Enhancing Supervision: Phase II Implementation Study

Study Protocol – Philippines

Updated Version – February 4, 2021

TABLE OF CONTENTS

Acronyms

BEmONC	Basic emergency obstetrics and neonatal care
BHS	Barangay health stations
CHO	City health office
CMSU2	Community Maternal Neonatal Child Health and Nutrition Scale Up Follow-on
DMO	Development Management Officer
DNS	District Nurse Supervisor
DOH	Department of Health
FHSIS	Field Health Services Information System
FP	Family planning
ILHZ	Interlocal Health Zones
IMAP	Integrated Midwives Association of the Philippines
IRA	Internal revenue allotment
LGU	Local Government Unit
PHA	Public health associates
PHO	Provincial Health Office
RHO	Regional Health Office
RHU	Rural health units
SSV	Supportive supervision
TMC	Technical Management Committee
USAID	United States Agency for International Development

A. Study Significance and Aims

A.1 Significance

The strength of a health system—and ultimately the health of a population—depends on health workers' performance. However, insufficient support to build, manage, and optimize human resources for health (HRH) across broader workforce development functions results in insufficient quantity and quality of health workers in low- and middle-income countries.

Effective health worker supportive supervision approaches and practices are essential elements that help compensate for shortfalls in HRH training, management, and efforts to improve quality of health services and motivation of health workers. According to the United States Agency for International Development (USAID) Acting on the Call report (2017)[1], enhanced supervision is estimated to have the highest potential impact of all health systems strengthening strategies considered in the modeling framework to save maternal and child lives[2]. The report defines enhanced supervision as "a broad set of supervisory interventions that improve provider performance through team-based learning approaches, including supportive supervision, the use of checklists, and in-person visits" (USAID, 2017, p. 100).

The Government of the Philippines recognizes supportive supervision as an important approach to increase quality of health care for all its citizens and as key strategy for achieving universal health care. In 2012, the Department of Health (DOH) endorsed and rolled out a supportive supervision guide developed by a USAID-funded HealthGov project to improve provider performance and the quality of health services. However, due to devolution of health policy and services to the provincial and municipal governments, this guide is not being applied uniformly across the country.

Phase I – Landscape Analysis Summary of Findings

In Phase I, the Human Resources for Health in 2030 (HRH2030) program conducted a landscape analysis to identify evidence-based enhancements to supervision approaches that demonstrated significant improvements in health worker performance, health service quality, or systems effectiveness. Key findings from this analysis showed that health worker supervision is most effectively implemented when the approach can be adapted to specific contexts to address identified health workforce performance at the macro-, micro- and individual levels. Best-practice supervision approaches integrate evidence-based, quality-driven tools and processes to improve performance, and can be adapted, scaled and sustained within a health system. To assess how effective some of the supervision enhancements identified in the landscape analysis are, HRH2030 will conduct implementation study in Phase II using an experimental research design in the context of the supportive supervision system in Leyte province, in the Philippines.

A.2 Phase II Study Aim

[1] United States Agency for International Development(2017). Acting on the Call - Ending Preventable Child and Maternal Deaths : A Focus on Health Systems. Retrieved from https://www.usaid.gov/actingonthecall/2017-report

[2] The results are based on an eight-step modeling framework that "represent a realistic, yet ambitious best-case scenario for impacts on lives saved." The report also cautions that estimated modeling requires each component of a health system works synergistically with the other to achieve maximum impact, and the importance of contextual factors and severity of health system bottlenecks by country in affecting outcomes (p. 105-109)

Phase II of this activity will use an implementation research approach to evaluate the outcomes of supervision enhancements. It will be an experimental study with treatment and control groups with five integrated local health zones (ILHZ)[3] each assigned randomly to the control group and treatment groups, which will cover all 10 ILHZs in the Leyte province.

Study Aim. To assess the effects of ***digital supervision support and facility self-assessment*** on supervisor and health worker competency and performance, client satisfaction, health service delivery, and data use.

Intervention: This intervention has three parts – (a) supporting the development and use of digital supervision checklists for basic emergency obstetric and newborn care (BEmONC) and family planning (FP); (b) facilitating action planning and follow up to address service delivery issues identified during supervision; and (c) supporting service providers in using supervision checklists for facility self-assessment and quality improvement.

Rationale: The current paper-based supervision tools are time-consuming to complete and make it difficult for supervisors to identify and prioritize performance issues that should be addressed during quarterly supervision visits and followed up through action plans at facility, ILHZ or provincial levels. The completed supervision checklists establish action plans that are used for quality improvement. Before adopting supervision enhancements in the country their effectiveness needs to be tested.

Approach: The effectiveness of this supervision enhancement will be assessed using an experimental design comparing changes in treatment and control ILHZs pre- and post-implementation, complemented by focus group discussions with health care providers and supervisors.

The country setting[4] and supervision enhancements were selected based on consultations with key Philippines stakeholders[5] to map the provincial health worker supportive supervision system during a September 2019 scoping trip. Findings from this study will contribute to the evidence base on effective supervision systems design in the Philippines and other resource-constrained settings, thereby aiding policymakers and program managers in the revision of supervision system and guidelines to maximize HRH staff performance at scale.

[3] Inter-Local Health Zones are based on the concept of the pre-devolution District Health System, the ILHZ is basically an "organized arrangement for coordinating the operations of an array and hierarchy of health providers and facilities, serving a common population within a local geographic area under the jurisdiction of more than one local government" (Department of Health, 2006a). During the program implementation review meeting in February 2020, inter-local health zones were renamed as integrated health zones used also be referred. An ILHZ consists of primary health providers, a core referral hospital and an end referral hospital. Cities and municipalities that are geographically contiguous and with populations ranging from 150 000 to 500 000 that routinely intermingle comprise an ILHZ. (World Health Organization, Regional Office for South-East Asia. 2018. The Philippines health system review. Health systems in transition. Vol-8, Number-2.). The label 'district' is retained in hospital and staff titles.

[4] To identify appropriate contexts, HRH2030 developed the following country selection criteria: [1] Country-led supervision activities currently supported by HRH2030, or Chemonics projects; [2] Functional health worker supervision system in treatment regions or districts; [3] Functional HMIS system in treatment regions or districts (e.g., DHIS2); [4] Demonstrated interest by host country MOH; [5] Demonstrated interest by local USAID Mission; [6] Possibility of the intervention being scaled up by national stakeholders after HRH2030 Phase II completion. Based on these criteria and in consultation with HRH2030 country programs, ministries of health, local USAID missions, and USAID/Washington, Philippines was selected. The sections below will be specific to testing select supportive supervision enhancements in Philippines. Study implementation for other selected country contexts will be developed separately.

[5] Including HRH2030 Philippines program, Provincial Health Office/Leyte, DOH Regional Health Office (Region VIII), District Health Office/Ormoc, USAID/Philippines, and USAID/Washington.

With intervention preparation taking place from October 2019 through January 2020, the anticipated period for the implementation study is from February through March 2021.

B. Context

B.1. Supervision System in the Philippines

The health system in the Philippines is decentralized[6] to local government units (LGUs) – 81 provinces, which further break down into 145 cities and 1,489 municipalities; with provinces led by a governor, and cities and municipalities headed by mayors, respectively. Barangays, the lowest administrative units, are headed by a chairperson, of which there are 42,044 (National Objectives for Health, 2018[7]). LGUs are allocated funds from the national government through the internal revenue allotment (IRA) and are responsible for managing IRA funds (and local revenue), including for delivery of basic social services such as health. The provincial administration is led by a governor, who approves changes to the health system including interventions supported by donor-funded projects such as HRH2030's enhanced supervision.

The public sector health service delivery and management structure follows the LGU hierarchy, with provincial health offices managing service delivery at district and provincial hospitals. Municipal health offices manage primary health care services delivered at rural health units (RHUs), city health offices (CHOs), and barangay health stations (BHS). In addition, the DOH also supports health service delivery at the local levels through various initiatives, such as the nurse deployment and public health associates (PHA) deployment programs. Through these programs, nurses are seconded to understaffed RHUs and BHSs to support service delivery; PHAs are seconded to RHUs and PHOs to support health data reporting through data entry and consolidation.

The health worker supportive supervision system follows the same management structure described above. While the DOH has supervision guidelines, they are not binding and each province designs and funds its supervision system as they see fit. In Leyte province, where this research study will be implemented, the PHO has adopted supportive supervision as one of their key health systems strengthening strategies, specifically for BEmONC. Supportive supervision is also applied to FP, but currently only for private facilities. In Leyte, supportive supervision policy development and oversight is led by the PHO, and district supervisors provide supportive supervision to RHUs/CHOs, and RHUs to BHSs in turn as detailed in Table 1.

In addition to the PHO-led supportive supervision visits, the regional health offices (RHO) also conduct monitoring visits to health facilities within their catchment areas; and have their counterparts, development management officers (DMOs), who are stationed at districts hospitals and work closely with their respective ILHZs. As the term 'monitoring' implies, RHOs have no supervisory authority and must rely on the PHO to follow up and address any issues identified during their visits.

[6] Alliance for Improving Health Outcomes. (2017) Leadership and Governance: the Philippines health system in a glance. Retrieved from http://www.aiho.org.ph/wp-content/uploads/2017/05/5-Philippine-Health-Leadership-Governance.jpg
[7] Philippines Department of Health (2018). *National Objectives for Health: 2017-2022*. Retrieved from https://www.doh.gov.ph/node/16880

Table 1: Supervision System Structure and Visit Frequency

Supervision Level/Supervisors	Supervisee	Supervision Frequency	Supervision Objectives/Supervisor Role
Provincial Health Office SSV coordinator and provincial health officer*	District Supervisors	Quarterly meetings (no supportive supervision activities)	Coordinate with regional, provincial, and municipal/city health offices, LGUs and ILHZs and through ILHZ board and Technical Management Committee (TMC) meetings; provide strategic support, and development of standards; supervise for quality control and adherence to standards as needed – including accompanying supervision visits; strengthen supervision skills of district supervisor and monitor their performance
ILHZ/ district supervisors	RHU, CHO, private clinics, municipal hospital, and community hospital staff	Quarterly	Assess skills of provide and strengthen them as needed; monitor performance of RHU staff. Organizes quarterly ILHZ coordination meetings to discuss and address findings from supervision visits.
RHU/ nurse and midwife supervisors	BHS staff	Monthly/Ongoing	Assess and strengthen skills of BHS staff (midwives, nurses, and barangay health workers), and monitor their performance

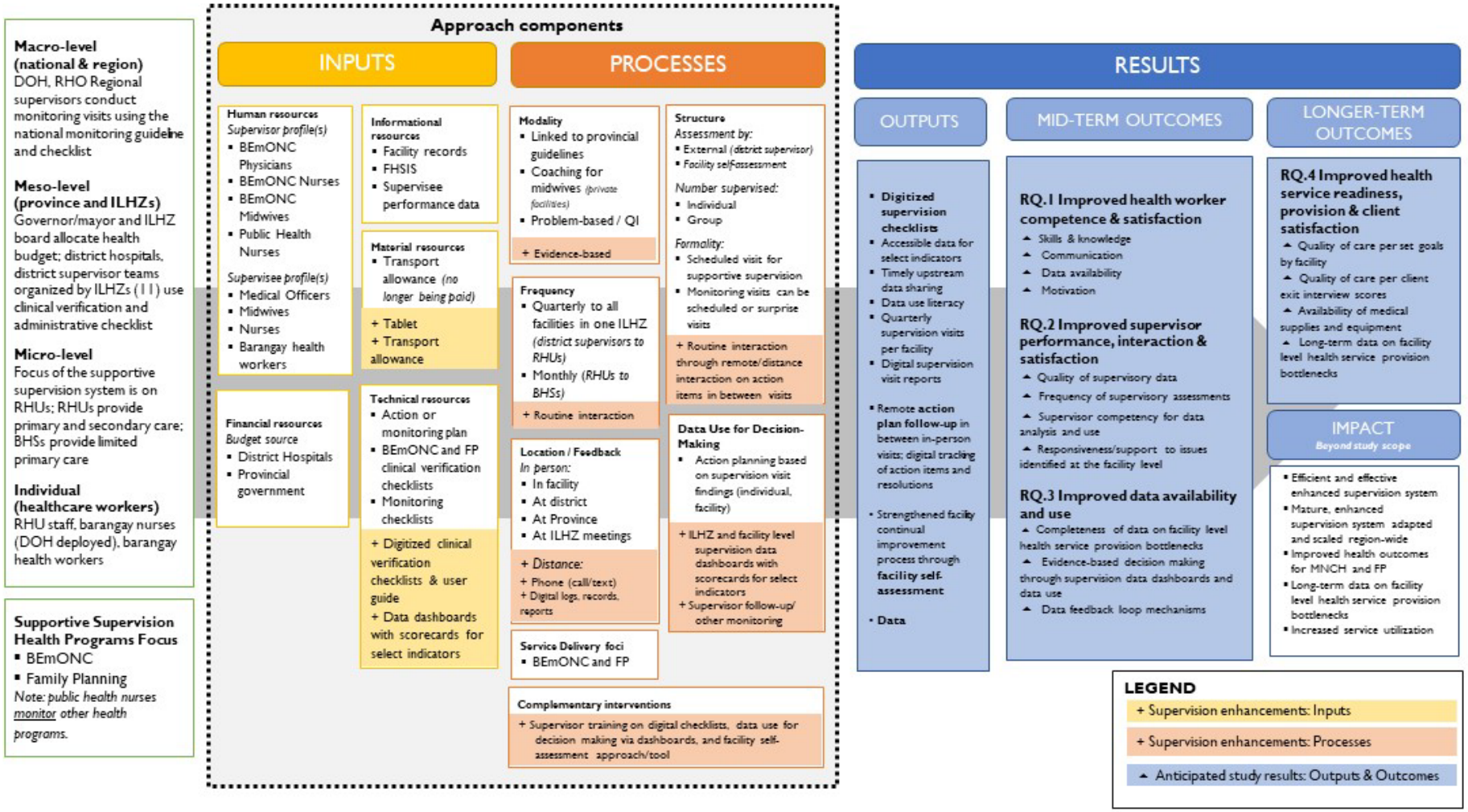
* Although there is no official supervisor role or designation at the provincial level, the provincial health office and maternal and child health coordinator oversee the province wide supervision system and manage all the supervisors.

With support from the CMSU2 project, the Leyte PHO harmonized the supervision checklist for BEmONC and FP. These checklists are paper-based and completed by supervisors during visits with results shared with supervisees on the same day. The supervision checklist outputs are then consolidated by the district nurse supervisor for each ILHZ and the supportive supervision coordinator at the provincial level.

Supervision visits occur quarterly for each site and supervisors use checklists to assess provider skills and compliance with clinical protocols and guidelines for BEmONC and FP (FP in private facilities only). The supervision teams are based in the district hospital and are generally composed of four staff: a BEmONC-trained physician, nurse, and midwife, and the district nurse supervisor (DNS). The BEmONC midwife could be a private or public sector provider whereas the physician and nurse supervisors are from the district hospital. The DNS is responsible for organizing and managing the supervision visits. When schedule permits, the district chief of hospital and the DMO, also join the supervision visits. In addition, the DNS conducts separate supervision visits for all other health services at the RHUs and BHS. Following each supervision visit by the district supervision team there is a debriefing meeting with the RHU staff to discuss findings and to develop an action plan to address the findings.

The ILHZ board is responsible for general oversight and management of cross-cutting issues, including supportive supervision, and have the authority to develop, propose, and pass resolutions or ordinances. The board is composed of local chief executives and/or their representatives from each municipality or city, representatives from the PHO and when relevant, from RHUs, district supervisors, and the management of the district hospitals to discuss ILHZ-wide issues identified during supervision visits and to propose, develop, and pass resolutions or ordinances to address them. At the provincial level, the

Figure 1. Leyte Province Supportive Supervision System Design and Phase II Implementation Study Enhancements



Source: HRH2030 2019, Enhancing Supervision Phase I Landscape Analysis Report. Adapted from GHWA 2014, Dieleman et al 2009, and informed by Campbell et al 2013.

technical management committee (TMC) meets bi-annually or as needed to address issues elevated by the different ILHZ boards.

As shown in Figure 1, the current supervision system within Leyte province is mapped according to the inputs, processes, and anticipated results identified in the Phase I landscape analysis. For example, the Leyte province's system design includes supervisors' use of technical resources (e.g. checklists, job aids) and informational resources (e.g. facility level reports collected through monthly "M1" forms). Supervisors also received training on supportive supervision skills, use a coaching approach with service providers, and review their respective sites from a holistic perspective by considering the availability of supplies and equipment, infrastructure, and adherence to primary care service clinical standards in general with a focus on BEmONC and FP services.

Our scoping trip consultations revealed that there is a supportive supervision system in Leyte province that focuses on BEmONC and FP in the public and private sectors. However, not all supervisors apply the FP checklists in the public sector (RHUs) but rather focus application of the FP checklist when visiting private sector birthing clinics run by private midwives. This is primarily due to the challenges with rolling out the recently integrated FP checklist and shortage of supervisors with FP-specific supportive supervision training. For the purposes of this research, training for both FP and BEmONC supervision will be provided for new supervisors who did not have previous training. Upon consultation with the PHO there could also be refresher trainings for previously trained supervisors.

C. Description of Supervision Enhancements (Treatments)

This study will evaluate the impact of one supervision enhancement – **digital supervision support and facility self-assessment** – on supervisor and health worker competency and performance, client satisfaction, health service delivery, and data use. This supervision enhancement has four parts:

a. Supporting the development and use of ***digital supervision checklists*** for BEmONC and FP. The existing supervision checklists used by district supervisor teams will be digitized in a supervision application ('supervision app') that will run on Android computing platforms. The data collected from the app will be stored in a cloud server. The content of the checklists will not be changed unless requested by the PHO. In the treatment ILHZs, each supervisor and other staff at ILHZ, provincial and regional levels supporting the supervision system as well as all supervised RHUs and private clinics will receive an Android-based tablet where the supervision app will be installed. Control ILHZs will continue to use their paper-based supervision system. Supervisors will collect the same information in both groups, but the supervision app will enhance the supervision process and provide analytic, follow up and communications features only available in a digital system for the treatment group. Data will be synchronized with a secure cloud server via existing Wi-Fi or a mobile connection.
b. Facilitating ***action planning and follow up*** to address service delivery issues identified during supervision. Supervisors identify gaps in facility and service provider performance and will plan remedial actions together with the facility manager. These gaps and action plans will be documented in treatment and control ILHZs. However, the supervision app will also provide additional enhancements such as establishing a timeline for actions and deliverables. It will prompt supervisors and supervisees at regular intervals whether and when actions have been taken and note whether performance issues were resolved. The use of data in identifying

performance issues and planning follow-up actions will be monitored in the treatment and control group.

c. Supporting service providers in using supervision checklists for ***facility self-assessment*** as an internal quality improvement process to complement quarterly supervision visits. The supervision app will provide the relevant content of the supervision checklists to service providers to be used primarily as a facility-level self-assessment. Each facility will be asked to perform at least one self-assessment in-between quarterly supervision visits. The supervision app will track how many assessments were done and when and what the results were. Supervisors will remind facility managers to perform the facility self- assessment, which will only be supported in treatment ILHZs.

d. Data use will focus on information collected from the supervision checklists, which will be presented in a ***services quality dashboard*** to facilitate more relevant and timely information access and performance feedback and support for both supervisors and supervisees, who will each have assigned credentials to access data at levels appropriate for their roles (i.e., supervisors access across their sites, whereas supervisees can access only their own performance data). If possible, routine health service data reported monthly into the Field Health Services Information System (FHSIS) may be included in the data analysis; but whether they can be linked to the supervision app will need to be determined, because reporting is paper-based with data transferred into Excel in some health facilities and at provincial level. An online health information system does not exist in the province. The timeliness and completeness of monthly reports will also be verified.

D. Research Methodology

HRH2030 will use **quantitative methods** to evaluate the effectiveness of enhanced supervision. Central for addressing the study aim will be an experimental design comparing ***treatment (enhanced supervision) and control (no enhancement) ILHZs pre- and -post intervention*** as shown in Figure 2 and Table 2. The study will include all 10 ILHZs in Leyte, with ILHZs assigned randomly to control and treatment groups. Pre- and -post intervention data will be collected from quarterly supervision visits, facility self-assessments and surveys and analyzed using difference-in-differences to mitigate any bias due to limitations in controlling for differences between treatment and control ILHZs. Surveys will be conducted with district supervisors, health workers, and clients at baseline, midline, and endline.

Figure 2. Experimental study design

	Control Group: Current supervision practice without enhancements in 5 ILHZs	**Treatment Group:** Enhanced supervision in 5 ILHZs
Before enhancements (**pre**)	**Baseline**: status of health worker & supervisor performance and health service provision	**Baseline**: status of health worker & supervisor performance and health service provision
After enhancements (**post**)	**Endline**: status of health worker & supervisor performance and health service provision	**Endline**: status of health worker & supervisor performance and health service provision

Approach

To achieve the study aim of assessing the impact of ***digital supervision support and facility self-assessment*** on supervisor and health worker competency and performance, client satisfaction, health service delivery, and data use, HRH2030 will answer the following research questions:

RQ.1 *Does digital supervision support and facility self-assessment lead to improved* ***health worker competence and satisfaction****?*

RQ.2 *Does digital supervision support and facility self-assessment lead to improved* ***supervisor performance, interaction and satisfaction****?*

RQ.3 *Does digital supervision support and facility self-assessment lead to improved* ***data use****?*

RQ.4 *Does digital supervision support and facility self-assessment lead to improved* ***health service readiness, provision and client satisfaction****?*

Key outcomes

RQ.1 Competency levels of health workers will be measured as adherence to quality of care standards and guidelines for the provision of services related to BEmONC and FP (FP in private facilities only) as described in the supervision checklists. Health worker satisfaction will be measured on ordinal scales (Likert scale) using between three to five categories with statements about the supervision process and perceptions of performance, effectiveness and self-efficacy at baseline, midline, and endline, complemented by focus group discussions after midline.

RQ.2 Competency levels of supervisors will be measured as the completeness and accuracy of supervision checklists. Supervisor satisfaction will be measured on ordinal scales (Likert scale) using between three to five categories with statements about the supervision process and perceptions of performance, effectiveness and self-efficacy at baseline, midline, and endline, complemented by focus group discussions after midline.

RQ.3 Data use will be measured as the link between data from the supervision checklist, performance issues identified, actions planned, and follow up actions taken (including responses to prompts by the supervision app).

RQ.4 Changes in health service readiness by the health facility will be measured through the relevant checklists and include availability of HRH (vacancies), stockouts of essential supplies and availability of basic equipment (tracer items only). The adequacy of infrastructure, presence of safe water, sanitation and electricity at the health facility will also be ascertained. If up to date and complete FHSIS data are available for a facility, changes in health service provision will be measured as volume and coverage for BEmONC and FP services. Client satisfaction will be measured as agreement/ disagreement (Likert scale) with statements about services received and perceptions of quality at the facility at baseline, midline, and endline.

Additional indicators will be selected to control for ILHZ characteristics that may influence these outcomes independent of the intervention. Appropriate characteristics will be chosen from the Local Government Unit (LGU) scorecard on health and aggregated for each ILHZ weighted by population size. Such characteristics will include scores representing LGU investments in health, human resources for

health, and household access to safe water and sanitation. Additional characteristics not included in the scorecards may be considered pending data availability such as higher/lower concentration of private providers and geographic isolation.

Geographic focus and study population

This study will be conducted in all 10 ILHZs of the Leyte province. All supervisors and health facilities supervised by them will be included in the study. Table 2 shows details for each ILHZ.

Table 2: Proposed Study Population

	Control Group* *No enhancements*					***Total***	**Treatment Group*** *Supervision enhancements*					***Total***
ILHZs	CALESAN	LEYTE WEST COAST	MAINBAY	MABAHINHI	LEYTE PLAINS	**5**	LEYTE GULF *	GOLDEN HARVEST*	KAMMAO	MAHARLIKA	GOODWILL	**5**
ILHZ Population *Source: 2015 Census*[8]	103,508	181,109	48,373	155,832	134,195	**623,017**	193,351	121,473	151,143	123,322	187,910	**777,199**
Supervision teams (# by ILHZ)**	1	1	1	1	1	**5**	1		1	2	1	**6**
Supervisors (BEmONC, DMO, DNS, ILHZ coordinator) [# by ILHZ]**	6	6	6	6	6	**30**	10		6	9	6	**31**
RHUs supervised (BEmONC)	3	3	3	5	5	**19**	3	4	5	5	5	**22**
Private birthing facilities (BEmONC and FP)	1	4	4	1	3	**13**	6	3	6	3	4	**22**
RHU Health workers supervised (BEmONC staff) *[# by facility]*	9	11	9	15	15	**59**	9	12	17	14	15	**67**

Health facilities without licenses to operate were not included in the sample size.
*Golden harvest and Leyte Gulf ILHZs were recently combined into one ILHZ.
** Supervision teams are composed of BEmONC trained physician, nurse, and midwife; DNS, DMO, and ILHZ coordinator; Abuyog has 2 BEmONC trained physicians, nurses and midwives. Leyte Provincial Hospital has 2 BEmONC trained physicians, nurses, and one midwife.

[8] Philippine Statistics Authority (PSA). 2019. Retrieved from https://psa.gov.ph/classification/psgc/?q=psgc/citimuni/083700000

Data collection

Table 3 lists the data collection instruments and the number of observations expected. Data collection, aggregation and analysis will be conducted by a research firm, except supervision checklists, which will be completed by supervisors.

Table 3: Data collection instruments by number of observations estimated at baseline, midline and endline *(preliminary estimates)*

	Control Group	**Treatment Group**	**TOTAL**
a. Supervision checklists completed *(Digitized in treatment group; paper-based in control group)*	96 *([19+13]*3)*	132 *([22+22]*3)*	**228**
b. Supervisor survey questionnaire	90 *(30*3)*	93 *(31*3)*	**183**
c. Health worker survey questionnaire *(Average of two supervisees per facility)*	192 *([19+13]*2*3)*	264 *([22+22]*2*3)*	**456**
d. Facility infrastructure and amenities checklist	96 *([19+13]*3)*	132 *([22+22]*3)*	**222**
e. Client exit interview questionnaire *(Average of three clients per facility)*	288 *([19+13]*3*3)*	396 *([22+22]*3*3)*	**684**
f. Monthly FHSIS data tally in Excel or database* *(3 for each quarter prior to supervision - BEmONC and FP)*	768 *([19+13]*24)*	1,056 *([22+22]*24)*	**1,824**
g. Focus group discussion guide *(One discussion per group: 1. Supervisors in control group; 2. Supervisors in treatment group; 23. Providers in treatment group who have used facility self-assessment; 34. Providers in treatment group who have not used facility self-assessments.*	1	3	**34**

* Monthly FHSIS data for each facility will be collected for 12 months prior to the study and for 6 months during the study

For RQ 1, data collection in the treatment group will be electronic, because health facilities will receive a tablet.

RQ.1 Data for health worker performance will be gathered quarterly from completed supervision checklists for BEmONC and FP. For treatment ILHZs at baseline and control ILHZs, checklists will be paper-based, and data will be entered into a database. For treatment ILHZs, checklists will be completed using tablets during the research period, and data will already be in digital format. All these data will be collected by the supervisors. Data about health worker satisfaction will be collected through a health worker survey using Likert scales at baseline, midline, and endline. In-person focus group discussions focusing on facility self-assessments will be undertaken to capture providers' understanding, feasibility, barriers/enablers, perception of value and usefulness and help interpret the survey results. They will be recorded for note-taking and thematic analysis purposes only.

RQ.2 Data for supervisor performance will be gathered quarterly from completed supervision checklists and from health worker and supervisor interviews. For treatment ILHZs at baseline and control ILHZs, checklists will be paper-based, and data will be entered into a database. For treatment ILHZs checklists will be completed using tablets during the research period, and data will already be in digital format. Data on supervisor satisfaction will be collected through a supervisor survey using Likert scales at baseline, midline, and endline. In-person focus group discussions focusing on facility self-assessments will be undertaken to capture supervisors' understanding, feasibility, barriers/enablers, perception of value

and usefulness and help interpret the survey results. They will be recorded for note-taking and thematic analysis purposes only.

RQ.3 At both treatment and control ILHZs, information about data availability and use will be collected quarterly through health worker and supervisor surveys (baseline, midline, endline). During research implementation in treatment ILHZs, information about data availability and use will be collected electronically (dashboards accessed). The link between data and priorities and follow-up actions at facility and supervisor levels for BEmONC and FP will be assessed in treatment and control ILHZs.

RQ.4 Data for service readiness will be gathered quarterly from completed supervision checklists (facility part) and collected by supervisors. Data for the provision of essential health services (BEmONC and FP) will be obtained from FHSIS for each facility in the treatment and control ILHZs for up to 12 months prior to the supervision enhancements and monthly during the research implementation. Data about client satisfaction will be collected through exit interview surveys using Likert scales at baseline, midline, and endline.

Sampling

All 10 ILHZs in the Leyte province were randomly assigned to the treatment (5 ILHZs) or control group (5 ILHZs) using simple random sampling. All RHUs, and private clinics delivering BEmONC and FP (FP for private facilities only) that are supervised by the district supervision team will be included in the study. An average of eight health facilities are expected per municipality.

All supervisees observed by the supervisors will be included in the study; sampling will not be applied. About two health workers per facility will be interviewed, if as many are eligible based on BEmONC training and FP service delivery. If more than two health workers are eligible, two will be selected randomly. All supervisors participating in the treatment ILHZs will have access to tablets and dashboards. Each health facility supervised will receive one table. Facilities in the control group will not be provided with tablets and will continue the paper-based supervision approach. Client exit interviews will be conducted for a total of about 3 clients per facility covering BEmONC and FP services (FP in private clinics only), if they were provided on the day of the visit. Clients will be selected consecutively as they complete services.

Data analysis

Competency summary scores will be calculated for health workers and supervisors based on data from supervision checklists at three points over the study period – at baseline (using checklists completed prior to the supervision enhancement) and at midline (6 months) and endline (12 months). Satisfaction scores will be calculated at baseline, midline (after 6 months of enhancement implementation) and endline (after 12 months of enhancement implementation) from data collected through health worker, supervisor and client exit surveys. For RQ.4, volume for BEmONC and FP services by health facility from the FHSIS will be analyzed at baseline and monthly over the study period. In addition to the difference-in-differences analysis described below, an interrupted timeseries analysis will be performed if sufficient FHSIS data are available (12 months before the study and 15 months during the study). Based on service volume, population coverage will be calculated using the appropriate population denominator for the catchment area of each health facility.

Data for all four research questions will be analyzed using difference-in-differences between treatment and control ILHZs before and after the implementation of digital supervision support and facility self-assessment. The analytic model can be specified as follows:

$$Y_{ijt} = a_j + y_t + ß_1 I_j + ß_2 SA_{it} + ß_3 DU_{it} + ß_4 I_j SA_{it} + ß_5 I_j DU_{it} + ß_r X_{it} + E_{ijt}$$

Where Y_{ijt} is independent variable or outcome of interest (competency score of supervisor or health worker, service volume or coverage) for person or facility i in ILHZ j in month t (baseline to endline). a_j is an ILHZ fixed effect, y_t is an ordinal variable that is equal to 0 at baseline and increments by 1 for each month of observations through endline. I_j is an instrumental variable that is equal to 1 for a treatment ILHZ and zero for a control ILHZ. SA_{it} and DU_{it} are instrumental variables for self-assessment and data use. $ß_4 I_j SA_{it}$ and $ß_5 I_j DU_{it}$ are interaction terms between the treatment group and self-assessment and data use respectively. These interaction terms measure the treatment effect in each group and can be interpreted as the difference in the change in competency or service volume over the study period between the treatment and control groups. $ß_r X_{it}$ is a vector of control variables at the individual level taking into account factors that are preconditions for an effective and functional supervision system and may influence the outcome (e.g., health worker and supervisor competence) independent of the supervision enhancements such as supervision frequency, training, transportation, lodging, adequate time, allowance, etc. E_{ijt} is the error term accounting for the variance not explained by the dependent variables.

Thematic analysis of qualitative data from focus group discussions with providers and supervisors focusing on facility self-assessments will be undertaken to capture providers' understanding, feasibility, barriers/enablers, perception of value and usefulness and help interpret the survey results.

Quality assurance

A research firm will be engaged for this research, which will be responsible for all primary data collection in paper form or through the digital means, data aggregation, data analysis, and reporting assuring the quality at each step. The research firm will be responsible for maintaining all project documentation (e.g. consent forms, paper forms, etc.) and ensuring that all data collected have personal identifying information removed and replaced by random identifiers to ensure data integrity. Data entry clerks will be responsible to transcribing all paper-based information into a database. Data quality will be assured through data accuracy checks of every 10th data record. Enumerators administering health worker, supervisor and client surveys will perform FHSIS data quality checks by comparing FHSIS monthly reports with facility registers for BEmONC and FP at baseline, midline, and endline.

Ethical considerations

The potential risk to participants in this study is minimal. Exemption from ethics review to conduct the study will be sought from a US IRB and Philippines ethics review committee prior to study initiation. Approval to conduct interviews with staff in all participating health facilities will be obtained from the PHO. The data collected from the surveys will be stored in a cloud server. No identifiable participant information will be retained on paper-based or electronic questionnaires.

Study limitations

This protocol assumes that study intervention implementation will begin in February 2020 and conclude in April of 2021 due to a project extension and COVID-19-related challenges. As supervision takes place

quarterly, this will yield four data points for supervision visits (baseline, midline and endline in 3-month intervals) and three facility self-assessments between quarterly supervision visits. Moreover, district supervision teams supervise a small number of facilities, about eight on average. Even including all 10 ILHZs in the study this will result in a small number of observations that will allow for the measurement of major changes but not outcomes that require a longer implementation period for the intervention to make a difference. Major short-term changes can be expected for supervisor competencies; changes in BEmONC and FP volume should only be expected over a period considerably longer than this study.

Other anticipated implementation challenges that are external to the study but will have an effect on implementation and results include the following:

- Shortage and distribution of appropriately qualified staff at treatment sites, which will unlikely be resolved in the duration of this implementation study
- Lack of adequate supply of drugs and medical supplies to resolve identified issues which could be a result of funding shortages, unavailability of commodities in country, import regulations etc.
- Lack of adequate infrastructure (communications, internet, etc.) and equipment which could be a result of funding shortages and/or insurmountable administrative process
- Facility, ILHZ and PHO resources for routine health worker supervision may be reverted to the Coronavirus response in 2019.

E. Implementation Plan

The study will be implemented by the HRH2030 HQ team with support of HRH2030/Philippines, a research firm and in-country partners – the Leyte PHO and district supervision teams. The implementation plan was initially co-developed by HRH2030 and PHO in September and October 2019. A high-level implementation timeline is shown in Table 4 below.

Table 4. High-level timeline for study implementation

Year	**2019**	**2020**				**2021**	
Quarter	**Q4**	**Q1**	**Q2**	**Q3**	**Q4**	**Q1**	**Q2**
Supervision enhancement – Preparatory Phase							
• Digitize provincial supervision checklists as an open source app • Supervision and self-assessment dashboard development • Procure tablets • Supervision app user guide development • Train district supervisors and site managers on tablet/checklist use	**X**						
Baseline surveys: district supervisor, health workers (supervisees), and client exit interviews *(January-February)*	**X**						
Supervision enhancement – Implementation Phase (February-December 2020)							
<u>Treatment group</u> a. Quarterly supervision visits with digitized checklists b. Quarterly facility self-assessment between supervision visits <u>Control group</u>	**X**	**X**	**X**	**X**	**X**	**X**	

a. Quarterly supervision visits with paper-based checklists b. No quarterly facility self-assessment between supervision visits							
Monthly compilation of FHSIS data	X	X	X	X	X	X	
Midline surveys: district supervisor, health workers (supervisees), and client exit interviews					X *Oct*		
Focus group discussions: district supervisors and health workers (supervisees)						X *Feb-March*	
Endline surveys: district supervisor, health workers (supervisees), and client exit interviews							X *Apr*

F. Research Team

Rachel H. Deussom, HRH2030/Global Technical Director (*Principal Co-investigator*) – co-leads study design; ensures overall quality and oversight of intervention implementation plan; reviews study instruments; contributes to, reviews, and finalizes manuscripts.

Dr. Agnes Jacinto-Pacho, Asia Pacific Management and Research Group, Inc. (APMARGIN) (*Co-investigator*) – oversees data collection; reviews and contextualizes study instruments; contributes to and reviews manuscripts.

Maureen Obregon, HRH2030/Philippines Research Associate, Supervision Research Study – manages research implementation, coordinates project communication across all stakeholders, reviews and verifies data, support project logistics and management, reviews and contributes to research protocol and manuscripts.

Mekdelawit Bayu, HRH2030/Global Technical Project Manager, Supervision Research Study – drafts study instruments; manages study implementation plan, communication plan, budget, and procurements; supports HRH2030/Philippines team to implement intervention; ensures quality data collection; supports data administrator to conduct data analysis; contributes to manuscripts.

Isaiah Ndong, Chemonics Technical Resource Group Director *(Research Advisor)* – advises on study protocol and methodological approach; provides high-level technical review of study instruments and manuscripts.

Eckhard Kleinau, HRH2030/Global Research & Evaluation Director (*Research Advisor)* – advises on study protocol and methodological approach; provides high-level technical review of study instruments; ensures quality of data analysis conducted per the methods outlined in the protocol; and reviews final manuscript.

Research firm - Asia Pacific Management and Research Group, Inc. *(Data collection, analysis, reporting, quality control)* – collects baseline, midline, and endline survey data from health workers, supervisors and clients; manually enters monthly (paper-based) supervision data from control group ILHZs, compiles facility-level FHSIS data. Performs descriptive, bivariable and difference-in-differences analysis. Drafts study report and contributes to manuscripts.

G. Dissemination Plan

To facilitate effective communication to all stakeholders, the study team will use the communication plan outlined below. In addition to what is included below, the study team will also contribute to routine project-wide HRH2030 reports including quarterly and annual reports, newsletters and other platforms as needed. The communication plan is outlined in Table 5 below.

Table 5: Communication plan

Communication	Target Audiences	Goals	Format	Channel(s)	Timetable
Internal Progress Updates	HRH2030 HQ Leadership HRH2030 Philippines	Activity initiation, planning, and implementation progress technical and financial update	Newsletter and/or meetings as needed/requested	Email Biweekly meeting USAID/Chemonics HRH2030 Meetings	January 30, 2019, and monthly thereafter
Client Progress Updates	USAID Washington USAID Philippines PHO Leyte	Activity progress update - technical	Newsletter	Email	March 30, 2019, and monthly thereafter
Midline progress update	USAID/Washington USAID/Philippines HRH2030 HQ HRH2030 Philippines	Mid-point preliminary data analysis report	Report	Email	February 2021
Final activity report	Clients, implementing partners and program participants	Study findings dissemination	- Full Report - Summary of Findings handout - PowerPoint Presentation - Webinar / dissemination plan	HRH2030 website, HRH2030 and Chemonics Health social media, webinar; in-person presentation for Philippines stakeholders	June 2021