-level HIV-related outcomes.	To what extent have the PEPFAR-supported elements of the HRH Program contributed to HRH and HIV-related outcomes?
Provide recommendations to inform future HRH investment that support PLHIV and advance PEPFAR's mission.	What efforts have been used to sustain the gains achieved by the PEPFAR-supported elements of the HRH Program since termination of PEPFAR funding? What approaches would be needed for long-term success?
	How can the experience of the HRH Program inform the effective use of future PEPFAR-supported HRH investments and their contribution to improved health outcomes for PLHIV?

## **THEORETICAL FRAMING AND EVALUATION APPROACH**

### **Theoretical Framing**

Theoretical causal pathways facilitate understanding of how complex interventions plausibly contribute to more distal outcomes, as well as show the processes undertaken to achieve those outcomes. While the HRH Program was designed to “build the health education infrastructure and health workforce necessary to create a high quality, sustainable health care system in Rwanda” (Rwanda MOH, 2011), the evaluation’s “statement of task” as provided by the CDC and the U.S. State Department’s Office of the Global AIDS Coordinator (S/GAC) and approved by the Governing Board of the National Academies (see “Justification for Evaluation”), necessitates linking this HRH Program aim to HIV-related population- and patient-level outcomes. These outcomes reach further downstream than the stated goals and outcomes of the HRH Program. The theoretical causal pathway below strives to bridge the gap between the HRH Program’s intentions and the evaluation’s objectives. The causal pathway will also serve to guide the assessment of the contribution of the CDC-supported HRH Program activities.

It is widely recognized that a comprehensive health system is required to implement the interventions needed to decrease HIV-related mortality. However, it is also widely accepted that access to skilled HRH contributes to improved health outcomes, and insufficient HRH can exacerbate the impact of the HIV epidemic (McCoy et al., 2008).

Through a combination of existing evidence, theory, and the expertise and knowledge of the NASEM study committee, a theoretical causal pathway was developed to inform and guide the evaluation’s lines of inquiry.

## *Theoretical Causal Pathway for Evaluation*



This pathway is holistic in that it includes elements that, while not funded under the HRH Program with PEPFAR support, are essential for building a health workforce that can effectively respond to the health needs of PLHIV. Taking this holistic view in our theoretical understanding of the HRH and associated needs to produce improved health outcomes for PLHIV facilitates the examination of the context into which the HRH Program was implemented.

As illustrated in the causal pathway, a stronger health workforce that is able to meet the health needs of the population is assumed, along with other factors, to generate improved public health and health care delivery systems. This combination of a functioning health system with an effective workforce results in better quality services. The combination contributes to improved health outcomes across health areas, including for PLHIV, and improved HIV-related outcomes as measured by decreased incidence, mortality, and morbidity. Though critical for producing an effective health workforce, pre- and in-service health professional education alone are not sufficient. Health worker performance is also influenced by management and supportive supervision practices, professional development and promotion opportunities, salaries and other incentives, as well as functioning systems within the health sector such as referral and supply chain (Henderson and

Tulloch, 2008; Bello et al., 2013). Furthermore, health worker engagement levels with their jobs are associated with facility performance in the delivery of HIV services (Alhassan et al., 2013). For example, a recent study in Tanzania found that every 10 percent increase in health worker job satisfaction was associated with a 1-percentage point (95 percent CI: 0.3 to 1.6) decline in HIV patient loss to follow-up (Lunsford et al., 2018). Additionally, many elements beyond the health sector influence the efficiency and effectiveness of the health system both as a whole and in part. For example, without a functioning education sector that supports both general education and professional educational institutions, students may not be prepared with the knowledge, skills, and competencies necessary to be trained as health workers capable of providing quality care.

### **Evaluation Approach**

The evaluation of PEPFAR's investment in HRH in Rwanda will be predominantly descriptive, building on appreciative and utilization-focused principles and employing a socio-ecological framework. Appreciative approaches in evaluation are especially effective in identifying often unrecognized programmatic results from the perspectives of diverse stakeholders and beneficiaries, and determining strengths to build on for future efforts. A utilization-focused approach ensures that insights are grounded in the realities of those closest to the program, and are more likely to provide useful and realistic recommendations to inform future activities and investments in HRH for HIV in Rwanda and elsewhere (Patton, 2008). Applying the socio-ecological framework ensures a lens through which to view how different levels of the system (individual, interpersonal, community, organizational, and policy) interact and influence outcomes separately and as part of a larger system. A theory-based causal pathway that reflects how programmatic activities and resulting changes in HRH outputs can be reasonably expected to contribute to intermediate HRH and health outcomes for PLHIV will inform the analysis.

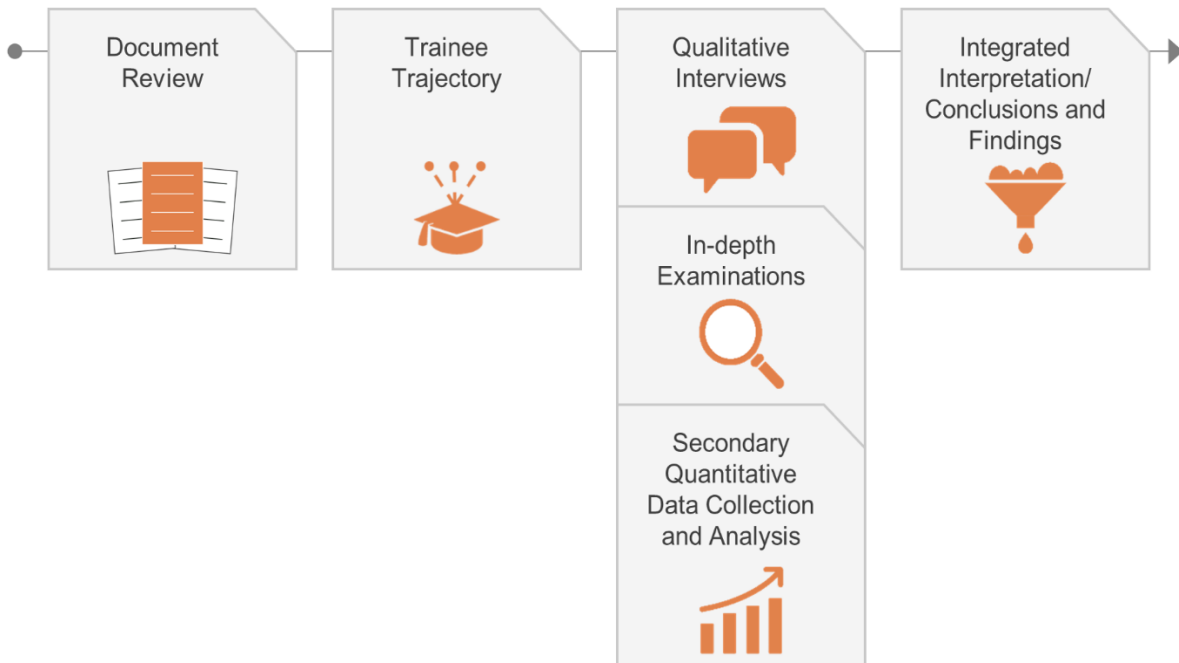
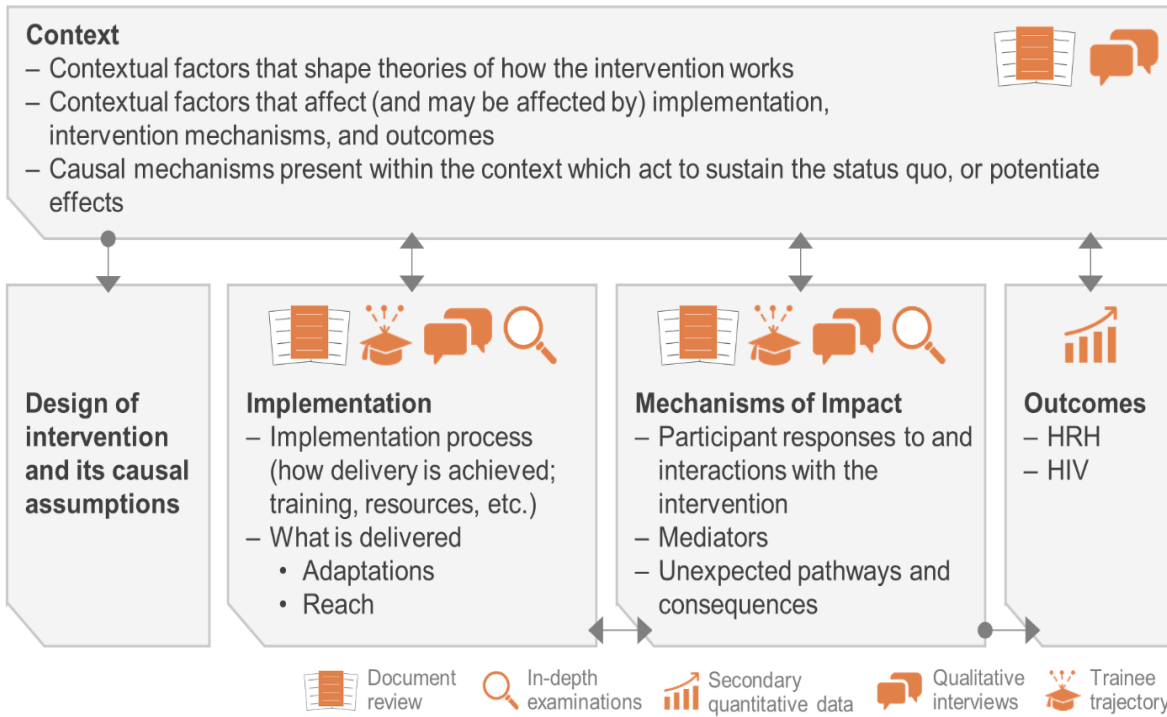
Contribution analysis will facilitate the examination of the potential impact that the HRH Program had on both HRH and patient outcomes. Contribution analysis is an effective methodology in complex settings where an experimental design or generating quantifiable measures of impact are not feasible. In this approach, concepts such as plausibility and reasonable agreement are applied to understand cause-effect, or the elements of a theory of change that led to the achievement of results (Mayne, 2011; Biggs et al., 2014; Nakrosis, 2014). As noted by Patton (2012), contribution analysis is particularly useful where "where there are multiple projects and partners working toward the same outcomes, and where the ultimate impacts occur over long time periods influenced by several cumulative outputs and outcomes over time," as is the case with HRH and HIV-related outcomes in Rwanda. The HRH Program was funded by PEPFAR, the Global Fund, the GOR, and, to a lesser extent, other entities. The scope of this evaluation focuses on the PEPFAR-supported elements of the Program: building health professional capacity to train HRH in nine clinical and management specialties (anesthesia, emergency medicine, internal medicine, nursing and midwifery, obstetrics and gynecology, pathology, pediatrics, surgery, and hospital administration), as well as investments in equipment. The evaluation will focus on PEPFAR-supported funding years (2012-2017), taking into account the effects of the termination of funding prior to the end of the Program.

## **DESIGN**

To answer the evaluation questions, we will use a retrospective, concurrent mixed-methods design with embedded in-depth examinations and contribution analysis. Our approach will focus on the Program's potential contributions to observed outcomes by understanding how the Program and its components were implemented and by examining the contextual factors that may have enhanced, moderated, or otherwise influenced outcomes (Moore et al., 2013). The figure on the next page links discrete evaluation objectives with the design element(s) (e.g., document review, trainee trajectory, in-depth examination, qualitative interview, and secondary quantitative data) that will be used to address each objective. The lower part of the figure illustrates that while the design is concurrent, there are some design elements that will occur sequentially. The document review and trainee trajectory elements will occur prior to the concurrent qualitative interviews, in-depth examinations, and secondary quantitative data collection and analysis. The integrated interpretation will occur in the evaluation's final phase.



## *Evaluation Design and Process*



Mixed-methods designs provide the flexibility to capture trends regarding what results have occurred, while gaining a deeper understanding of how gains were achieved and why change has or has not happened. Such designs also provide insight into how different populations may have experienced the intervention. Drawing on multiple data sources and approaches, this evaluation will yield an understanding of both breadth (via quantitative data) and depth (via qualitative data).

- **Document review:** We will conduct a thorough document review, drawing on policy and program documents, published reports about the Program, and other donor and partner reports to understand the context and landscape in which the HRH Program was designed and implemented.
- **Following the professional trajectory of HRH Program trainees:** It is unclear whether a single data source will provide comprehensive information on the distribution of HRH Program trainees within and outside of the public health system and within and outside Rwanda. Examination of a range of sources will allow us to follow the trajectory of HRH Program trainees both to understand their geographic distribution and to inform sampling for the in-depth examinations and quantitative components of the evaluation. Our aim is to follow the professional trajectory of as many trainees as possible, though we do not expect to locate all HRH Program trainees. The number traced will depend on feasibility, resources, Human Resources Information System (HRIS) data, and other information provided by professional associations and the MOH.
- **In-depth examinations:** To gain a deeper understanding of the outputs and outcomes of the HRH Program, we will complete two in-depth examinations: one at the University of Rwanda and another across a facility microsystem (see description of facility microsystem under “Study Populations”). These in-depth examinations will also provide a comprehensive narrative of the HRH Program’s role in the provision of HIV, health care management, and other services.
- **Qualitative interview data:** We will collect information from key respondents with deep knowledge of the design, implementation, and administration of the HRH Program and the broader HRH landscape in Rwanda to provide insight into Program achievements, and perceived impact on HRH capacity and HIV service delivery. Key respondents will be identified through document review and other mechanisms in advance of data collection. Furthermore, we will use a snowball sampling approach where initial interview respondents suggest others who could contribute to the evaluation. We will continue this approach until saturation is achieved, or the point at which no new information is shared from respondents.
- **Quantitative secondary data:** Contribution analysis will generate an understanding of the plausible contributions the HRH Program has made to HRH and HIV outcome indicators of interest.

## **Collaboration with Key Stakeholders**

This evaluation was requested of NASEM as an external evaluation in the form of a consensus study. NASEM has specific procedures in place for its consensus studies that assure neutrality and objectivity. The design and operationalization of this evaluation will be in accordance with those procedures. It is therefore being conducted by a study committee, staff, and evaluation team that explicitly do not include any individuals who are affiliated with the sponsor of the evaluation, the funders of the program being evaluated, the implementers of the program, nor parties with any other conflict or perceived conflict of interest.

An advantage to the use of an external evaluator is that it optimizes neutrality and objectivity in the design and in the data collection, analysis, and interpretation. It provides assurance that the resulting conclusions and recommendations are free from conflicts of interest and have not been vetted or controlled by those closely affiliated with or affected by the subject of the evaluation.

A disadvantage of an external evaluation can be that the evaluators do not inherently have the depth of context nor the first-hand knowledge and insight of those involved directly in the program. To enable appropriate interpretation of the available evidence and to foster the generation of meaningful conclusions and useful recommendations, it is important to gather and incorporate this perspective and experience.

This evaluation has several elements designed to do this. The evaluation questions incorporate the examination of context as a key component, and the design uses a range of data sources to gather that information. In addition, the study committee includes members who have experience in Rwanda, and the evaluation team carrying out data collection and analysis include members who are Rwandan and can contribute their contextual understanding. The design of the evaluation also includes the participation of stakeholders with both direct knowledge of the context and first-hand experience of the Program through qualitative methodologies.

## **LIMITATIONS OF THE EVALUATION**

The retrospective design of this evaluation limits investigation into causality, especially around HIV morbidity and mortality. There are a multitude of factors that contribute to both HRH and HIV outcomes that cannot be controlled with this type of design. While the goal of the evaluation is to determine the impact of the HRH Program on HIV-related mortality and morbidity, effecting change in these indicators can take many years. Because PEPFAR funding for the HRH Program ended in 2017, there likely has not been enough time to observe change. Additionally, the lack of a clear comparison and the ability to distinguish the HRH Program from background noise complicates the process of measuring the counterfactual and observing attributable impact. However, through a contribution analysis, the evaluation aims to examine the plausible role the HRH Program played in observed changes in key HRH and HIV indicators and contribute to an evidence-informed revision of the theoretical causal pathway. Qualitative data and document review will complement

quantitative data to generate insights into the HRH Program's implementation and impacts, and provide evidence to refine the theoretical causal pathway.

### **DISSEMINATING RESULTS TO THE PUBLIC**

The primary product derived from this study will be a NASEM consensus study report, authored by the NASEM committee. The report will consist of the committee's findings, conclusions, and recommendations to address the study's statement of task.

The National Academies Press, the publishing arm of NASEM located in Washington, D.C., will publish the final report and will assist in broader dissemination by making the report available on the internet through its website ([www.nap.edu](http://www.nap.edu)). A public release event will be held, with staff and committee members participating, in both Washington, D.C. and Kigali, Rwanda.

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