Strengthening National Epidemiologic and Research Capacity to Improve Health Outcomes in the Kingdom of Eswatini

(CoAg #: GH15-1580/GH001271)

Evaluation Report

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List of Acronyms

BSS	Behavioral Surveillance Survey
CDC	Centers for Disease Control and Prevention
CRVS	Civil Registration and Vital Statistics
CoAg	Cooperative Agreement
CROI	Conference on Retroviruses and Opportunistic Infections
CSO	Central Statistical Office
CUIRB	Columbia University Institutional Review Board
DGHT	Division of Global HIV/TB
DHS	Demographic and Health Survey
ESU/EDCU	Epidemiology Surveillance Unit/Epidemiology & Disease Control Unit
EU	European Union
GCP	Good Clinical Practice
GHS	Global Health Service
GKOE	Government of the Kingdom of Eswatini
HRTP	Health Research Training Program
HRU/NHRID	Health Research Unit/National Health Research and Innovation Department
HSS	Health Systems Strengthening
IAS	International AIDS Society
ICAP	ICAP at Columbia University
ICD-10	International Classification of Diseases 10
IDSR	Integrated Disease Surveillance and Response
IHR	International Health Regulations
IP	Implementing Partner
IRB	Institutional Review Board
KII	Key Informant Interviews
MEDAB	Monitoring, Evaluation, and Data Analysis Branch
MICS	Multiple Cluster Indicator Survey
MOEPD	Ministry of Economic Planning and Development
MOH	Ministry of Health
MOHA	Ministry of Home Affairs
NDCC	National Data Coordinating Center
NHRRB	National Health Research Review Board
PEPFAR	President's Emergency Plan for AIDS Relief
PREMR	Public Responsibility in Medicine and Research
PHP	Public Health Practice
SHIMS	Swaziland HIV Incidence Measurement Survey
SID	Strategic Information Department
SWOT	Strengths, Weaknesses, Opportunities and Threats
TA	Technical Assistance
TWG	Technical Working Group
UNISWA	University of Eswatini
USG	United States Government

Executive Summary

Background: In April 2015, ICAP began a CDC-funded cooperative agreement (CoAg) entitled *Strengthening National Epidemiologic and Research Capacity to Improve Health Outcomes in the Kingdom of Eswatini (EPI|PHIA)*. The primary objective of EPI|PHIA is to increase national capacities in epidemiology, surveillance, vital statistics, and research capacities through working with the Epidemiology & Disease Control Unit (EDCU)[1], Central Statistical Office (CSO), Health Research Unit (HRU)[2], National Health Research Review Board (NHRRB), and the Health Research Training Program (HRTP) under the Government of the Kingdom of Eswatini (GKOE). The purpose of this evaluation report is to assess the implementation successes and challenges (process evaluation) and effectiveness (outcome evaluation) of EPI|PHIA.

Methodology: Process evaluation questions assessed stakeholder engagement during the implementation of the program and the extent to which planned activities were implemented. Outcome evaluation questions focused on the effectiveness of the program in building capacity. Key Informant Interviews (KIIs), in addition to a review of program administrative records, were the primary sources of data. Data collection for this mixed-methods evaluation was completed in March 2019. A deductive approach, guided by key evaluation questions, was used to analyze key informant data. A codebook was developed, and QSR NVivo software was used to organize and analyze data. Results from KIIs were triangulated with performance indicator data from program administrative records to evaluate EPI|PHIA's level of success in implementing planned program elements and assess outcomes associated with the program. Baseline assessments and performance assessments were quantitatively analyzed retrospectively, and narratives were extracted from open-ended questions to illustrate emerging themes.

Findings: ICAP improved the capacities of the target units despite funding gaps and occasionally weak stakeholder engagement. ICAP improved capacities through training, one-on-one mentorship, and technical assistance. The methods in which ICAP carried out their activities varied between units and were implemented to varying degrees of success. The CSO successfully constructed a National Data Coordination Center (NDCC) and produced vital statistics reports. The HRU quickly established a resource center and started newsletters, among other information dissemination tools, but the resource center has lost resources due to lack of security, and the website was not accessible at the time of the evaluation due to a funding gap that resulted in license expiry. Capacity within the NHRRB was built through training, and the protocol submission and review process were enhanced through the installation of RHInnO, an online platform tool to track protocol procession through the IRB process. The EDCU's staff members were capacitated to begin collecting weekly epidemiological data and develop epi-bulletins, which has led to improved data use and dissemination. ICAP facilitated transportation to enable the team to visit outbreaks, attend meetings, and fulfill the EDCU's national mandate. Lastly, through HRTP, a comprehensive research training curriculum has been implemented and has successfully trained 40 fellows, who have gone on to pursue advanced degrees, work at the CDC, become pharmacists, and conduct important health research in Eswatini.

Conclusions and Actionable Items: All units have seen increases in capacities and ability to achieve deliverables through EPI|PHIA. The progress between units varied and many of the gains will be threatened when EPI|PHIA ends. The sustainability of new capacities presents a challenge without future funding and technical support. Some units have begun preparations for the closure of the program; however, all units would benefit from solid transition planning. Sustainability plans should be created for each unit to ensure progress will continue after EPI|PHIA. Importantly, capacity building of unit staff should be prioritized over technical assistance to increase the success of the sustainability plans. Many of the evaluation team's suggested actionable items center around

[1] Formerly called the Epidemiology and Surveillance Unit (ESU)

[2] The name of the unit was changed after data collection to the National Health Research and Innovation Department (NHRID). Because the name of the unit at the time of the evaluation was HRU, we will refer to the unit as the HRU throughout the report.

planning, both for sustainability and for future activities that can be carried on after EPI|PHIA. Specific actionable items for CDC Eswatini and ICAP's consideration are listed at the end of the report in section 6.0.

1.0 EPI|PHIA Program Background

Over the past decade, collaboration between the United States Government (USG) [President's Emergency Plan for AIDS Relief (PEPFAR) and the Centers for Disease Control and Prevention (CDC)] and the Government of the Kingdom of Eswatini (GKOE) has transformed the response to HIV/AIDS in Eswatini and enabled rapid and remarkable scale-up of HIV prevention, care, and treatment services. To continue their aggressive approach to the HIV epidemic, more timely and high-quality information and research are needed. In July 2015, ICAP was the recipient of a CDC-funded CoAg (CoAg #GH15-1580/GH001271) entitled *Strengthening National Epidemiologic and Research Capacity to Improve Health Outcomes in the Kingdom of Eswatini* (EPI|PHIA). EPI|PHIA represents a comprehensive approach to strengthen national capacity in epidemiology, surveillance, and research to effectively track, monitor, and respond to the HIV epidemic. EPI|PHIA, also known as EPI|SHIMS, contained five objectives. Four of those objectives concerned health systems strengthening and are the focus of this evaluation. The fifth objective was the completion of the Swaziland HIV Incidence Measurement Survey (SHIMS) and was not covered in this evaluation. The program includes the following Health Systems Strengthening (HSS) objectives:

1. Support to the EDCU to implement and monitor Integrated Disease Surveillance and Response (IDSR)
2. Support to the HRU to coordinate national health research initiatives and disseminate research findings; and the NHRRB to expeditiously review a wide range of protocols
3. Support to the CSO to establish the NDCC and strengthen Civil Registration and Vital Statistics (CRVS) activities
4. Research capacity building through the HRTP

The HSS objectives of EPI|PHIA are primarily focused on providing technical assistance to specific operational units within the GKOE's Ministry of Health (MOH) and Ministry of Economic Planning and Development (MOEPD).

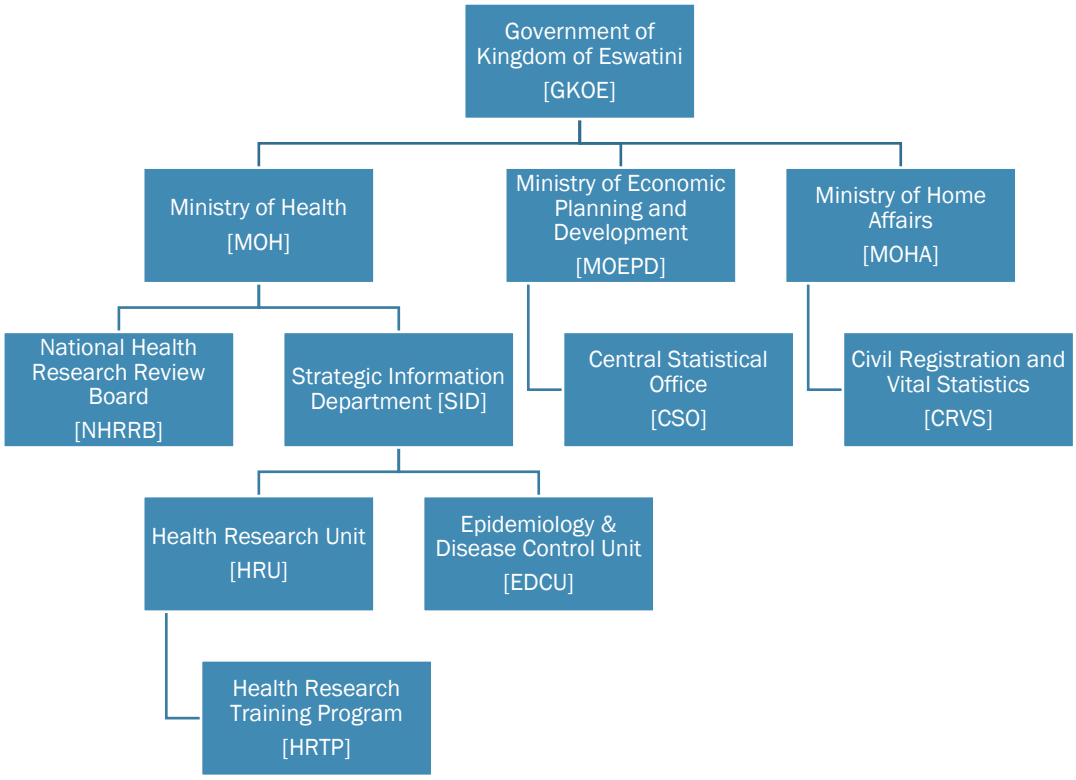

Figure 1: Organizational structure for operating units supported under EPI|PHIA

The HRU and EDCU are separate units under the Strategic Information Department (SID). The HRTP leadership is coordinated by the HRU. The NHRRB is directly under the MOH. EPI|PHIA activities conducted in the MOEPD involve strengthening of the CSO and CRVS activities. While CRVS is officially housed under the Ministry of Home Affairs (MOHA), the ministry works closely with MOEPD to implement CRVS activities. Mandates for each unit are described below in Table 1, and a brief description of EPI|PHIA workplan activities for each of the units is provided in Section 5.0. All the workplan activities were prioritized with guidance from the CDC.

Table 1: Operating Unit Description of Mandates

Operating Unit	Description of Mandate
ESU/EDCU	Set the national disease surveillance agenda and coordinate the production, analysis, and dissemination of population-based data.
HRU	Lead the coordination and implementation of the country's research agenda.
NHRRB	Ensure that the research conducted within Eswatini is ethically and scientifically sound.
CSO	Support periodic national surveys and national custodian of country statistics.
HRTP	Ensure that health care workers in Eswatini are capacitated to conduct and utilize evidenced-based health research.

2.0 Evaluation Purpose

This report describes the findings from process and outcome evaluations and is intended to provide information to determine the level of stakeholder engagement, technical assistance, and effectiveness in sustainably increasing the capability of the GKOE operational units in fulfilling their mandates through EPI|PHIA.

The process evaluation aimed to assess the relative successes and challenges in the *implementation* of EPI|PHIA and included the questions below:

- To what extent did planned technical assistance and capacity building activities take place? [Workplan Implementation]
- To what extent did ICAP engage stakeholders in designing and implementing program activities? [Stakeholder Engagement]

The outcome evaluation aimed to assess the *effectiveness* of EPI|PHIA in improving epidemiology, surveillance and research capacities in Eswatini and included the following questions

- To what extent has the access to and use of quality epidemiologic, surveillance, and health research data in general, and HIV and TB-related epidemiologic, surveillance, and health research to inform programming and related policy updates been increased? [Capacity Building, Sustainability]
- To what extent has the access to and use of health and vital registration data, and social sector research in general, to inform national planning and policy updates been improved? [Capacity Building, Sustainability]
- To what extent has the NHRRB been capacitated to improve the efficiency of protocol review, feedback, and study monitoring processes? [Capacity Building, Sustainability]
- To what extent has capacity building through HRTP been provided to improve research in the country? [Capacity Building, Sustainability]

3.0 Evaluation Design

The evaluation was designed and conducted in line with the CDC's framework for program evaluation in public health. A mixed-methods approach was employed, utilizing both qualitative and quantitative methodologies. Data were triangulated from desk reviews of administrative program data collected and reported periodically to CDC and from KIIs of relevant stakeholders who were positioned to describe the successes and challenges encountered in program implementation and the effectiveness of EPI|PHIA on the surveillance, public health, and research in Eswatini. Data reviewed in this evaluation included the following:

- Performance indicators routinely reported to CDC
- Results from KIIs conducted as part of this evaluation
- Data from baseline gap analyses of the units (raw data was not available, and thus, only the reports were used)
- Data from performance assessments of benefiting individuals and departments
- Routinely collected data available to beneficiary units, e.g., routine surveillance data

3.1 Stakeholder Engagement

Governmental and non-government stakeholders (people who had directly been involved with the planning and implementing of EPI|PHIA) included GKOE officials, ICAP project officers, and CDC staff. Stakeholders were engaged in the different planning stages of the program, including prioritizing what to evaluate, budgeting and funding decisions, identification of the evaluation questions, and dissemination and use of findings and recommendations. Stakeholders were engaged multiple times throughout the evaluation design, implementation, and data collection. Key stakeholders from MOH were sensitized on the need to conduct a program evaluation and were listed on the evaluation protocol to highlight their institutional affiliations, roles, and responsibilities. Conference calls between the ICAP Evaluation Team, the CDC Atlanta Evaluation Team and the sponsor (CDC Eswatini) provided an opportunity to discuss and refine the design of the evaluation and outline the scope of work for the Evaluation Team. Information from these discussions was used to develop an implementation manual and supporting materials.

3.2 Ethical Considerations and Assurances

All evaluations must be conducted in a manner that is respectful to and protects human rights, privacy, and confidentiality and maintains the dignity of participants and other stakeholders.

The Columbia University Institutional Review Board (CUIRB) and the NHRRB reviewed and approved the evaluation protocol entitled '*Evaluation of a Program to Strengthen Surveillance, Public Health, and Research in the Kingdom of Eswatini, Version 1.3'*. The protocol was also reviewed and approved by the Scientific Integrity Branch/Office of the Associate Director for Science, Division of Global HIV/TB (DGHT) at CDC. Protocol submission and approval dates are shown in Table 2:

Table 2: IRB Submission and Approval Dates

IRB/Ethic Review	Protocol Submission Date	Protocol Approval Date	Amendment Submission Date	Amendment Approval
CUIRB	Nov 2, 2015	Nov 19, 2015	Nov 12, 2018	Mar 5, 2019
NHRRB	Feb 21, 2018	Aug 8, 2018	Nov 27, 2018	Dec 6, 2018
CDC	Nov 5, 2015	Aug 21, 2018	Dec 3, 2018	Feb 7, 2019

All Evaluation Team members completed the Collaborative Institutional Training Initiative Social and Behavioral Research training before starting the evaluation. This training covers Good Clinical Practices in reference to research protocol, recruitment and retention, informed consent communication, confidentiality and privacy, participant safety and adverse event reporting, quality control and assurance, and research misconduct. Evaluation Team members from CDC are staff members from the Monitoring Evaluation and Data Analysis Branch (MEDAB) and have experience conducting quantitative and qualitative assessments under protocol in alignment with the PEPFAR Evaluation Standards of Practice. Evaluation Team members were trained on patient data confidentiality and security guidelines, and all signed confidentiality agreements and conflict of interest statements (Appendix 3).

Informed consent was obtained from all KII participants using the approved consent form (Appendix C of the Evaluation Protocol). As part of the consent process, participants were informed that their participation in the KII was voluntary, and they are free to stop participation at any time without penalty or loss of benefits. All individual-level information reported has been de-identified.

4.0 Methodology and Analytic Techniques

A two-pronged approach, consisting of 1) desk review of administrative program documents and 2) KIIs, was used to conduct the onsite component of the evaluation in Eswatini.

4.1 Desk Review

Members of the Evaluation Team were responsible for conducting the desk review of administrative program documents. A list of desk review materials derived from Appendix 6.3 of the evaluation protocol was generated and shared with ICAP for the collection of both hard and soft copies of the materials (Appendix 5). All documents were kept in a locked room in ICAP Eswatini offices or on a password-protected computer with access limited to members of the Evaluation Team.

ICAP project officers were asked to provide a brief overview of the available documentation for each program area. Materials were reviewed, and key elements/relevant findings captured using a data extract tool (Appendix 1A). Findings from the desk review were triangulated with KII responses and used to provide additional context for interview summary sheets (Appendix 1B).

4.2 KIIs

KII participants were selected based on their expert knowledge of the program activities and expected outcomes. ICAP project officers also provided suggestions of key stakeholders who should be interviewed. ICAP assembled the list of potential interviewees from each organization and contacted participants to schedule the interviews. Sampling of KII participants included staff affiliated with the project from EDCU, HRU, CSO, NHRRB, MOHA, MOH, the University of Eswatini (UNISWA), ICAP, and CDC. Due to logistical limitations, not all people or organizations identified in the protocol could be interviewed. The distribution of interviewees contributing to each area is shown in Table 3. While not all interviewees were directly employed by the unit, participants had significant experience and interaction with that unit, thus qualifying them as a key informant.

Table 3: Number of Completed Interviews per Unit

Unit	# of Interviewees Per Unit
HRU/NHRRB	6
CSO	6
EDCU	2
HRTP	5

The ICAP Evaluation Lead was responsible for arranging the interviews and subsequent transcription, overseeing the data collection, securing data files, collecting materials for desk review, and monitoring progress. All interviews were scheduled and confirmed by ICAP. Permission to conduct the interviews was obtained from supervisors prior to contacting the KII participants. Individual interviews were conducted in a private room, and a unique identifier was assigned to each participant that was used to code all information collected during the interview to ensure confidentiality. Prior to conducting the interview, informed consent was obtained from the participant using the approved consent form.

Nineteen KIIs were completed over a two-week period. ICAP Evaluation Team members served as primary interviewers, and CDC Atlanta Evaluation Team members served as secondary interviewers, note-takers, and provided additional probing questions when necessary. All interviews were audio-recorded, and audio files uploaded onto encrypted password-protected computers from digital recorders. Audio files were transcribed by an ICAP staff member, and all transcripts underwent a quality assurance process, initiated by the ICAP Evaluation Lead. Audio files were deleted after transcription and transcription verification. Once transcription was completed, a codebook was developed, and transcripts uploaded into NVivo for coding. A thematic analysis was conducted using coded transcripts and findings aligned with other documentation and notes from the interview.

To facilitate data collection and reduce inter-interviewer variability, a tailored job aid was developed based on the protocol and aligned with the KII guide (Appendix 1C). Contextual meetings with ICAP project officers assisted in the development of the job aid. Interviewers used the job aid in conjunction with the KII guide to conduct the interview and collect notes. Upon completion of the interviews, interview summary sheets for each of the five primary organizations were populated by a subgroup of the Evaluation Team. The summary sheet consolidated observations from the Evaluation Team members who participated in the interviews and aligned the observations with relevant sections from the KII guide.

5.0 Evaluation Findings

The process evaluation conducted under this protocol sought to assess the relative successes and challenges in the implementation of EPI|PHIA. Process evaluation questions applied to all target units supported by EPI|PHIA and included the following:

1. To what extent did planned technical assistance and capacity building activities take place?
2. To what extent did ICAP engage stakeholders in designing and implementing program activities?

For question 1, the Evaluation Team conducted a review of planned activities and documented the status of key activities under each unit to assess the extent to which these activities had been completed at the time of the evaluation. To address question 2, results from KIIs were used to assess the degree to which ICAP engaged stakeholders in designing and implementing program activities.

The outcome evaluation assessed the effectiveness of EPI|PHIA in improving epidemiology, surveillance, and research capacities in Eswatini. The questions below are specific to each unit:

1. To what extent has the access to and use of quality epidemiologic, surveillance, and health research data in general, and HIV and TB-related epidemiologic, surveillance, and health research to inform programming and related policy updates been increased? [EDCU]
2. To what extent has the access to and use of health and vital registration data, and social sector research in general, to inform national planning and policy updates been improved? [CSO]
3. To what extent has the NHRRB been capacitated to improve the efficiency of protocol review, feedback, and study monitoring processes? [HRU/NHRRB]
4. To what extent has capacity building through HRTP been provided to improve research in the country? [HRTP]

Findings for each unit are described in the narratives and tables below.

5.1 EDCU

The EDCU is responsible for setting the national disease surveillance agenda and coordinating the production, analysis, and dissemination of population-based data. This is achieved by setting up surveillance systems, implementing outbreak control, and conducting epidemiological research studies. ICAP, through EPI|PHIA, sought to strengthen each of these areas.

Workplan implementation

The protocol identified 23 key workplan activities that covered 5 main areas: the EDCU Strategic Plan (SP), International Health Regulations (IHR), IDSR, tuberculosis, and Behavioral Surveillance Surveys (BSS). The complete list of activities and their completion status can be found in Table 4.

SP: A baseline assessment of the EDCU was completed, and the National Strategic Plan for Epidemiology and Disease Surveillance was finalized based on findings/recommendations from the baseline report. Seventy-nine participants attended the official dissemination meeting for the strategic plan. In addition, the strategic plan was disseminated through monthly clinical forums, presentations, meetings with regional health management teams, and routine trainings.

IHR: The IHR aims to prevent, protect against, control, and provide a public health response to the international spread of disease. Utilizing IDSR is a way of fulfilling IHR requirements.

IDSR: IDSR utilizes a coordinated approach to data collection, analyses, interpretation, use, and dissemination of surveillance information for decision-making and implementation of public health interventions, with the goal of controlling and preventing communicable diseases. When the EDCU was receiving human resources support, funded through EPI|PHIA, they were able to complete the baseline of IDSR at each facility, develop a roadmap to guide IDSR implementation, and draft a list of indicators to monitor implementation. With support from ICAP, the EDCU trained over 600 health workers on IDSR and the importance of bringing disease-specific surveillance programs together to improve the efficiency of resources and public health surveillance in Eswatini. However, since human resources support ended through seconded staff, the EDCU has been unable to continue fully

monitoring IDSR implementation at the site level. Onsite sensitization meetings and monitoring visits have continued, however, at a decreased frequency.

TB/BSS: The EDCU and ICAP also planned activities specific to TB and the BSS. However, due to reprioritization in funding, these activities were not funded or pursued during EPI|PHIA but have been included in Table 4 to show the complete original conceptualization of EPI|PHIA's work within the EDCU.

Stakeholder Engagement

Overall, EDCU informants felt that they had a good working relationship with ICAP and were appreciative of ICAP's support and flexibility. Informants also stated that they felt that they could take ownership of program activities while still relying on ICAP for assistance as needed. One area where informants felt less engaged was in the identification of stakeholders/KIIs for this evaluation.

> *"We have worked with different partners but there have been some restrictions, but with this one [ICAP], it has been very effective working with them."*
>
> *"You know what is unique about this project is that I can say it has been our project, not an ICAP project, in such a way that there was that flexibility… so there was that open communication between ICAP and ourselves."*

Capacity Building

EDCU surveillance systems, outside of HIV/AIDS, have improved, and data is now received on a weekly basis. EDCU informants specifically highlighted that ICAP's involvement in the creation of strategy documents and a roadmap helped the EDCU to become strategic and purposeful in their activities. Transportation (ICAP vehicle/driver) was frequently referenced by informants as a significant benefit of ICAP support as the provision of a vehicle/driver facilitated outbreak investigations and enabled the unit to provide training. ICAP also played a pivotal role in providing technical assistance for training health workers at tertiary institutions on IDSR. Over 600 health workers have been trained, and EDCU is currently integrating IDSR training at the University of Eswatini. ICAP has provided HR support, but due to funding re-prioritization to other parts of EPI|PHIA, this support was not able to cover the entire period of the program. In general, there has been a shift in the EDCU's organizational culture to encompass a larger appreciation for data utilization. The increased utilization of data has increased the visibility of EDCU, especially at the MOH level and other agencies and departments know to reach out to EDCU when it comes to surveillance:

> *"Whenever they have these epidemic conditions, they know who to call by the end of the day"*

Through EPI|PHIA, EDCU was able to build capacity in its surveillance systems. Before EPI|PHIA, many districts or even other units within the MOH were conducting their own epidemiological surveillance due to the perceived lack of capacity at the EDCU. Through EPI|PHIA, this capacity has grown, and now most surveillance runs through the EDCU. ICAP specifically assisted the EDCU in setting up surveillance for HIV, TB, multi-drug resistant diseases, sexually transmitted infections, and behavioral surveillance among priority populations. However, due to EPI|PHIA funding reprioritizations, the behavioral, TB, and STI surveillance systems were not fully functional at the time of this evaluation.

Significant improvements were also seen in documentation/processes as well as information dissemination. Before support through EPI|PHIA, EDCU struggled to locate and utilize documents. As processes have improved, essential resources such as the SP, IDSR Roadmap, and baseline assessments are not only appropriately filed but have also been shared with MOH. Regarding information dissemination, EDCU has also improved information dissemination and is now able to assess data quality and produce epi bulletins monthly and weekly instead of just quarterly. Additionally, two papers have been presented in international conferences, and EDCU has been invited yearly by schools to present on IHR and Global Health Service (GHS).

Sustainability

EDCU still has a limited number of staff members, high turnover, and competing priorities, which create a challenging environment. To address some of these challenges, EDCU planned to decentralize surveillance activities and promote sustainability after EPI|PHIA and intended on recruiting four regional surveillance officers through government hiring. However, this effort was put on hold due to the 2019 economic climate and the government-hiring freeze.

Table 4: Planned and Implemented Activities for EDCU

#	Area	Activity	Status
1	SP	Conduct baseline desk review/SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis of surveillance system, in collaboration with EDCU, SID, and other key stakeholders	√
2		Review the EDCU SP	√
3		Disseminate the baseline assessment by Public Health Practice (PHP)	√
4		Facilitate stakeholder meetings for coordination protocols	Not Done
5		Support stakeholder meetings to launch the national plan, and to support the roll-out of the implementation plan	√
6		Print strategic plan	√
7		Disseminate strategic plan	√
8		Provide technical assistance (TA) for the development of the M&E plan to monitor the EDCU strategic plan	√
9		Develop sensitization training materials on components of the EDCU strategic plan	√
10	IHR	Conduct periodic site visits to assess the implementation of IHR and GHS to ensure that core capacities are met	√
11	IDSR	Provide TA support in training of key staff	√
12		Facilitate consensus framework meeting with stakeholders	√
13		Draft IDSR consensus framework	√
14		Provide TA for the development of the IDSR Roadmap forward to strengthen epidemiology and surveillance capacity	√
15		Development of monitoring and evaluation tool for IDSR Roadmap	√
16		Provide TA in the EDCU's review of case definitions for IDSR for global best practices	√
17		Support analysis of existing routinely collected surveillance data in one key area to be decided by stakeholders	Not Done
18		Provide support and mentorship for field supervision of the routine surveillance system	√
19	TB	Working with other stakeholders (Global Fund) to review existing TB drug resistance data and reporting system	Not Done
20		Provide TA for updating the TB-drug resistance surveillance system and related SOPs and tools relevant to MDR- TB current issues	Not Done
21		Support review meetings of routine TB drug resistance surveillance system	Not Done
22	BSS	Provide TA for finalization of BSS report, participate in meetings and report writing activities	Not Done
23		Facilitate dissemination of report findings	Not Done

5.2 CSO

The CSO is the government unit in charge of conducting national surveys and supporting the statistical needs of the government. Because they play a large role in vital statistics and national health surveys, they were selected as a recipient of EPI|PHIA support.

Workplan Implementation

EPI|PHIA supports two different components within the CSO: 1) support to establish a sustainable and functional NDCC and 2) strengthening of the quality and use of vital statistics data. The protocol identified 13 sub-activities spanning these two areas (Table 5).

NDCC: The NDCC was conceptualized as a place where government datasets would be housed, and researchers could access the datasets. The center has both online and offline components. The offline component is housed within the CSO building and is a designated space where researchers can utilize computers and access government health datasets. Furniture, computers, and other equipment was provided for the center by ICAP through EPI|PHIA. The online component will ultimately allow researchers to access government health datasets from anywhere in the world; the system is not yet fully functional but is in the work plan for Year 5 of EPI|PHIA. Concerns were raised by informants about the feasibility of this happening in Year 5. The online component of the NDCC was not in the initial workplan and was later added.

> *"By the time ICAP leaves the country, [we] will be actually having the NDCC up and running, but now it is not the case, and one is not actually sure whether by the time the project is over, it will be up and running"*

As a result of funding gaps and prioritization of other national activities such as SHIMS that occurred earlier in EPI|PHIA, informants were sometimes hesitant to say that objectives laid out in subsequent work plans would be met by the time EPI|PHIA was over. However, most informants across all units felt that they had achieved most of what had been set out to accomplish in the initial work plan.

ICD-10: The 10th version of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) is the universally accepted coding system for causes of death and injury. To improve vital statistics reporting, EPI|PHIA provided support to help migrate Eswatini health facilities to ICD-10 coding. Currently, ICD-9 is being used at health facilities; the MOH systems are not compatible with ICD-10, preventing the full integration of the system. At the time of data collection, MOH had developed plans to train new developers to integrate the system. Three vital statistics reports were developed with the support of EPI|PHIA. However, the actual reporting to the vital statistics registry remains low, and the reports lack the quantity or quality of data needed to produce high-quality and useful vital statistics reports.

Stakeholder Engagement

NDCC stakeholder engagement by ICAP was reported to be very strong. An informant stated that the ICAP project officer came every week to make sure that they were on track to accomplishing the work plan:

" We are actually having a strong relationship… the plan was to have someone working for ICAP sited in the office to ensure that there is actually a link between the two, and even during his departure after he left the office , he actually kept coming in the office almost every week to ensure that there is that kind of relationship of engagement of ICAP to see to it that things are actually on the move"

While ICAP's engagement with the ICD-10 and vital statistics reporting was strong, it appeared from interviews that the engagement was more focused on technical assistance than capacity building.

"At some point they were helping us with analysis, but our schedule has been busy and have been clashing. I haven't been able to really learn or gain skills from what ICAP to offer us. I believe that once a partner has come and gone there should be a sign that somebody was here and helped you, you can do it on your own. So, I still feel like we are still kind of using ICAP as a crutch on some things"

This perspective highlights potential issues with sustainability as the analytic support that ICAP has provided through EPI|PHIA may not have translated fully into meaningful capacities built within the CSO's ICD-10 and vital statistics reporting unit. By contrast, interviewees from the CSO's NDCC unit did not make this distinction. Interviewees from the ICD-10 unit said they experienced very high workloads during most of EPI|PHIA, perhaps resulting in ICAP working directly on deliverables more than they did with other units.

Capacity Building

As a result of activities conducted under EPI|PHIA, health and vital registration data have become more available with the publishing of the three annual vital statistics reports in 2017, 2018, and 2019. This matched CDC and ICAP expectations of being able to produce one annual report per year. However, in the forward to the 2018 Vital Statistics report, the Director of the CSO, Amos Zwane, noted that the quality of the data within the reports is low due to the low civil registration within the country: *"According to the 2017 and 2018 CRVS reports, it is worth noting that registration of vital events remains incomplete, for example, complete birth registration improved to just 13.2 percent in 2017 from a mere 8.3 percent in 2016. As such, this limits the depth of analysis to only a few indicators that pinpoint the data gaps, which also is useful information to guide policy on the next steps towards an improved CRVS system."* Often, people do not register vital statistics events, and so data quantity and quality are low. This was outside the scope of the EPI|PHIA award but did limit the use of vital statistics data for national planning and policy updates.

Sustainability

The progress made in the CSO, including the creation of the NDCC and the production of vital statistics reports, may be at risk for two reasons: 1) government funding for these activities post-EPI|PHIA and 2) sustainable capacity building. One informant noted that even though much ground has been covered through EPI|PHIA, the government can decide to not support the NDCC in the future and the CSO will have little control over the sustainability:

> *"It will depend on priorities because government priorities they change…you will find that next year data is something that for us we can do away [with] because some people or our country, our politicians, they don't understand what the importance of research is actually"*

Achieving designated deliverables addresses the needs over a specific time period, equally important to sustainability is training and knowledge transfer to ensure that the staff being supported can independently conduct analysis and other activities in the absence of or with minimal technical assistance.

Table 5: Planned and Implemented Activities for CSO

#	Area	Activity	Status
1	NDCC	Conduct a baseline assessment of infrastructure, security and technical needs for the NDCC to determine overall goals, intended users, datasets to be housed, among other basic aspects	√
2		Develop recommendations and a collaborative work plan	√
3		Support procurement for resources and personnel for the NDCC	√
4		Clean and convert previous datasets into easily accessed and usable data files and provide data use documentation and post them in the NDCC	√
5		Provide expert advice and conduct training workshops for NDCC-related functions	√
6		Support CSO to develop SOPs for data access and use	√
7		Develop and implement a sustainability plan for maintaining NDCC	√
8	ICD-10/Vital Statistics	Conduct baseline desk review and interviews to determine SWOT with vital statistics data	√
9		Collaboratively develop a work plan based on gaps identified	√
10		Conduct ICD-10 coding training and utilize as a mechanism to institutionalize standardized reporting of causes of morbidity and mortality within Swaziland	√
11		Update standard operating procedures for vital statistics reporting	√
12		Support and train staff to collect and update vital statistics data at the regional level	√
13		Develop a sustainability plan for maintaining quality reports on vital statistics	Not Done

5.3 HRU/NHRRB

The HRU is responsible for coordinating health research-related activities and implementing the national research agenda. Likewise, the NHRRB is responsible for granting ethics approval for health research in the country and ensuring that health research conducted within Eswatini is ethically and scientifically sound. The NHRRB acts as an independent body within the MOH. EPI|PHIA sought to improve the efficiency of protocol review, feedback, and study monitoring processes.

Workplan Implementation

The EPI|PHIA workplan supported four main activities aimed at providing support for the HRU and NHRRB (see Table 6); 1) strengthening the NHRRB, 2) establishment of a National Health Research Resource Center, 3) support for HRU to implement the National Health Research Agenda (2015-2019), and 4) support for HRU to host the National Health Research Conference (NHRC) biennially. The protocol references 23 sub-activities in covered in the workplan for these 4 areas.

NHRRB: Although the initial workplan development process was less interactive and iterative, the process got progressively better with later work plans where the unit felt more engaged and was able to provide more significant input, although some informants noted that it would have been helpful to have greater transparency from ICAP on budget. A baseline assessment of the NHRRB was conducted by members of the CUIRB and served to inform the NHRRB workplan and capacity building efforts. The report identified training needs for NHRRB members and provided recommendations for improving NHRRB coordination and procedures. An orientation and planning meeting and 3 trainings for NHRRB members were held in 2016. An NHRRB member was able to contribute to a poster abstract for the Public Responsibility in Medicine and Research (PREMR) conference; however, due to lack of funding, he was not able to attend the conference in person. NHRRB members have been able to share information and learnings with researchers, address questions, and hold quarterly meetings to obtain feedback. These quarterly meetings provide greater accountability, and ICAP was engaged in the organization of the meetings.

EPI|PHIA also provided support for the NHRRB secretariat to improve coordination and report. Initially, the provision of TA/staffing yielded good results; however, due to funding restrictions, support for this activity was not maintained. The use of the RHInnO software system helped facilitate coordination and reports, and NHRRB successfully installed and implemented the RHInnO software system to enable online protocol submissions and review. The NHRRB switched to full electronic submissions in April 2018 (no paper submissions were accepted after this date). Researchers and the NHRRB members have access via the system to meeting dates, checklists for submission, and NHRRB review comments. While many of the sub-activities addressing RHInnO implementation were accomplished, and the system's capacity to monitor and track protocol submission and review that has not been fully utilized. Due to funding gaps, the NHRRB has not yet conducted a SWOT analysis on country readiness for implementing clinical trials or developed research monitoring capacity.

National Health Research Resource Center: The aim of this activity was to help build research capacity through the creation of resources centers where researchers and students would be able to access documents, databases, and receive training.

"it is helping the researcher in the region to know where they can sit and work on their studies, and it is also assisting those who are doing their studies; providing spaces and resources to health researchers in Eswatini"

Three resource centers were initially opened, however, with no dedicated staff, two of the centers have since closed. The Evaluation Team visited the resource center in Mbabane that has remained open; while there was adequate space for the center, both materials and staffing were limited. Trainings on Endnote, Stata, and workshops on cost analysis, qualitative research, and report, abstract, and manuscript workshop have been conducted. HRU disseminated research and other information through a variety of platforms, including newsletters (2 hard copy, 2 e-copy, working on a 5th at the time of the evaluation), post-conference debriefs, and their website. The newsletter has been useful in disseminating research. One informant described the purpose of the newsletter as a tool:

> "*to disseminate what we do in as far as research is concerned so we feature every series of research that is happening in the country, irrespective of who conducts that particular research undertaken."*

The HRU website, which also houses RHInnO, was not operational at the time of the visit and documentation of trainings (Stata and Endnote), SOPs, and the number of individuals using the facility was limited. Like other areas, the HRU experienced funding gaps in Year 3 that limited its ability to support these centers adequately, and several activities were not achieved.

National Health Research Agenda for 2015-2019: The National Health Research Agenda details the types of health research to be prioritized by the Eswatini government. The agenda was developed and effectively disseminated via both hard and soft copies (available on the HRU website) with EPI|PHIA support.

National Health Research Conference (NHRC): Two National Health Research Conferences (2015 and 2017) were held allowing national health researchers to present their work. Meeting minutes and information provided by informants demonstrated ICAP support in the organizing conference, establishing thematic tracks, training meeting participants on how to write abstracts, and develop posters. ICAP also provided support for post-conference information dissemination for the NHRC as well as other meetings (including the Conference on Retroviruses and Opportunistic Infections (CROI) and the International AIDS Society (IAS)).

Stakeholder Engagement

While there are clear successes with EPI|PHIA's support of HRU and NHRRB during the implementation phase, engagement of NHRRB during the design of the program was limited.

> *"Maybe they consulted with the ministry and other people, but we didn't give much input to it, even though when we looked at the activities, they were sort of aligned with some of the things we wanted to do."*

Capacity Building

Capacity-building activities conducted as part of EPI|PHIA resulted in improved capacity and efficiency of protocol review and feedback. An important early step that helped to guide improvement efforts was the assessment conducted by members of the CUIRB. The assessment yielded several helpful suggestions that improved the organization of the NHRRB as well as providing suggestions on procurement and use of the RHInnO system to streamline the protocol review and approval process. Successful implementation of RHInnO and training of both board members and investigators have facilitated protocol submission and review procedures. NHRRB board members were also trained in ethics and IRB management by CUIRB.

> *"It also assisted us to capacitate the board, to orientate the board, they trained the board what is really expected of them as board members, there was GCP [Good Clinical Practice] training you know capacity building trainings there have been a lot. I think they are more than 4. Then it also assisted us, we were also capacitated as a board, I remember one time…, someone from ICAP Columbia they flew in, we sat down with them. They did a sort of desk review for us so they can see where we are still having challenges, where we can still improve, it assisted us a lot. They also met the board, the whole board, they also gave a workshop I think it was a 2-day workshop to the board."*

Informants had positive feedback on RHInnO and indicated that the use of the system has streamlined procedures and decreased the turnaround time for NHRRB reviews. The actual turnaround time before and after implementation of the system was not documented, and desk review documents were not able to confirm the actual turnaround time for NHRRB reviews. Several informants noted that some researchers had difficulty adapting to the RHInnO system as the previous system was all done via email or paper; however, the ease of use outweighed the learning curve for the platform.

In other areas, research capacity has also been enhanced as part of EPI|PHIA through support to HRU in developing the resource center, drafting and dissemination of a National Research Agenda, hosting two (2015 and 2017) National Health Research Conferences, and the development of a website, newsletters, and post-conference briefs. At the time of the evaluation, no activities had been conducted to support capacity building for monitoring of research trials.

Sustainability

The sustainability of HRU successes is at risk in the absence of EPI|PHIA funding and support. The Evaluation Team was unable to access the website at the time of the visit due to a funding lapse that resulted in the expiry of the license for the website. Informants noted that resource center materials are not secured and were often taken and not returned to the center. While there is sometimes someone present at the resource center to assist with checking out materials, the center is understaffed and has no lockable shelving units. This is costly for the unit and means that there are fewer materials in the resource centers than when they were first constructed. Many informants echoed a sentiment expressed by one informant:

> *"It will really be challenging…., the shortage of staff would be a challenge and also the resources, the other resources that ICAP comes with, like the transport, we would have a challenge and as I mentioned earlier in terms of the engagement of human resource after the end of the contract"*

To begin to address some of the concerns around sustainability, NHRRB members have been proactive in seeking out sustainable funding options. The NHRRB has applied for additional funding through the European Union (EU) and received a conditional notice of acceptance at the time of data collection. They are also planning to raise protocol submission fees (E1000 for international organizations, smaller fees for local organizations) as another mechanism to support the sustainability of the NHRRB and have submitted a budget for the NHRRB to the government to help increase autonomy.

Table 6: Planned and Implemented Activities for HRU/NHRRB

#	Area	Activity	Status
1	Strengthen NHRRB	Review and update NHRRB workplan	√
2		Identify training needs of NHRRB members	√
3		Support the position of the NHRRB secretariat to improve coordination and report	√
4		Support NHRRB to develop research monitoring capacity of approved research, e.g., submission of regular progress reports to identify protocol violations and ensuring annual NHRRB renewals	Not Done
5		Provide support for internal monitoring capacity and tools to review number protocols received, turnaround time, monitoring reviews done.	√
6		Provide support to NHRRB to conduct a SWOT analysis on country readiness for implementing clinical trials (e.g., need a strong lab and pharmacy, GCP training)	Not Done
7		Support regular feedback meetings to NHRRB by researchers	√
8		Support RHInnO system coming live	√
9		Support online access to NHRRB guidance and activities: meeting dates, the checklist for submission, comments from NHRRB (only accessible to the submitting researcher)	√
10		As part of training for NHRRB staff, will facilitate attendance at the annual meeting of Advancement of Ethical Research, attended by members of CUIRB and organized by PREMR	Not Done
11	National Health Research Resource Center	Conduct a baseline needs assessment to identify infrastructure and equipment needs	√
12		Support establishment of an online request system for additional resources, e.g. articles behind paywalls	√
13		Provide mentorship to HRU staff to maintain the resource - center and track access and use	√
14		Develop standard operating procedures for using the resource center and train users	Not Done
15		Develop a database and database documentation to support the resource center	√
16		Support training for users of the resource center	√
17	National Health Research Agenda	Support printing of documents related to the national health research agenda	√
18		Support the dissemination plan for the research agenda	√
19		Support monitoring of submissions to NHRRB to track the relevance of new applications to the national health research agenda	√
20	National Health Research Conference	Provide technical assistance for identifying conference themes, and abstract tracks	√
21		Provide leadership and TA for capacity building symposia for abstract submission, poster preparation, and oral presentations	√
22		Support attendance of facilitators with relevant local and international experience	√
23		Support post-conference activities including abstract archival and manuscript development for high-quality abstracts	√

5.4 HRTP

The HRTP was launched in 2013 and has enrolled 40 fellows to date. The HRTP Advisory Board is comprised of senior officials from MOH, ICAP, CDC/PEPFAR, universities, and other government institutions, and is responsible for fellowship selection, among other tasks. The HRTP curriculum includes modules on protocol development, research implementation and monitoring, GCP, data analysis, and scientific writing.

Workplan Implementation

The EPI|PHIA workplan supported two main activities for HRTP: 1) Launch and train the current cohort of HRTP fellows, and 2) continued training and mentorship of previous HRTP fellows. The protocol references 11 sub-activities in covered in the workplan for these 2 areas (Table 7).

Launch and train the current cohort: HRTP was successfully launched and implemented a modular training curriculum. To date, 40 fellows have completed the training. These fellows have gone on to become pharmacists, researchers, CDC employees, and pursue advanced degrees.

> *"One main which can maybe even make us very proud, there are some examples of former HRTP maybe because of you know the knowledge, skills, capacity they received you know they have been promoted to higher responsibilities in the health sector, some examples in our office they are former HRTP you know who will apply for higher positions and come up as one of the best candidates so it is another success story."*

Continued training and mentorship of previous HRTP fellows: At the time of the evaluation, 5 cohorts had completed the training.

Stakeholder Engagement

Fellows felt like they owned their projects (completed in the second year of the fellowship). But fellows often struggled to commit to the fellowship fully. One of the most significant struggles for fellows was work-fellowship balance. All fellows worked full-time in addition to the fellowship, which added strain on their ability to be involved with the fellowship fully. However, there is increasing prestige of the fellowship and more applications were being received every year. One fellow indicated that the balancing act was a motivation to get her Ph.D.:

> *"I am currently doing my Ph.D... not something that I wasn't thinking to do, it was not anytime soon because I would look at the mere fact that when will I get the time…. doing HRTP helped me to understand that it is not like you will find time anywhere, but you need to work around the time that you have and how best you can maximize it. So basically, it helped me to realize that I can do it despite the work of 8 to 5, even beyond that because it also depends on where you are stationed at the same time."*

Capacity Building

The HRTP program has increased the capacity for health research within Eswatini and enhanced the visibility of Eswatini research by increasing the number of abstracts and manuscripts authored by Eswatini researchers. Eleven abstracts have been presented, and four manuscripts are currently in draft form.

Sustainability

EPI|PHIA is currently is the sole financial supporter of HRTP, which has generated concern among informants about the sustainability of the program. The informants described two possible solutions for sustainability. The first was to integrate HRTP into a university in Eswatini, thus making it a tuition-based curriculum. The second was to integrate HRTP into the MOH as in-service training. While no decision had been made by the time of data collection, the strategic advisory board was actively engaged in planning for the sustainability of HRTP after EPI|PHIA ends.

Table 7: Planned and Implemented Activities for HRTP

#	Area	Activity	Status
1	Launch and train HRTP cohort fellows	Conduct pre-training assessment	√
2		Conduct a launch workshop	√
3		Conduct modules 1-6 training	√
4		Conduct other training sessions including webinars, workshops and other research review and dissemination sessions	√
5		Conduct post-training assessment	√
6		Hold semi-annual HRTP advisory board meetings	√
7		Conduct mid-year review/MOH senior managers meeting	√
8	Continued training and mentorship of previous HRTP cohorts	Obtain IRB approvals for individual projects	√
9		Support fieldwork and data collection for individual projects	√
10		Support data analysis for individual projects	√
11		Writing up of individual projects	√

6.0 Conclusions and Potential Actionable Items

6.1 EDCU

The IDSR Roadmap contains the activities, actors, and timeline for IDSR implementation and was developed to achieve an efficient and effective public health system. When EDCU had personnel support, the unit was able to assess IDSR implementation at each facility. However, since the loss of this position, there have been no follow-up visits to continue monitoring or evaluating the implementation of the IDSR Roadmap at sites. Identification and funding for an advisor to support EDCU activities would help address this problem and ensure that monitoring and evaluation for the IDSR Roadmap takes place.

Decentralization of surveillance could promote EPI|PHIA program activity sustainability. While efforts have been made to accomplish this, the current economic climate, resulting in a government-hiring freeze, presents a significant obstacle to the sustainability of this approach. Additional surveillance systems could be established to address emerging health issues, such as non-communicable disease surveillance. Now that the capacity of EDCU to set up surveillance systems has been improved through EPI|PHIA, focus on developing systems to address additional needs is needed.

6.2 CSO

While valuable technical assistance was provided by the implementing partner to achieve key deliverables, additional capacity building, involving knowledge and skills transfer, is still required to ensure long term sustainability. In Year 5, emphasis on training people from the CSO and interconnected agencies could enable additional capacity and competencies to be built before EPI|PHIA ends. The lack of integration of systems within the CSO, CRVS, and MOH prevents data from being used effectively. The integration of these systems is critical to data utilization. In addition, when the ICD-10 coding is completed within the MOH systems, training on ICD-10 for hospitals and death recorders would improve vital statistics reporting; the last training on ICD-10 was done in 2017. Lastly, the process for moving government datasets to the NDCC is currently manual, in that someone must use a flash drive or email to put the dataset on the NDCC computers. Automating this process would make the system more effective and sustainable for the future.

6.3 HRU/NHRRB

HRU: Three primary actionable items prevent the HRU from being fully operational. First, the website license for the HRU was expired at the time of data collection, which limited access to resources and dissemination of the information, including the newsletter. Addressing the expired license could enable HRU to disseminate information and connect with national and international health researchers. Second, informants noted that materials were often taken and not returned, from the resource centers. This is costly for the HRU and means that there are far fewer materials in the resource centers than when they were first constructed. Developing a strategic plan for security measures and then implementing the plan could be one way to improve the retention of materials in the resource centers. Lastly, the HRU's current level of activity appears to be unsustainable past EPI|PHIA support. For example, the HRU was unable to fund the website license themselves even though the website is a large part of their overall communication strategy. Active transition planning by ICAP and the HRU could alleviate some of the uncertainty about the future of HRU programming.

NHRRB: Monitoring the training of board members to ensure they are all properly trained would be a useful step in the final year of EPI|PHIA. In addition, specific sustainability planning for the RHInnO system would allow the NHRRB to seamlessly provide services even if there are gaps in funding. The NHRRB appears to have taken a proactive approach to address funding issues post-EPI|PHIA funding and have applied for and received conditional approval of the EU grant. At the time of data collection, they were close to achieving legal

recognition as the national health research ethics board. However, until this is achieved, legal recognition remains a barrier to the NHRRB's overall success and sustainability.

6.4 HRTP

HRTP is clearly a valuable program to the Eswatini government and developing a sustainability plan could enable it to build on its successes. As a follow-up to EPI|PHIA, the HRTP curriculum is currently not publicly available and could be packaged as part of the transition plan with the closeout of EPI|PHIA. This packaging would allow the curriculum to be shared more broadly, including fellows for their personal use. The HRTP strategic advisory board is working on a sustainability plan for future HRTP cohorts. Several options for the sustainability of HRTP are under consideration: an in-service training program housed with the MOH, and a tuition-based curriculum housed within a university. Housing the program within the MOH would likely encourage more fellows to stay within the MOH after the fellowship which would, in turn, build MOH capacity. The program would be free to the participants, thus allowing more to participate, however to implement this model, funding would need to be identified in the MOH budget to support mentors' and fellows' stipends and this money would need to come out of the MOH budget. A tuition-based curriculum within the university would address some funding challenges; however, fewer promising candidates would be able to join the fellowship and, without direct linkages to jobs within Eswatini, fellowship graduates may move outside of the country to pursue additional research opportunities. The third option of a combined one-year tuition-based program and a subsequent year of in-service training at MOH may bring together the advantages of the first two approaches and address the funding challenges.

Table 8: Challenges and Potential Actionable Items for EPI|PHIA and Future Programming

Unit	Challenges	Potential Actionable Items
EDCU	• IDSR implementation is not currently monitored at sites and EDCU is severely understaffed • Surveillance systems need to be strengthened at local and regional levels	• Conduct site visits to monitor and evaluate the implementation of IDSR in facilities • Identify advisor to support EDCU activities • Decentralize surveillance so that activities aren't always initiated at the national level • Develop additional surveillance systems to monitor emerging diseases
CSO	• Capacity has not been built at all levels despite ongoing trainings • Data must be manually entered into NDCC and data management processes involve many systems and stakeholders	• Train more people from each organization (do not rely on 'trickle-down' effect of training one person in an organization) • Increase capacity in correctly reporting ICD-10 causes of death (last training was done in 2016/17) • Make systems 'talk' to each other (MOH, CRVS, and CSO) • Create automatic processes to transmit data to NDCC
HRU/NHRRB	• License for HRU website does not work and resource centers are losing resources quickly • The party responsible and capable of paying for RHInnO after EPI|PHIA is not clear	• Investigate and address access/license expiry for HRU website • Implementation plan for monitoring of clinical trials (if funds are available to support this activity) • Develop a strategic plan for supporting resource centers to ensure retention of materials in the resource center • Develop sustainability planning for RHInnO system to ensure gains made under the award are not lost • Monitor certification process for NHHRB and board member training to address gaps

HRTP	• The curriculum is not available to fellows to use after the training
	• The party responsible for running and maintaining HRTP after EPI|PHIA is not clear
		• Implement a plan to package HRTP curriculum [in alignment with the transition plan]
		• Develop a transition plan to ensure the sustainability of the program after the award
		  ○ MOH in-service training program
		  ○ University-based pre-service training program

7.0 Limitations

While the Evaluation Team was able to successfully complete the desk review and KII interviews, several factors limited the analysis of the data. Delays in full protocol approval prevented the HQ evaluation team from initially being able to access desk review documentation, which ultimately resulted in a compressed review period. Targets for key indicators and monitoring data collected throughout the program for these indicators were not readily available for many of the activities conducted during EPI|PHIA. In addition, while some monitoring data was available through ICAP's semi-annual and annual reports to CDC, records of the monitoring data, external to the reports, were not always found. While a monitoring plan had been constructed at the beginning of the program, as well as workplans throughout EPI|PHIA, a completed monitoring dataset or tool was unavailable during data collection. This made it challenging, at times, to distinguish the role of ICAP compared to the role of the supported unit in achieving some workplan items. For KIIs, there was disproportionate representation across the five program areas of EPI|PHIA (some units had many informants, and others had few), resulting in saturation for units with more representatives and information gaps for underrepresented or non-represented units.

8.0 Dissemination Plan and Use of Data

Preliminary results were shared with CDC Eswatini so that they could immediately begin working on the actionable items in the remaining year of EPI|PHIA. The results were shared in a presentation at CDC offices, and the slides were later sent to the country office for their reference. CDC Eswatini used the preliminary findings to inform partner management and to plan for future programming. ICAP Eswatini will utilize this report, in addition to a dissemination meeting by the end of 2019, to improve their activities and resolve some of the outstanding activities that have yet to be completed. The evaluation report was shared with the CDC Eswatini and ICAP Eswatini offices throughout the drafting process. The final report was also shared with key stakeholders and will be made publicly available on CDC Stacks within 90 days of completion.

9.0 Evaluation Budget

Funds totaling $5540.00 were requested for the evaluation. At the evaluation completion, the total cost of the evaluation was estimated to be $4373.43. Please contact the DGHT intramural financial unit for further information.

10.0 References and Appendices

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Table 9: List of Appendices

Title	Document File
Appendix 1A: Data Extraction Tool	CSO Data Extraction Tool.pdf; ESU Data Extraction Tool.pdf; HRU NHRRB Data Extraction Tool.pdf; HRTP Data Extraction Tool.pdf
Appendix 1B: Interview Summary Sheets	Interview Summary Template.pdf
Appendix 2: Informed Consent	Appendix D-Consent form_pm_c
Appendix 3: Conflict of Interest Statement	Appendix G_COI form_pm.pdf
Appendix 4: Workplan and Timeline	Program Workplan.pdf
Appendix 5: Desk Review Materials	Desk Review List.pdf
Appendix 6: CVs of Evaluators	Roles and Responsibilities of Eva