

Infectious Diseases Institute WASH Project Handover Report for Kabarole District, February 2019 to September 2023

Strengthening Partnerships for Preparedness and Response in Uganda Project

Handover Report



FEB 2019- SEPT 2023

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Acronyms

CDC	Centers for Disease Control and Prevention
FGD	Focus Group Discussion
HCWs	Health care workers
IDI	Infectious Diseases Institute
IPC	Infection Prevention and Control
KII	Key Informant interview
POE	Point of Entry
PopCAB	Population Connectivity Across borders
ABHR	Alcohol Based Hand Rub
MGHWS	Management Guidelines for Hand Washing Stations
MOH	Ministry of Health

Message from Program Manager



Practicing appropriate hand hygiene (HH) through handwashing with soap and water or using alcohol-based hand rub (ABHR) is a key prevention measure recommended to reduce the disease burden worldwide. Hand hygiene adherence (HHA) among healthcare workers (HCWs) is particularly important to reduce disease transmission in healthcare settings.

Health facilities in low and middle-income countries (LMICs) often lack the necessary funds to purchase commercial Alcohol Based Hand Rub (ABHR) and local production may be a more economical option. The WHO developed a protocol for local production of ABHR to guide the production procedure within

health facilities.

The Infectious Diseases Institute (IDI) received funding from the Centres for Diseases Control and Prevention (CDC) under the Strengthening Partnerships for Preparedness and Response project to scale up handwashing and Alcohol Based Hand-Rub (ABHR) use in priority health facilities in six districts in Uganda (Kabarole, Kasese, Amuru, Tororo, Moroto and Kotido). This included setting up ABHR production units, training producers, and establishing distribution structures as well as hand hygiene mentorship and impact evaluation.

This report provides an account of project activities in Kabarole district from inception in 2021 to September 2023. We extend our sincere thanks to the Ministry of Health Environmental Department (EHD) for the project above-site oversight and continuous technical support throughout the implementation. Special thanks to the Kabarole District Local Government for leading the implementation through the office of the District Health Officer, all in charge of supported health facilities and community locations as well as the producers and quality assurance team for ABHR in the district.

Finally, as a project, we thank the IDI project staff who have provided technical support in the implementation of the project especially Mr. Fred Tusabe and Ms Saudha Yapswale, who successfully coordinated the district-level activities throughout the implementation period with enthusiasm and diligence.

As we hand over the project to the district, we are confident that the capacity that has been built, complimented by the structures and supportive environment, the project will continue to thrive, and IDI will continue to provide technical assistance whenever there is a need.

Thank you.

Judith Nanyondo S
Senior Project Manager
Strengthening Partnerships for Preparedness and Response in Uganda Project

Executive Summary

Background:

Improving access to alcohol-based hand rub (ABHR) can improve healthcare professional (HCP) hand hygiene adherence (HHA) and reduce healthcare-associated infections.

Method: To understand the relationship between ABHR availability and HHA in Kabarole District, Uganda ("Kabarole"), we established central ABHR production to distribute to all Healthcare facilities in the district including the now, city. distributed locally-produced ABHR in February 2019 to HCF and anonymously recorded HHA of HCPs before and after patient contact at baseline (August 2018), midpoint (June 2019), and endpoint (November 2019). After this, we provided more support to sustain the project to to-date. From April- September 2021, IDI received funding from International Water and Sanitation Center, (IRC) to locally produce and distribute ABHR to private for-profit and private not-for-profit HCFs. HHA was defined as handwashing with soap and water or hand-rubbing with ABHR.

Results:

About 15,000L of quality-controlled ABHR have been produced and distributed to 30 HCFs. HHA was recorded from 43 HCPs (380 observations) at baseline, 69 HCPs (620 observations) at midpoint, and 69 HCPs (618 observations) at endpoint. HHA was 5% at baseline, 43% at midpoint, and 25% at endpoint. In multivariable logistic regression, the odds of HHA at midpoint were 23.0 (95% CI=6.4–83.5) times higher than at baseline. The odds of HHA at the endpoint were 0.2 (95% CI: 0.1–0.5) times lower than the midpoint but still 5.5 (95% CI=1.6–19.3) higher than the baseline. The odds of HHA after patient contact were 7.1 (95% CI=4.3–11.5) times higher than before patient contact. In this study, hand hygiene adherence increased 4 months after ABHR distribution and decreased 5 months later but remained 5-fold higher than at baseline. Increased HHA at the midpoint may reflect efforts to improve HHA in response to the identification of imported Ebola cases near Kabarole District two weeks before data collection.

Conclusion:

While increasing ABHR availability increased HHA, additional interventions including training, institutional safety climate, and feedback could increase HHA further, especially before patient contact.

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Introduction

1.0 Introduction

Hand hygiene is a core infection prevention and control (IPC) method for preventing healthcare-associated infections (HAIs). Alcohol-based hand rub/Sanitizer (ABHR) and handwashing with soap accessibility and water are both effective hand hygiene methods for healthcare workers.

The WHO promotes ABHR use in HCFs because of its fast-acting and broad-spectrum microbicidal activity with minimal risk of generating resistance to antimicrobial agents. Furthermore, ABHR is suitable for use in resource-limited or remote areas with a lack of sinks or other facilities for hand hygiene among other factors.

The World Health Organization (WHO) and the United States Centers for Disease Control and Prevention (CDC) recommend using an ABHR at patient care points that contain at least 60% alcohol as the new standard of patient care to reduce transmission of emerging and re-emerging infectious diseases.

When hands are not visibly soiled, ABHR is effective at reducing the number of viable pathogens that cause many enteric diseases, viral haemorrhagic fevers, and respiratory illnesses, among others.

1.2 Background

The CDC WASH team together with IDI and IRC (International Water and Sanitation Centre) Kabarole partnered in delivering a project, “evaluating WASH status, use of hand hygiene products with associated compliance at 30 health care facilities within Kabarole District”.

The 9-month project started in January and was completed in October 2019 with a year-long sustainability phase to Sept 2020. In light of the Ebola Virus Disease outbreak in DRC, the project has expanded to Kasese district as an EVD preparedness effort to improve hand hygiene by district-led production and distribution of Alcohol Based Handrub (ABHR). As part of the sustainability plan, Two District staff were trained on the local production of ABHR modalities.

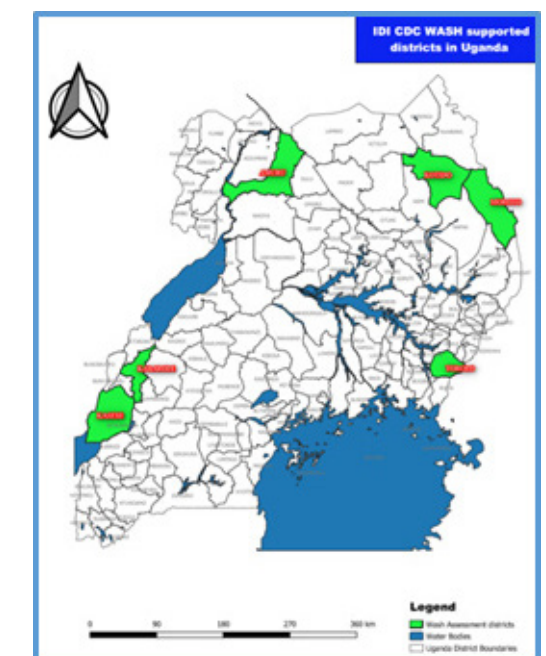
This was a Five-day training that involved a theoretical, practical, and simulation exercise. In between sessions, we had breaks for Questions and answers.

All modules of the training material were subsequently completed to include the importance of ABHR, Materials and requirements, Production process, Quality assurance and quality control.

Implementation area

Kabarole District is in western Uganda near the border with the Democratic Republic of Congo (DRC). It covers 1,315 square kilometres and had an estimated population of 325,000 in 2017 (Uganda Bureau of Statistics). The district seat and chief town is Fort Portal. The public healthcare system in Kabarole comprises 31 HCFs of different sizes and service levels.

Figure 1 Showing the IDI- WASH Supported Districts



1.3 Program Overview with data and performance key Results

The WASH project at IDI with the support from the CDC created and supported interventions leading to improvements in WASH and explored and promoted implementation in the WASH sector, including renovation of ABHR production unit, delivery of supplies, training of ABHR producers, production and distribution of ABHR, pilot of Cleaning and disinfection

of ABHR containers, WASH (hand hygiene) baseline, mid-line and end-line were conducted in 2019 and 2020 respectively. The WASH project targeted 30 public health facilities and the project's goal was to strengthen preparedness and response in Uganda.

The project had two objectives to reach this goal:

- Increase access and usage of ABHR
- Improve hygiene practices among health workers among other objectives.

3.0 Renovation of ABHS production unit

The Kabarole ABHR production unit is housed at Bukuuku HCIV premises and it required minor renovations for it to functionalize. An air conditioning system, window glasses and door locks were fixed.

4.0 Training of ABHS producers/quality controllers

A total of 3 district staff have been trained to locally produce quality-controlled ABHR. Of these, an EQC officer was trained to perform external quality control of ABHR prior to last-mile delivery.

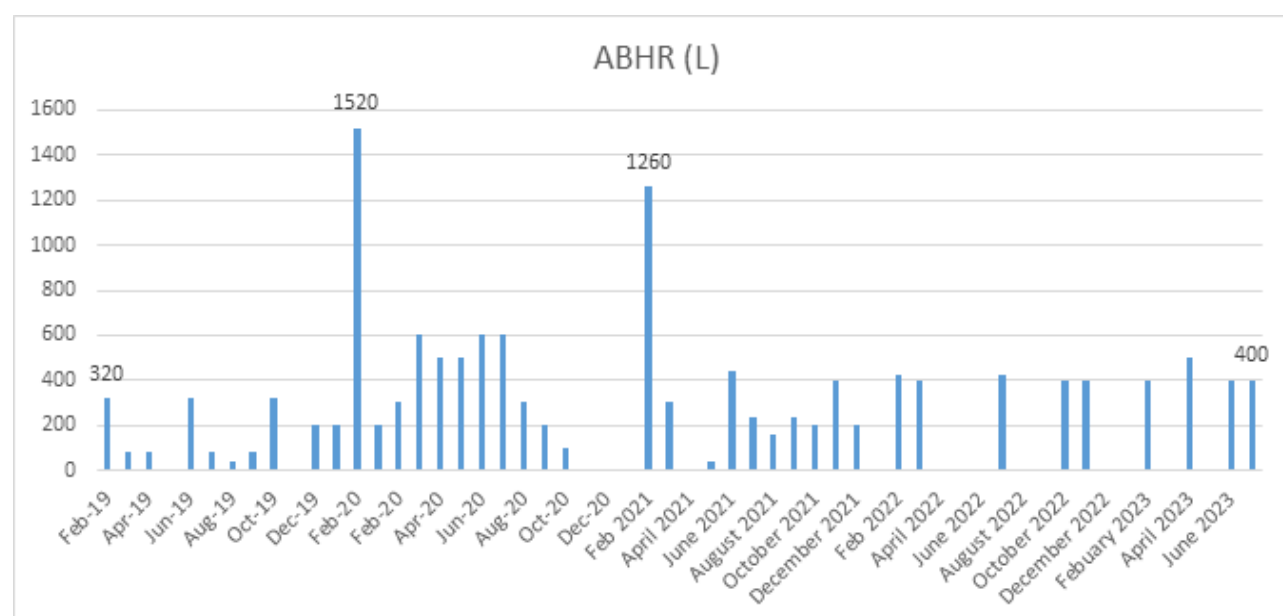
4.1 ABHS Produced and Distributed to date

Upon completion of the training, this was followed by the production of ABHR with support from IDIs and technical officers. Production of ABHR was based on the WHO protocol on local production of ABHR. About 15,000L of ABHR have been produced and distributed throughout the project's lifespan. All ABHR batches produced passed both internal and external quality control tests with an alcohol content between 75- 85%

ABHR Container Reprocessing

Following guidance from WHO, IDI developed and piloted cleaning and disinfection of ABHR containers across public facilities benefiting from the project.

Figure2. ABHR Produced over time



6.0 12 Months Project Evaluation

1.1. Specific activity objectives

- To estimate the availability of ABHR and handwashing materials at patient care areas at all hospitals and Health Centres IV (HC IV), and a representative sample of HC IIIs and HC IIs.
- To assess hand hygiene adherence of healthcare workers, before and after patient contact, at all hospitals and Health Centres IV (HC IV), and a representative sample of HC IIIs and HC IIs.
- To provide the District Health officials with information about hand hygiene adherence aggregated by healthcare worker type and by healthcare facility level

Method

We established a centrally located ABHR production unit in Kabarole District in early 2019 following WHO guidelines. Internal and external quality control measures were implemented after production and after a 72-hour quarantine, respectively, to ensure the ABHR met the WHO guidelines for alcohol concentration. The intervention included distributing ABHR to participating HCFs in 20L jerrycans, a 1L pump bottle for each point-of-care identified by the IPC focal person, and a 60mL pocket bottle for each healthcare professional (HCP). During the intervention period, 20L jerrycans that contained less than 5L of ABHR were replaced.

Hand hygiene observations

Hand hygiene observations of HCP were performed by the same two enumerators throughout the study. Enumerators were trained following the WHO hand hygiene observation method. Enumerators obtained permission from HCF in-charges to observe clinical practices but did not tell the in-charges or HCP that they were observing hand hygiene practices to reduce the Hawthorne effect. Enumerators observed up to four HCPs at HC IV, three at HC III, and one at HC II. Eligible HCPs included doctors, midwives, nurses, clinical officers, and laboratory technicians.

For each HCP observed, enumerators recorded hand hygiene practices at two different moments -- before patient contact began and after contact with a patient or patient surroundings -- for up to five patient interactions. Multiple hand hygiene opportunities with the same patient were possible if the HCP's clean hands were contaminated by touching something other than the patient or medical equipment during the patient encounter. For hand hygiene opportunities before and after patient contact, the enumerator recorded if the HCP washed hands with soap and water, used commercial ABHR (including ABHR distributed by WHO/UNICEF), used intervention ABHR, or none. The enumerator also recorded if the HCP donned new gloves before patient contact. HHA was defined as the use of ABHR or handwashing with soap and water. Donning new gloves alone was not considered hand hygiene adherence.

Focus group discussions

At baseline, midpoint, and endpoint assessments, we conducted focus group discussions (FGD) with 6–8 healthcare professionals from participating HCF. FGD assessed knowledge, attitudes, and practices about hand hygiene behaviours; barriers and facilitators to hand hygiene; and perceptions of the ABHR intervention. At baseline and endpoint, we conducted one FGD per HCF level (IV, III, and II). During the midpoint evaluation, we conducted six FGDs: one per HCF level for Group A and Group B. For all FGDs, we sampled participants randomly from a roster of available HCPs, taking care to ensure a maximum of one participant from any given HC II or HC III and a maximum of one participant per department for a given HC IV.

This process was to minimize bias, avoid participants within the same chain of supervision, and reduce the burden on each HCF. We attempted to recruit different HCPs across study time points.

We developed semi-structured interview guides specific to hand hygiene practices that asked about emotions, behaviours, cues, barriers, facilitators, benefits, competing behaviours, and self-efficacy. Because commercial ABHR was concurrently available at HCF, we asked questions about the characteristics of the intervention vs. commercial ABHR. FGDs were recorded, and thematic analysis was conducted by two independent investigators.

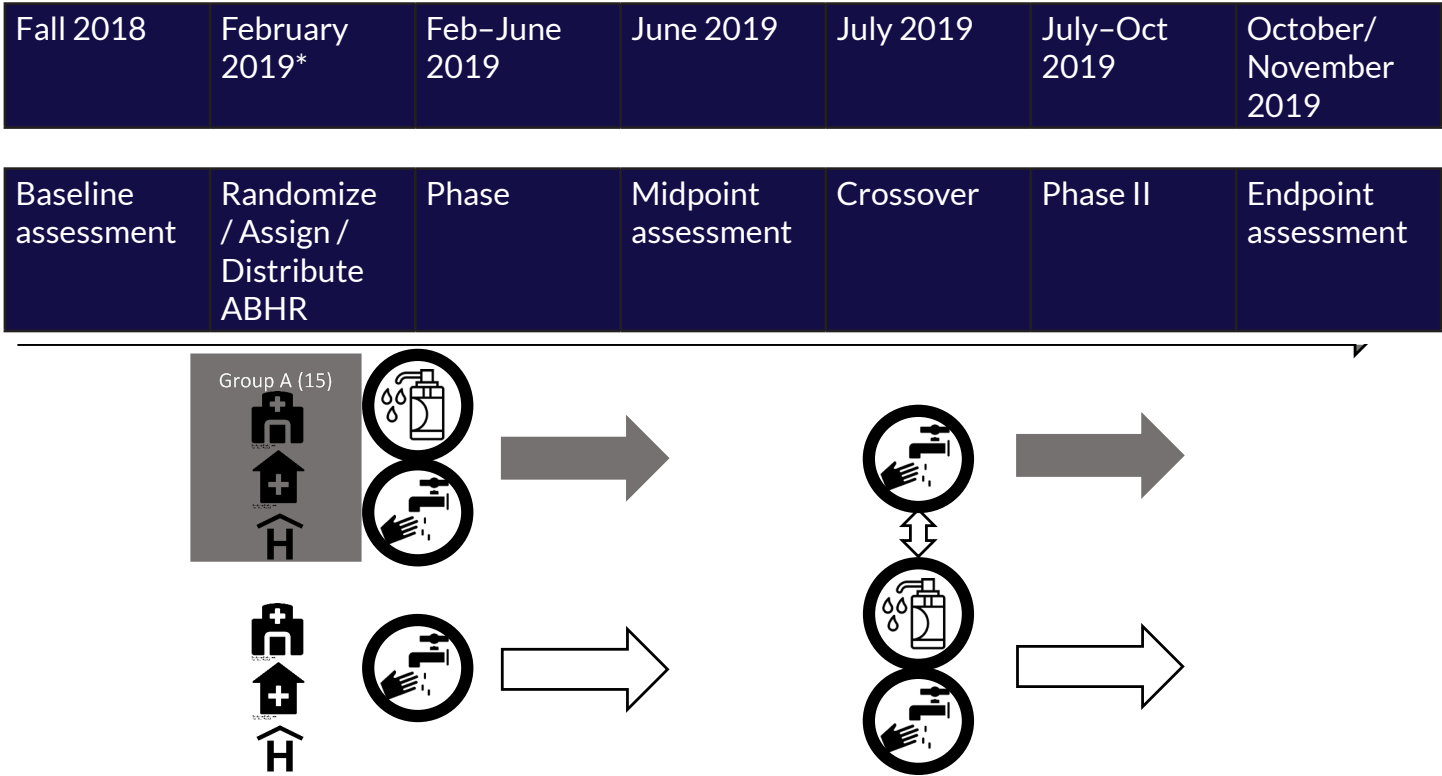
Statistical analysis

Quantitative data were collected on paper forms and entered in the Open Data Kit (ODK) platform or collected directly in ODK using Survey CTO (Dobility, Inc.). All analyses were performed using SAS v9.4 (Cary, NC, USA) or R. Cross-sectional analyses: We calculated a composite HHA rate (total number of HHA patient interactions observed/total number of patient interactions observed), as well as HHA rates by time of interaction (before or after patient contact), type of HCP, level of HCF, timepoint (baseline, midpoint, or endpoint), type of hand hygiene (ABHR use or handwashing with soap), and type of contact (invasive or non-invasive) (The Joint Commission, 2009). Differences were compared using logistic regression.

Longitudinal analyses: Because each HCF had access to ABHR throughout the entire study period, we assessed changes in HHA from baseline to midpoint and endpoint in separate models, restricted to the 15 HCFs that had complete data at all time points. Univariable and multivariable logistic regression were used to assess HHA rates by timepoint, time of interaction, type of contact, level of HCF, cadre of HCP, and ratio of hand hygiene resources to patient care areas for each HCF. A Generalized Estimating Equation was used to account for the clustered data structure (repeated hand hygiene observations within HCPs and HCF).

6.4 Results
Hand hygiene resources

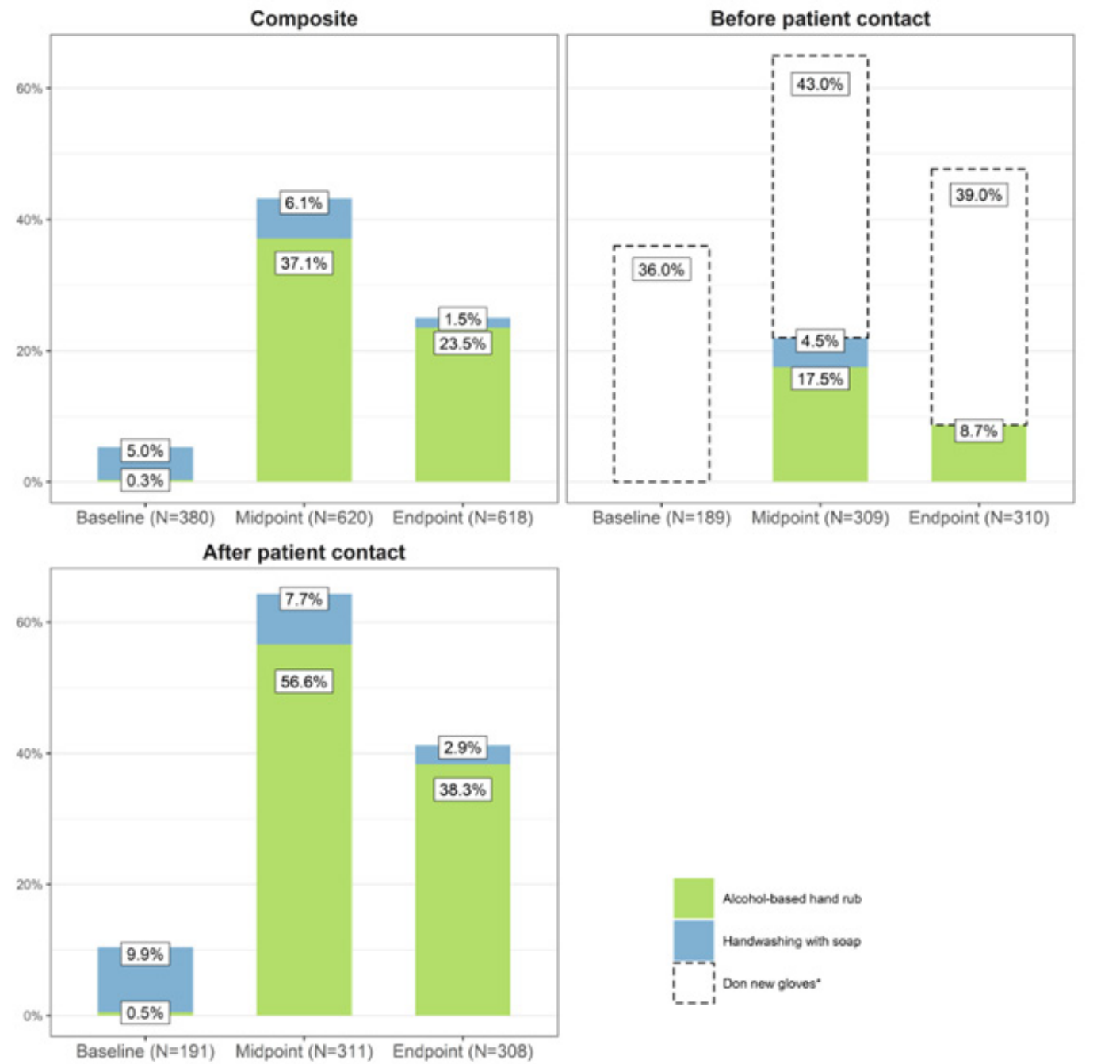
Figure 1. Study design: Baseline assessments were completed, and the 30 healthcare facilities (HCF) were stratified by level (HC II, III, or IV). Within the level, HCFs were randomly assigned to Groups A or B. In Phase I, Group A received locally produced alcohol-based hand sanitiser (ABHR) from February– June 2019; midpoint assessments were conducted (June–July 2019). During the crossover, ABHR was removed from Group A and distributed to Group B. In Phase II, Group B had ABHR from July–October 2019; endpoint assessments were conducted (October–November 2019).



Baseline Assessment	Midpoint Assessment	Endpoint Assessment
<ul style="list-style-type: none">hand hygiene observationsfocus group discussionshandwashing station assessments	<ul style="list-style-type: none">hand hygiene observationsfocus group discussionshandwashing station assessmentsTested alcohol concentration of ABHR in HCFs	<ul style="list-style-type: none">hand hygiene observationsfocus group discussionshandwashing station assessmentsTested alcohol concentration of ABHR in HCFs

* In late 2018 and early 2019 (after baseline but before Phase I), WHO/UNICEF distributed commercial ABHR to all HCFs in the Kabarole district as part of Ebola preparedness efforts. Consequently, ‘ABHR-free’ control groups within the study had access to ABHR.

Figure 3. Hand hygiene adherence rates (composite, before patient contact, and after patient contact) by study timepoint, Kabarole District, Uganda.



* Hand hygiene adherence was defined as a hand hygiene action where the healthcare professional used alcohol-based hand rub or washed their hands with soap and water. Donning new gloves without prior use of alcohol-based hand rub or handwashing with soap was not considered adherent to hand hygiene guidelines. Donning new gloves was only quantified for interactions before patient contact and was not included in composite analyses.

Table 1. Hand hygiene resources are available to healthcare professionals per patient care area by healthcare facility level (HCII, HCIII, and HCIV).

	HCII (N=12)	HCIII (N=16)	HCIV (N=2)
	Median (range)	Median (range)	Median (range)
Patient care areas	2 (1–5)	9 (6–15)	15.5 (11–20)

	Baseline	Intervention Phase	Baseline	Intervention Phase	Baseline	Intervention Phase
Ratio HWS per Patient care areas	0.5 (0.0–2.0)	0.5 (0–1)*	0.2 (0.0–0.5)	0.3 (0.1–0.6)	0.3 (0.2–0.4)	0.6 (0.5–0.7)
Ratio ABHR bottles per Patient care areas	0.0 (0.0–1.0)	1 (0.5–2.5)	0.0 (0.0–0.2)	0.7 (0.2–1.3)	0.0 (0.0–0.1)	0.6 (0.5–0.6)
Ratio total hand hygiene resources per Patient care areas	0.8 (0.0–2.5)	1.8 (0.7–3.5)	0.2 (0.0–0.7)	1.1 (0.3–1.5)	0.3 (0.2–0.4)	1.2 (1.0–1.4)

Ratios were calculated by using the number of functioning handwashing stations with soap and functioning alcohol-based hand rub (ABHR) dispensers and dividing that by the number of patient care areas present in each healthcare facility.

* Two HCIIIs did not have any functioning handwashing stations during the intervention period.

Table 2: Number (%) of healthcare professionals (HCP) by job, healthcare facility type and time point that were observed for hand hygiene practices.

	Baseline, N=43		Midpoint, N=69			Endpoint, N=69		
	HCIII [n=15]*	HCIV [n=2]	HCII [n=12]	HCIII [n=16]	HCIV [n=2]	HCII [n=12]	HCIII [n=16]	HCIV [n=2]
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Total	35	8	14	47	8	14	47	8
Type of HCP								
Clinical officer	4 (11)	2 (25)	0 (0)	7 (15)	2 (25)	1 (7)	7 (15)	1 (13)
Laboratory technician	15 (43)	2 (25)	1 (7)	15 (32)	3 (37)	1 (7)	15 (32)	2 (25)
Midwife	7 (20)	2 (25)	2 (14)	13 (28)	3 (37)	0 (0)	13 (28)	2 (25)
Nurse	9 (26)	2 (25)	11 (79)	12 (25)	0 (0)	12 (86)	12 (25)	3 (37)

* Number of healthcare facilities

Table 3. Hand hygiene adherence* rate by type of healthcare professional (HCP), before and after patient contact at baseline, midpoint, and endpoint.

HCP Type		Baseline			Obs, N	Midpoint			Obs, N	Endpoint	
	Obs,N	Before contact1	After contact1					Before contact		After ontact	
All	191	0 (0)	20(10)	305	65 (21)	194	(64)	308	25 (8)	127 (41)	
Clinical officer (0)		24	0	39	13 (33)	31	79)	44	1 (2)	24 (55)	
Lab technician (0)		75	0	83	0 (0)	37	(45)	81	0 (0)	16 (20)	
Midwife (14)		37	0 (0)	5	86	27 (31)	54	(63)	71	10(14)34(48)14	
Nurse	55	0 (0)	6 (11)	97	25 (26)	72	74)	112	(13)	53 (47)	
Type of patient contact											
Invasive (7)		91	0 (0)	6	169	16 (9)	101 (59)	160	8 (5)	62 (39)	
not	100	0 (0)	14 (14)	136	49(36)	93 (69)		148	17 (11)	65 (44)	

*Hand hygiene adherence was defined as a hand hygiene action where the healthcare professional used alcohol-based hand rub or washed their hands with soap and water.

Table 4. Odds ratio (OR) and adjusted OR (aOR) of hand hygiene adherence (HHA) from univariable and multivariable analysis*.

Univariable analysis**		Multivariable analysis			
OR (95% CI)	P-value	aOR*** (95% CI)		P-value	
Timepoint					
Baseline	Ref	Ref			
Midpoint	18.5 (5.8–59.4)	<0.001	23.0 (6.4–83.5)	<0.001	
Endpoint	5.8 (1.8–18.9)	0.004	5.5 (1.6–19.3)	0.008	
Endpoint vs Midpoint	0.3 (0.2–0.6)	<0.001	0.2 (0.1–0.5)	<0.001	
Patient contact					
Before contact	Ref	Ref			
After contact	4.7 (3.0–7.3)	<0.001	17.1 (4.3–11.5)	<0.001	
Type of contact					
Invasive	0.6 (0.4–1.1)	0.105	1.1 (0.5–2.7)	0.825	
Not invasive	Ref	Ref			
Healthcare facility level					
III	2.0 (0.8–4.9)	0.148	2.3 (0.7–7.3)	0.178	
IV	Ref	Ref			
Type of healthcare worker****					
Clinical officer	Ref	Ref			
Lab technician	0.3 (0.1–0.7)	0.006	0.2 (0.1–0.6)	0.005	
Midwife	1.0 (0.4–2.7)	0.952	0.8 (0.3–2.4)	0.727	
Nurse	0.5 (0.2–1.4)	0.186	0.4 (0.2–1.3)	0.129	
Hand hygiene resources available per patient care area					
≤1	Ref	Ref			
>1	1.0 (0.5–2.1)	0.940	1.0 (0.5–2.0)	0.906	

Bold significant at 0.05

* Data for these analyses came from hand hygiene observations at 15 different healthcare facilities that had complete data across all study time points (192 hand hygiene observations at baseline; 306 hand hygiene observations at midpoint; 308 hand hygiene observations at endpoint).

** All analyses in this table used the Generalized Estimating Equation to account for the clustering of observations within healthcare professionals and healthcare facilities.

*** The multivariable analysis adjusted for timepoint, patient contact, type of contact, healthcare facility size, and type of healthcare professional.

**** Hand hygiene practices of doctors were not observed. In Uganda, only HC IVs and hospitals have doctors, and in Kabarole District, only one of the HC IVs has doctors on staff.

12.0 Successes and Challenges During Implementation

- This study showed associations between providing ABHR to public HCF in Kabarole District, Uganda, and HCP hand hygiene adherence: 4 months after locally produced ABHR was distributed, composite HHA was 23-fold higher; 5 months after that, composite HHA had decreased but remained 5-fold higher than baseline levels
- With synergy from this project, all HCF in Fort Portal City and Kabarole District had access to Quality ABHR in the entire period of the project improving scores in the ongoing IPC mentorship program.
- Administrators/ In charge at the Healthcare Facilities that IDI/IRC extending free ABHR to their facilities enabled them to save lots of costs. They further noted that given that ABHR is expensive they never had enough yet their Healthcare workers preferred hand rubbing to hand washing when hands were not visibly soiled. Money meant to procure ABHR is being used to procure other essentials or even pay our staff with waves of laughter.
- In 2019, Some Facilities provided their staff to participate in piloting IDC/CDC data collection tools but were not part of the ABHR beneficiaries, receiving news that IRC/IDC is extending ABHR support to their Facilities brought excitement and this was noted at Maranatha and Sarah clinics to mention a few
- Staff at Virika Hospital, Kabarole Hospital noted that having enough ABHR at their sites has greatly improved hand hygiene compliance and improved their IPC scores as most clinical care points have one or more hand hygiene materials but ABHR to be specific. These were the same comments from the IPC focal person Kabarole Regional Referral Hospital and thanked IDI/IRC for the support.
- During the implementation period, there was proper management of the production unit including proper documentation and cleaning supported by the trained district staff and support staff respectively.
- There has been good stock management of the raw materials and finished product in the entire period of implementation.
- No stock-outs of raw materials were experienced before the timeline of project implementation
- Nearly all Facilities thanked IDI/IRC for the provision of pocket-size bottles which they said would help them when out of the facilities or when unable to access water and soap. However, we noticed some HCWs had lost their bottles. More appreciation towards the supply of quality 1L spray bottles which they said were better than pump bottles, noting that these were easy to use, spray wider surface area, and are durable.

Challenges

- Some facilities lost 1-L ABHR bottles
- Sourcing raw materials for ABHR production without donor funds is still a challenge.
- Movement of supplies from IRC and Mucwa district stores to the production Unit is still a challenge as delays have often been noted.

13.0 Key Lessons Learnt

The key lessons learned are

- Kabarole district and Fort Portal City leadership has been supportive which led to the success of the District-wide ABHR model.
- ABHR supplies were stored alongside other drugs in the district stores enabling easy last-mile delivery through leveraging the district systems.
- There has been good stock management of the raw materials and finished product hence minimal stockouts being reported.

14.0 Sustainability and Continuity Plan

Proposed ABHR Sustainability Plan.

- Hospitals consume more ABHR compared to other levels, training ABHR production personnel at hospitals and HSD levels is encouraged given that hospitals may have resources to sustain in-house ABHR production.
- Human Resources: The District allocated to staff who were trained on ABHR production and production is ongoing. More have been mentored using the IDI virtual curriculum.
- Budget allocation for ABHR production sustainability at the district level is needed. This could be through soliciting support from implementing partners to procure available PHC funds.
- Use of NMS trucks to distribute ABHR during their routine distribution cycles. Where private HCF will be picking up ABHS at the nearby healthcare facilities upon delivery by NMS trucks being cognizant of limited space on the NMS trucks.
- Use of NMS trucks to distribute ABHR during their routine distribution cycles. Where private HCF will be picking up ABHS at the nearby healthcare facilities upon delivery by NMS trucks being cognizant of limited space on the NMS trucks.
- HCFs with transport means may continue picking ABHS from the district medicine store upon their requests being approved by the DHO office.

Conclusion

Implementation of the ABHR project in Kabarole and Fort Portal City was a success as observed by high production and consumption of the product, steady hand hygiene improvement, and containment and control of disease outbreaks through good hand hygiene practices.

Annex



A.C System at the ABHR Production Unit (Interior)



ABHR at District Stores



District inspector demonstrates ABHR refilling



1Litre Dispenser bottles



IDI staff Deliver ABHR



Staff at Vine Hospital Receive extra dispenser bottle

Annex



Support supervision during ABHR Production



ABHR Production by District staff



Staff at Sarah Clinic receive ABHR



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