

# The Impact and Sustainability of Hand-hygiene Practices on Health Facilities in the Context of the COVID-19 Pandemic. A Case Study of Busia County (Kenya)

William Okedi<sup>1,\*</sup>, Caroline Wakoli<sup>2</sup>, Irene Emojong<sup>3</sup>

## ABSTRACT

**Introduction:** Health care associated infections including COVID-19 are drawing attention from patients, insurers and Governments worldwide because of the magnitude of the problem i.e. morbidity, mortality and treatment, although these are preventable. Literature review shows there is very little published information on hand washing practices of health care workers in Kenya. This study provides important inputs for planning, policy making and informs future research areas and methods. **Methods:** A cross sectional study design was conducted in Matayos, Teso South and Teso North sub-counties of Busia County. The study covered 33 consenting health workers in 7 health facilities. An interview guide and observation checklist were used to collect data and to ascertain availability of hygiene and sanitation facilities. Thematic analysis was used to analyze qualitative data while quantitative data was analyzed using descriptive statistics. **Results:** That there was no policy on hand hygiene in 6 (86%) health facilities; awareness about hand hygiene was high; knowledge on critical moments for hand hygiene was unsatisfactory but nurses scored better. Only 44% respondents knew effectiveness of alcohol-based sanitizer; on disposal of waste, maternity wards ranked highest 6(87.7%) complying. Laxity in enforcing obligatory use of hand hygiene was high only 2(28.6 %) of facilities complying. Respondents attributed reduction in diarrheal infections and improvements in sanitation during covid-19 pandemic to rigorous hand hygiene practices. Found that hand hygiene compliance by health care workers can reduce infections in health facilities. That lack of piped water, erratic supply of soap, sanitizers and dependency on external partners were perceived to be important barriers for the sustainability of hand washing practices. **Conclusion:** The hand hygiene initiative has occupied a new and important place in the minds of health workers, policy makers and communities due to its contribution in the prevention and control of one of the most serious diseases of the 21<sup>st</sup> century. The initiative has presented a compelling case for investment in preventive and promotive health and demonstrated the power of the old adage “prevention is better than cure”. Purposeful partnerships and collaborations are powerful tools to achieve common goals. The study also exposed various systemic weaknesses within the public health sector and the political leadership that needs to be addressed to ensure sustainability of hand hygiene.

**Keywords:** World Health Organization, Prevention, Covid-19, Compliance, Sustainability.

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## INTRODUCTION

The Coronavirus Disease 2019 (COVID-19) outbreak was declared a Public Health Emergency of International Concern (PHEIC) on 30<sup>th</sup> January 2020 and a pandemic on 11<sup>th</sup> March 2020. The Director General of the World Health Organization (WHO) requested all countries to adopt a “whole –of-Government, whole – of- Society” approach built around a comprehensive strategy to prevent infections, save lives and minimize impact.<sup>1</sup>

Coronavirus disease 2019 (COVID-19) that originated in China has spread globally, causing unprecedented socio-economic disruptions and overtaking the capacity and resources of health systems worldwide. The WHO Africa regional office

reports indicate that as of 13<sup>th</sup> November 2020, there were 6,107,353 cumulated reported cases, and 151,084 deaths.<sup>2</sup>

Although covid-19 prevention vaccines have been developed and approved for emergency use, it is not yet available to the majority of people in developing countries, especially Africa, where supply chain systems are still insufficient and remain vulnerable to potential international industrial and transport shut-downs.<sup>2</sup> The situation is exacerbated by the endemic challenges of inadequate essential equipment and human resources within the health systems. Therefore preventive measures are the priority approach to control the transmission of cases as

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the virus is highly contagious via the respiratory route (droplets from infected persons, widely spread by coughing or sneezing) and via contact with contaminated surfaces. Community transmission and spread can be decreased through non-pharmaceutical interventions (NPIs) which includes practicing social distancing, avoiding group gatherings, regular and diligent hand washing with soap and water or sanitizer as well as community mask wearing.<sup>3</sup>

Current evidence indicates that the COVID-19 virus is transmitted through respiratory droplets or contact. Contact transmission occurs when contaminated hands touch the mucosa of the mouth, nose, or eyes; the virus can also be transferred from one surface to another by contaminated hands, which facilitates indirect contact transmission.<sup>1</sup> Consequently, hand hygiene is extremely important to prevent the spread of the COVID-19 virus. It also interrupts transmission of other viruses and bacteria causing common colds, flu and pneumonia, thus reducing the general burden of disease.

Although awareness of the importance of hand hygiene in preventing infection with the COVID-19 virus is high, access to hand hygiene facilities that include alcohol-based sanitizers, soap and water is often in short supply in schools, community and in health care facilities, especially in low-and middle-income countries. WHO and UNICEF estimate that globally three<sup>3</sup> billion people lack hand hygiene facilities at home and two out of five health care facilities lack hand hygiene at points of care.<sup>1</sup>

Further, the WHO Africa regional office<sup>2</sup> reports that access to hygiene facilities has become increasingly challenging as a result of stock-outs of supplies. However, WHO notes that when hand hygiene is provided free of charge and is made obligatory by public health authorities, acceptability and adherence to hand hygiene practices are improved, including in public health emergencies of international concern.<sup>2-3</sup> Hand hygiene is the most effective single measure to reduce the spread of infections through multimodal strategies, including access to appropriate supplies.<sup>4</sup> To enhance the prevention of COVID-19, the World Health Organization<sup>5</sup> made the following nine recommendations to member states:-

1. One or several hand hygiene stations (either for handwashing with soap and water or for hand rubbing with an alcohol-based hand rub) should be placed in front of the entrance of every public (including schools and healthcare facilities) or private commercial building, to allow everyone to practice hand hygiene before entering and when leaving it.
2. Facilities should be provided at all transport locations, and especially at major bus and train stations, airports, and seaports.
3. The quantity and usability of the hand hygiene stations should be adapted to the type (e.g. young children, elderly, those with limited mobility) and number of users to better encourage use and reduce waiting time.
4. The installation, supervision, and regular refilling of the equipment should be the overall responsibility of public health authorities and delegated to building managers. Private sector and civil society initiatives to support the commodities, maintenance, and effective use are welcome.
5. The use of public hand hygiene stations should be obligatory before passing the threshold of the entrance to any building and to any means of public transport during the COVID-19 pandemic. Repeated hand hygiene whenever outside private homes can in this way become part of the routine of everyday life in all countries.
6. All private and public health care facilities should establish or strengthen their hand hygiene improvement programmes and rapidly ensure at a minimum procurement of adequate quantities

of quality hand hygiene supplies, refresher hand hygiene training, and reminders and communications about the importance of hand hygiene in preventing the spread of the COVID-19 virus.

7. Local health authorities should ensure the continuous presence of functional hand hygiene stations (either alcohol-based hand rub dispensers or soap, water, and disposable towels) for all health care workers at all points of care, in areas where personal protective equipment (PPE) is put on or taken off, and where health care waste is handled. In addition, functional hand hygiene stations should be available for all patients, family members, and visitors, and within 5 metres of toilets, as well as at entrances and exits, in waiting and dining rooms, and other public areas.<sup>5</sup> Local production of alcohol-based hand rub formulations in national, sub-national or hospital pharmacies or by private companies should be strongly encouraged according to WHO guidance especially if commercial options are limited or too costly.<sup>6</sup>
8. Health care workers should perform hand hygiene using the proper technique<sup>7</sup> and according to the instructions known as “My 5 moments for hand hygiene,”<sup>7</sup> in particular, before putting on PPE and after removing it, when changing gloves, after any contact with a patient with suspected or confirmed COVID-19 virus, their waste, or the environment in the patients’ immediate surroundings, after contact with any respiratory secretions, before food preparation and eating, and after using the toilet.
9. All health care facilities are strongly encouraged to participate actively in the WHO Save Lives: Clean Your Hands campaign respond to the United Nations Secretary General’s Global Call to Action on WASH in health care facilities.<sup>8</sup>

Subsequent to the declaration of the COVID-19 as an international disaster by WHO in March 2020, the ministry of health (MOH) in Kenya established a national taskforce to spear-head the activities of COVID-19 preparedness and response.<sup>7</sup> The COVID-19 rapid response taskforce in Kenya is a multi-disciplinary team, housed at the ministry of health headquarters, with representatives at the county, sub-county and community levels. The role of the COVID-19 rapid response task force is to create awareness (education) among the public, formulate care, prevention and control guidelines and protocols, among other roles.

Busia County was among the top five counties that were adversely affected by the Covi-19 disease. The population segment most affected were truck drivers, prisoners and health workers. According to the county situation report of October 2021,<sup>9</sup> the cumulative number of laboratory confirmed cases were 5, 784, of whom 4,676 were males and 1104 were females. During the same period, 67 deaths had occurred, giving a case fatality rate (CFR) of 1.125%. The cumulative confirmed cases were distributed throughout the county as shown in Table 1 below:

To Prevent and control the spread of Covid-19 disease, the County Government of Busia in collaboration with the National Government,

**Table 1: Distribution of laboratory confirmed COVID-19 cases – by sub-county.**

Sub-County	Number of cases
Teso North	1676
Teso South	658
Nambale	91
Matayos	3157
Butula	100
Samia	61
Bunyala	47

set up Alupe Sub-county Hospital as an isolation and treatment center. According to the situation report document, the County of Busia commenced Covid-19 vaccination on 9<sup>th</sup> March 2021. Eight thousand six hundred sixty (8,668) people received the first dose of the Astra-Zeneca vaccine representing a dose uptake of 47.6%. Vaccine status for Moderna vaccine stands at ten thousand five hundred thirty-two (10,532) for first dose and two thousand nine hundred six (2906) for the second dose, representing an uptake of 6.56%. The county government has accelerated its immunization campaigns since July 2021 with the target of immunizing all adults to achieve herd immunity in the population.

To safe-guard public health and the learners, GOK issued health and safety guidelines and protocols to the best interest of the learners, health personnel and the general public. These protocols covered social distancing; hygiene and sanitation; and psychosocial support. This study will only focus on the Hygiene and sanitation guidelines.

### Problem Statement

Since the issuance by GOK of the health and safety policy directive to health and basic education institutions with specific protocols on social distancing, hygiene and sanitation, and on psychosocial support, no study has specifically examined the implementation process, achievements, challenges and sustainability of the hygiene and sanitation components of the policy directive in Busia County.

### Purpose of the Study

The purpose of the study is to inform policy makers, community leaders and to influence policy development in support of enhanced prevention and control of Covid-19 disease in health facilities in Busia County.

### Objectives

1. To assess the compliance of 7 health facilities in Matayos, Teso South and Teso North sub-counties with the hygiene and sanitation guidelines
2. To document the process, success, challenges and lessons learned
3. To identify the enabling and constraining factors for the implementation of the hygiene and sanitation component of the Covid-19 protocols in health facilities
4. Assess the potential for sustainability of hand hygiene and sanitation practices in health facilities.

### Justification and Significance

The justification for this study stems from four critical issues:

1. Since GOK issuing the policy directive in June 2020, no evaluation of the policy implementation has been done in Busia County. Policy makers, actors and implementers don't know what works, what doesn't and why?
2. Policy implementation research has assumed critical importance since the initiation of devolved governments because it is seen as one way of holding officials to account, yet it has received little attention.
3. Policy implementation especially in the health and related sectors is a potential niche for future research at Alupe University College.
4. Results of this study may facilitate change of pre-existing administrative and management systems to enable effective prevention and control of COVID-19 disease.
5. Finally, this research contributes towards AUC's vision and mission by simultaneously addressing the three strategic areas of its mandate (research, extension and education).

### Significance

The significance of this study lies in its potential to shade insights about the support required for health-related policy implementation at the grass-root or institutional level. In addition, the results of the study may influence policy makers to restructure pre-existing administrative and management systems which may be hindering effective implementation of the policy directive at health facility levels.

**Limitations of the Study** – The main limitation of the study is the available funding. However, the researchers are fully aware of this fact and have taken mitigating measures to ensure the study is implemented with minimal interruptions. The Investigators and collaborating partners will use this study as a bait to seek additional funds from external sources for the implementation of its results or key findings.

## MATERIALS AND METHODS

**Study Area:** The study was conducted in three sub-counties, namely Matayos - covering Busia County referral hospital and Matayos Health center.

In Teso South sub-county, Alupe hospital and Amukura health center were included in the study.

In Teso North sub-county, Angurai health center; Malaba dispensary and Kocholia hospital were included in the study.

The choice of the three sub-counties as sites for this study was informed by the relatively higher numbers of individuals that were infected, relative to the other sub-counties as shown in Table 1 above. These three sub-counties were most exposed due to their geographical locations along the Great North road (Mombasa-Kampala) highway through the Malaba border town in Teso North and the (Kisumu – Kampala) highway through the Busia Border town which passes through Matayos and Teso South sub-counties.

### Study Design

A cross-sectional study design was chosen for this study. The World Health Organization (WHO) checklist for assessing hand hygiene and sanitation in health facilities was modified, adopted and used in this study as analytical framework. In addition, a key Informant Interview (KI) schedule was developed to gather in-depth information from key informants, both quantitative and qualitative data was collected.

### Study Population

The study population included medical officers, nursing officers, public health officers, registered clinical officers, laboratory technologists, pharmaceutical technologists, nurse attendants and subordinate staff of the health facilities covered in this study.

### Sampling

A purposively sample was chosen from the above study population taking into consideration the time, funding and roles of the study population in the implementation of the health and sanitation protocols among other considerations. Thirty-nine (39) consenting respondents participated in the study. These included the County Chief Nurse (1); County Public Health Officer (1); Senior public health officer (1); five (5) Medical Officers; six (6) Clinical officers; eleven (11) Nursing Officers; five (5) public health officers; five (5) Laboratory Technologists; one (1) Pharmaceutical Technologist; two (2) Nurse Attendants and one (1) Cleaner Supervisor.

### Data Collection Procedures

The data collection commenced with a planning meeting with the key stakeholders drawn from the Department of public Health and Sanitation

and AUC to review and agree on the study purpose, data collection tools and timelines.

The WHO assessment tools for Hygiene and sanitation protocols in health facilities (9) was adopted and used for this study. Data was collected using two main methods

- a. Interview – using an interview guide to collect data from the sampled health workers
- b. Observation- an observation checklist was developed and used to collect a range of behaviors and to ascertain availability of hygiene and sanitation facilities.

**Data analysis:** Thematic analysis procedures were used to analyze qualitative data. Quantitative data was analyzed using descriptive statistics and presented using tables, percentages and bar charts.

### Management of the Research Process

The Principal Investigator had the overall responsibility over the smooth implementation of the research project. He was assisted by the co-research investigator and an investigator in executing the study. The key partners in this study are officers from the department of health and sanitation of Busia County Government and the Staff of Alupe University College. These officials played key roles in organizing and coordinating participation of their respective constituencies in the research process and by creating a conducive research environment.

### Ethical Considerations

Ethics approval was received from the Institutional Ethics and Review Committee of Masinde Muliro University of Science and Technology (Appendix 1) while permission to conduct research in the health facilities was granted by the County Director of curative and rehabilitative services (Appendix 2). Prior to conducting the interviews, written informed consent was obtained from the participants (Appendix 3).

#### Appendix 1: Interview Schedule for County Director/S, SUB-COUNTY MOH; MED SUPP/ NO IC/PHO – ON Hand Hygiene Practices

County-----  
 Sub-county name-----  
 Health facility name-----  
 Respondent no-----  
 Gender-----  
 Age-----  
 Date-----

1. Do you have an infection prevention control committee (IPC)
2. If Yes, what is its
  - a. Structure
  - b. Membership
  - c. Functions
  - d. Implementation strategies
3. Who is the coordinator of the committee and what are her specific functions (prod, appointment letter, documents relating to functions)
4. What main activities have been implemented on hand hygiene in the past two (2) years?
5. What capacity building activities on hand hygiene have been conducted for:
  - i. Clinical staff (MOs, NOs, COs, laboratory scientists) etc.
  - ii Sub-ordinate staff (cleaners, attendants) etc

- iii. Preventive and Promotive health staff (PHOs, health Promotion officers, community strategy officers) etc
- iv. Neighboring community members
6. What are the main successes of the hand hygiene activities in your area of jurisdiction?
7. What are the three main challenges affecting implementation of hand hygiene activities?
8. What should be done and by whom to alleviate the stated challenges?
9. Do you have any other comments you wish to make on the hand hygiene initiative?

#### Appendix 2: Semi-Structured Questionnaire – Hand Hygiene Practices For Health Workers

Sub-County Name-----  
 Name of Facility -----  
 Number of Staff (Professional and Support) -----  
 Average OPD Attendance -----  
 Respondent Number -----  
 Gender -----AGE -----  
 Profession -----  
 Department -----  
 Date -----

1. WHO recommends the use of hand –hygiene measures at five critical moments? Enumerate this critical moments.
2. Have you received formal training in hand hygiene programme in the last two years?
3. If yes, what was the most important aspects in your view?
4. Do you routinely use an alcohol based sanitizer for hand hygiene? How often?
5. What is the minimum time needed for alcohol based sanitizer to kill most germs in your hand?
6. Which type of hand hygiene method is required in the following situations
  - a. Before palpation of abdomen -----
  - b. Before giving an injection -----
  - c. After emptying a bed-pan -----
  - d. After removing examination gloves -----
  - e. After making a patient's bed -----
  - f. After exposure to blood -----
7. Which one should be avoided due to its association with increased likelihood of colonization of hands with harmful germs?
  - a. Wearing jewelry
  - b. Damaged skin
  - c. Artificial fingernails
  - d. Regular use of hand cream
8. What specific challenges do you experience in the course of your work related to hand hygiene practices?
9. How have you addressed the above challenges?
10. Which recommendations can you make to improve hand hygiene practices in the health facility?

#### Appendix 3: An Observation Checklist

##### Hand –hygiene practices in schools and health facilities

Sub-county name-----  
 Name of School/Health Facility-----

DATE-----

**Observe and Record the Following:**

1. Presence of one or several hand hygiene station in front or entry to health facility or school:
  - a. With soap and water
    - Yes \_\_\_\_\_
    - No \_\_\_\_\_
  - b. With alcohol based hand sanitizer/dispenser
    - a. Yes
    - b. No
  - c. Approximate waiting time to use hand washing facility
    - a. 1-2 min
    - b. 3-5 min
    - c. More than 5 min
2. Availability of quality hand-hygiene supplies
 

Washing soaps

  - a. Yes
  - b. No

Alcohol based sanitizers

  - a. Yes
  - b. No

Gloves

  - a. Yes
  - b. No

Cleaning equipment for toilet

  - a. Yes
  - b. No
3. Presence of functional hand hygiene stations for health workers at all points of care
  - i.) MCH Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
  - ii.) OPD Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
  - iii.) Laboratory Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
  - iv.) Pharmacy Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
  - v.) Maternity Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
  - vi.) Wards
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
4. Waste bins provided and emptied
  - i.) MCH Department
    - a.) Yes b.) No c.) Not Provided
  - ii.) OPD Department
    - a.) Yes b.) No c.) Not Provided
  - iii.) Laboratory Department
    - a.) Yes b.) No c.) Not Provided
  - iv.) Pharmacy Department
    - a.) Yes b.) No c.) Not Provided
  - v.) Maternity Department
    - a.) Yes b.) No c.) Not Provided
  - vi.) Wards
    - a.) Yes b.) No c.) Not Provided
  - vii.) CCC Department
    - a.) Available and Functional
    - b.) Available and Dysfunctional
    - c.) Not Provided
5. Presence of proper collection, storage and disposal of waste especially tissues utilized for:
  - Cough and sneezing
 

Laboratory a. \_\_\_\_\_ Yes b. \_\_\_\_\_ No

Cough Corner a. \_\_\_\_\_ Yes b. \_\_\_\_\_ No
  - Menstrual hygiene materials
 

Maternity a. \_\_\_\_\_ Yes b. \_\_\_\_\_ No
  - Used masks \_\_\_\_\_ Yes \_\_\_\_\_ No
  - Waste burning \_\_\_\_\_ Yes \_\_\_\_\_ No
6. Posters and communication materials on the importance of hand-hygiene in preventing the spread of the Covid-19 virus available in strategic places
  - i.) MCH Department a.) Yes b.) No c.) Not Seen
  - ii.) OPD Department a.) Yes b.) No c.) Not Seen
  - iii.) Laboratory Department a.) Yes b.) No c.) Not Seen
  - iv.) Pharmacy Department a.) Yes b.) No c.) Not Seen
  - v.) Maternity Department a.) Yes b.) No c.) Not Seen
  - vi.) Wards a.) Yes b.) No c.) Not Seen
  - vii.) CCC Department a.) Yes b.) No c.) Not Seen
7. Mechanisms to enforce obligatory hand-washing by clients before entry into health facility or school (observe)
  - a. None
  - b. Security officer
  - c. Barrier erected
  - d. Notice in the board
8. Observe health worker practice during the key moments for hand-washing:-
  - a. Before putting on PPE and after removing it
    - i.) OPD ii.) Maternity iii.) CH
    - iv.) Pharmacy v.) Laboratory vi.) Wards vii.) CCC
  - b. When changing gloves
    - i.) OPD \_\_\_\_\_ ii.) Maternity \_\_\_\_\_
    - iii.) MCH \_\_\_\_\_ iv.) Pharmacy \_\_\_\_\_
    - v.) Laboratory \_\_\_\_\_ vi.) Wards \_\_\_\_\_

- vii.) CCC
- c. After any contact with any patient  
 i.) OPD\_\_\_\_\_ ii.) Maternity\_\_\_\_\_
- iii.) MCH\_\_\_\_\_ iv.) Pharmacy\_\_\_\_\_
- v.) Laboratory\_\_\_\_\_ vi.) Wards\_\_\_\_\_
- vii.) CCC
- d. After handling patients waste, secretions or the environment in the patients immediate environment i.) OPD\_\_\_\_\_
- ii.) Maternity\_\_\_\_\_ iii.) MCH\_\_\_\_\_
- iv.) Pharmacy\_\_\_\_\_ v.) Laboratory\_\_\_\_\_
- vi.) Wards\_\_\_\_\_ vii.) CCC\_\_\_\_\_
- e. Before food preparation and eating i.) OPD\_\_\_\_\_
- ii.) Maternity\_\_\_\_\_ iii.) MCH\_\_\_\_\_
- iv.) Pharmacy\_\_\_\_\_ v.) Laboratory\_\_\_\_\_
- vi.) Wards\_\_\_\_\_ vii.) CCC\_\_\_\_\_
- f. After using the toilet i.) OPD\_\_\_\_\_
- ii.) Maternity\_\_\_\_\_ iii.) MCH\_\_\_\_\_
- iv.) Pharmacy\_\_\_\_\_ v.) Laboratory\_\_\_\_\_
- vi.) Wards\_\_\_\_\_ vii.) CCC\_\_\_\_\_
9. Availability of local institutional policy or standard operating procedures or manual
- a. Yes
- b. None
10. Food handlers are free from evidence of: (Observe in the facility kitchen)
- i. Open lesions of the hands, face or neck
- a. Yes
- b. No
- ii. Inflammatory conditions of the respiratory tract (sneezing, cough, running nose)
- a. Yes
- b. No
- iii. Any poor personal hygiene practices
- a. Yes
- b. No
- iv. Validity of physical and food handlers certificate issued by MOH
- a. Valid
- b. Expired
- c. Not issued
11. Observe in schools or Health care facilities if wash their hands thoroughly with clean water and soap for at least 20 sec(for target population)

**Schools**

- i. Before eating a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- ii. After sneezing, coughing or nose blowing.
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- iii. After using toilet or urinal
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- iv. Before handling food
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA

- v. After touching or cleaning surfaces that may be contaminated
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- vi. After using shared equipment (combs, masks, spoons)
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA

**Health Facilities**

- i. Before eating
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- ii. After sneezing, coughing or nose blowing.
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- iii. After using toilet or urinal
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- iv. Before handling food
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- v. After touching or cleaning surfaces that may be contaminated
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
- vi. After using shared equipment (combs, masks, spoons)
- a.)\_\_\_\_\_ Yes b.)\_\_\_\_\_ No c.) NA
12. Observe whether the hand washing techniques by Health care workers and learners conform to the WHO guidelines -:

**Schools**

- a. Wet hands with clean running water, turn off tap and apply soap
- b. Lather your hands by rubbing them together with soap
- c. Scrub hands (internal parts, in-between fingers, along thumbs) for 20 sec
- d. Rinse your hands well under clean, running water and dry with serviette or sun
- Health Facilities**
- a. Wet hands with clean running water, turn off tap and apply soap
- b. Lather your hands by rubbing them together with soap
- c. Scrub hands (internal parts, in-between fingers, along thumbs) for 20 sec
- d. Rinse your hands well under clean, running water and dry with serviette or sun

**RESULTS AND DISCUSSION****Institutional and Policy Framework for Hand –Hygiene**

Majority of respondents in the selected study facilities in Teso South, Matayos and Teso North sub-counties reported that there was no specific policy on hand –hygiene in their facilities. However, they stated that hand-hygiene is always considered as an integral part of the Infection Prevention Control (IPC) policy or guidelines. Table 1 below shows responses to the question” Do you have an institutional policy, Standard operating guidelines or manual on hand-hygiene?

As can be seen in Table 2, except for the BCRH whose respondent claimed that there is a National policy on hand –hygiene, most of the facilities reported lack of hand hygiene policy. It is noteworthy that most or all the facilities acknowledge possession of posters and brochures on hand –hygiene that were distributed by their development partners including NGOs. Distribution of the IEC materials was however not even, with critical areas such as CCC, MCH, and OPD of the study facilities reporting 28.6%; 42.9% and 43% having the materials. Most of the IEC materials seen by the research team were developed and distributed by WHO and USAID. (Appendix 4).

It's also worth noting that most health facilities included in this study reported that no hand hygiene operating standards were developed and

**Table 2: Availability of Policy on Hand –Hygiene at facility level.**

Facility Name	Availability of policy	Hand-hygiene posters	Hand hygiene standard operating procedure manual
1. Alupe Hosp.	NO	YES	YES
2. Amukura H/C	No	YES	NO
3. Angurai H/C	No	YES	NO
4. Kocholya Hosp	No	YES	NO
5. Malaba H/C	No	YES	NO
6. Matayos Hosp	No	YES	YES (Not seen)
7. Busia County Referral Hosp	Yes – National Policy	YES	NO

Source-interview data

#### Appendix 4: Research Findings from Observation Checklists

##### Demographic data

The study sampled 7 health centres where data was collected. Schools were not covered. In each health center seven departments were observed on hand hygiene practices in the context of covid-19 pandemic. These departments were MCH, OPD, Laboratory, Pharmacy, Wards and CCC.

The health centres covered were Angurai, Busia Referral Hospital, Matayos, Malaba, Kocholia, Amukura, Alupe

##### The objectives of the study were

1. To assess the compliance of 7 health facilities with hygiene and sanitation guidelines in Matayos, Teso South and Teso North Sub Counties
2. To document the process, success, challenges and lessons learned
3. To identify the enabling and constraining factors for the implementation of the Covid- 19 protocols health facilities
4. Assess the potential for sustainability of hand- wash hygiene practices health facilities

A comparative analysis could not be done between schools and health centres since data collection was not done in schools

##### Findings of the study

To assess the compliance of the health facilities to hygiene and sanitation facilities, data was collected through observation on the areas below

##### 1. Hand–Hygiene Facilities

The presence of one or several hand hygiene stations in front or entry to the health facility with soap and water, alcohol sanitizer or dispenser and approximate waiting time to use the hand washing facility in the Departments

From Table 5, the compliance rate is 85%, since 6 out of 7 health facilities had hand hygiene station present with or without sanitizer. Table 6 shows 4 out of 7 health facilities had alcohol- based sanitizer in the stations provided.

In all the seven-health facilities people used the shortest time of 1-2 min as approximate waiting time. It means either users are not many or the stations are efficient- 100%

Availability of the hand- hygiene supplies like washing soap, sanitizers, gloves and cleaning equipment at the facility was above 70% on average

Comparison of Departments- CCC Dept. was not doing well in all the health centers in terms of hand washing stations. The rest were 70%

2. Availability of supplies- soap/ sanitizers- This was witnessed in 5 out of 7 health centres. Reason could be because the sanitizers are cheap

3. Presence of functional hand hygiene stations for health workers at all points of care

MCH Department- 7out of 7 100%

OPD Dept. 4out of 7- 67%

Pharmacy 5 out of 7- 71%

Laboratory 6out of 7- 85%

Wards - 57%

CCC Dept. -83.3% -

##### 4. Disposal of waste bins

Laboratory 4out 7:-57% This is not good for hygiene

Wards 6out of 7- 87.7% Good

Pharmacy 3out of 7 42%

Disposal of waste in in all health centres is above 50%. However disposal of used face masks is not properly done i.e 3out of 7- 42%

Menstrual hygiene is maintained in maternity Department in all health centres. The disposal of this material is 100%

Burning of waste materials done in all health centres 7out of 7

##### 5. IEC materials

Advertisement/posters on hand washing protocols

This is above 50%. Some of the health centres did not have the posters MCH- 3out of 7- 42.9%

Communication in CCC is only at 28.6%- 2 of the health centres not having or not seen- 2 of the health centres not having or not seen

OPD- 3 out of 7- 43% (No sustainability of communication on hand washing hygiene

##### 6. Health worker practice during the key moments for hand washing

Before putting on PPE and after removing it, when changing gloves, after contact with a patient, after handling patients waste, before food preparation, after using toilet

6 out of 7 observing hand washing

One health centre not observing

OPD-

MCH 3 out of 7- 42.9%

Maternity 5 out of 7- 71%

Pharmacy -2 out of 7- 28.6% not t observing well

Wards 2 out of 7- 28%

Lab 3 out 7 -42.9% This can be attributed to the fact that they do not handle patients directly

CCC 1 out of 7 14.3%

##### 7. Mechanism to enforce hand washing

4 out of 7 not having enforcement

2 out of 7- security officers present at the gate to enforce hand washing- 57.%

##### 8. Food handlers are free from evidence of poor hygiene practices

3 out of 7- 42.9%

Valid Certificate issued from MOH- 5 out of 7- 71%

##### 9. Washing hands thoroughly at least 20 sec with clean water and soap before eating

4 out of 7- 57.1%- Informal conversation with the staff

**10. Washing hands after sneezing, coughing and blowing nose**

2 out of 7- 28.6%

**11. Washing hands after touching contaminated surfaces**

1 out of 7- 14.4%

used in the County. However, one respondent from Matayos hospital reported that the county had developed a standard operating Procedure manual but this was not availed to the research team.

The research team found that most facilities have Infection Prevention Control Committees headed either by the Medical Officer in-charge; nursing officer or public health officer. The members of the committee frequently mentioned included Medical Officer in charge of the facility; the Nursing officer in-charge; the Public Health Officer and the laboratory technologist.

**Main Functions of the Committee**

According to the majority of respondents, the main functions of the Infection Prevention Committee include – coordination of all matters relating to infection prevention control in the facility; conducting needs assessments in the facility in order to identify gaps in IPC issues; attending IPC meetings regularly; advising the HMT on matters relating to IPC including provision of hand-washing facilities, dust-bins; safety boxes for syringes, needles and other sharps, and procurement of materials. It was pointed out that the committee is also responsible for waste disposal

as well as organizing capacity building activities for both the technical and support staff at the health facility level, training of CHVs as well as overall oversight on implementation of the IPC activities including hand-hygiene.

Despite being responsible for the IPC and hand-hygiene activities in their respective sub-counties/health facilities, some of the respondents in Amukura, Alupe and Matayos hospitals, reported that their respective committees had not met for long-periods for reasons that were not clearly explained. For example, Alupe IPC Committee had not met since January 2022. Similarly the Amukura IPC committee had not met since early 2021.

**Capacity Building**

One of the key functions of the IPC was to strengthen the capacity of the health workforce to implement the IPC activities including training in hand hygiene practices. Table 3-5, below summaries the hand hygiene training activities in the study facilities.

From Tables 3-5 given, a number of observations can be made

1. That there was a large concentration of partners in the first year, 2020 and reduced drastically in 2022. For example, Teso North sub-county was supported by several partners in 2021 but as of March 2022, only one partner (JPIEGO) continued supporting the Sub-county on capacity strengthening.

**Table 3: Hand-Hygiene Capacity Building Activities in Teso South Sub-County.**

Sub-County	Target Group	Main theme of training	Duration	Sponsor	2022
Teso South (Amukura and Alupe Hospitals)	1. Clinical and Technical staff (MOs, NOs, COs, Lab-Techs, PHOs, Pharm-Techs,)	i. Covid-19 prevention ii. Hand-washing iii. IPC and waste management	1-2 Days	All training at this level was sponsored by Partners namely:- AMPATH; PSK; AMREF; Catholic Church; JHPIEGO; UNICEF; Living-Goods.	NO Training as of March 9 <sup>th</sup> 2022.
	2. Support staff (Casuals; gardeners; Cleaners; and Mortuary attendants)	Mainly on Job training (CME): i. Covid 19-prevention ii. Demonstration of hand-washing and waste disposal techniques; iii. Safe removal of hand-gloves	1 day	Most of this capacity building activities were on-the Job training, conducted by health facility	
	3. Community Health Volunteers	i. practical application and use of masks; gloves; ii. Steps of Hand-washing iii. protective clothing including gumboots; iv. Community dialogue at CU level v. Home visits (Leakey tins next to toilets)	1 day	As above	
	4. Preventive and Promotive (PHOs, CHAs; Cough-Monitors and lab sputum specimen-riders	Hand Hygiene and waste disposal:- - Procedures for hand-washing - Materials used in hand washing - TB sputum collection	3 Separate seminars of one day each.	County Government;	

Source: Interview data

The researchers found that despite the existence of the IPC committee, the Amukura H/C Committee had not met since the first quarter of 2021.

**Table 4: Hand Hygiene Capacity Building activities in Teso North sub-county.**

Teso North (Kocholya Hospital; Angurai and Malaba Health centers)	1. Clinical and Technical staff (MOs, NOs, COs, Lab-Techs, PHOs, Pharm-Techs)	i. TOT on infection prevention ii. Covid-19 management iii. Covid -19 and IPC	1-2 Days	All training at this level was sponsored by Partners namely:-AMPATH Plus; Red –Cross; PATH; Afya Hali; UNICEF and JHPIEGO.	- No training was held in 2021. - One training held in February 2022 on Basic emergency IPC sponsored by JPIEGO.
	2. Support staff (Casuals; gardeners; new students; Cleaners; and Mortuary attendants)	Mainly on Job training (CME): i. Covid 19-prevention ii. Demonstration of hand-washing and waste disposal techniques; iii. Safe removal of hand-gloves	1 day	Most of this capacity building activities were on-the Job training, conducted by health facility staff.	
	3. Community Health Volunteers	i. Health Education on Covid-19 ii. iii. iv. v.	1 day	As above	
	4. Preventive and Promotive (PHOs, CHAs; Cough-Monitors and lab sputum specimen-riders	Health Education through Barraza's (chiefs ad administrators meetings)	-	As above	

Source: interview data

The respondents in Teso North health facilities reported that for un-explained reasons, during the year 2021, no capacity strengthening activities sponsored by external partners were conducted in the sub-county. They relied on their internally organized Continuing Medical education to update knowledge and skills of their workers.

- The near absence of capacity strengthening since late 2021 and only one in 2022 is glaring. The respondents explained that their partners have since moved to support vaccine uptake focused activities at the expense of hand –hygiene. The void created is however being taken up through CME by the respective IPC facility management committees.
- It's also observed that there is a large concentration of partners in Matayos sub-county. This is because the County headquarters are in Matayos sub-county and thus coordination of all activities for the County are done in this sub-county. Although this may be interpreted as concentration of resources in one sub-county, it is noted that health workers from across the county were invited to participate in these workshops and seminars
- There was relatively little capacity strengthening or even sensitization directed at the community structures and leadership on issues of hand hygiene. Only AMREF attempted to do this in only two market centers, namely Busia and Bumala in the study areas. The likely implication is that the community's served by this facilities received minimal support in hand-hygiene promotion.

The irregular and near absence of IPC meetings in three out of seven facilities reflects poor leadership and governance on the part of these facilities and has negative consequences for the hand hygiene practice and sustainability.

### Hand-Hygiene Practices and Health Care-Workers Knowledge of Health Workers

The hand-hygiene knowledge and practices of the healthcare workers in the study facilities were assessed by professional category based on the WHO five (5) critical moments for hand-hygiene. The five critical moments are: - before touching a patient; before clean/aseptic procedures; after body fluid/exposure risk; after touching a patient;

and, after touching patient surroundings. Respondents were asked to enumerate these critical moments. The results are presented in Table 6 below:

From the data presented in the above table, the study team decided that the cut off point for respondents to be considered having acceptable level of knowledge will 3 correct moments (60%). Based on this criteria, it appears that the nurses (100%) are very well aware of the 5 critical moments for hand hygiene as recommended by WHO. They are followed by Clinical officers at 80%; public health officers and Nursing attendants at 50% and Laboratory Technologists at 40%. The low levels of knowledge among the laboratory technologists is particularly worrying noting the high rate of infectiousness of the type of waste (e.g. blood, urine, saliva, excreta and other body fluids) handled in the laboratory.

These findings are corroborated by observation of health worker practices during key moments for hand-washing that showed that 71% of the maternity ward nurses as opposed to 42.9% of the laboratory technologists were practicing hand-hygiene during the critical moments. (Appendix 4).

Knowledge of the effectiveness of alcohol-based sanitizer to kill germs was assessed among the healthcare workers. Respondents were asked what the minimum time needed for alcohol- based sanitizer to kill most germs in their hands. The results among the various professional categories are presented in Table 7 below.

The data from the above table shows that only eight (44%) of the eighteen (18) respondents know the effectiveness of alcohol-based sanitizers to kill germs. The majority (56%) do not have this knowledge. The implications of this gap in knowledge could lead to unnecessary prolonged use of the sanitizer and wastage. The findings also confirm the superior knowledge levels of the nurses on IPC and re-affirms the inadequacies among the laboratory technologists on this matter.

**Table 5: Hand Hygiene Capacity Building activities in Matayos Sub-County.**

Matayos (sub-county hospital and BCRH)	1. Clinical and Technical staff (MOs, NOs, COs, Lab-Techs, PHOs, Pharm-Techs,)	i. Waste management and hand hygiene ii. Covid 19 and IPC iii. TOT on Covid – Intersectoral teams iv. Integrated water and sanitation -IPC for health workers v. IPC and COVID 19 for level 4 health facilities (Khunyanguru; Port-Victoria; Kocholia and Amukura)  vi. Covid -19 and IPC	1 Day  3 days  5 days  2 days  2 days	County GVT  KDS -  MOH  KIWASH -Kenya  Afya Halisi  Internal Training and Education Centre for Health workers (ITECH) Washington State University	- No capacity building activities since last quarter of 2021.
	2. Support staff (Casuals; gardeners; new students; Cleaners; and Mortuary attendants)	Mainly on Job training (CME): i. Covid 19-prevention ii. Demonstration of hand-washing and waste disposal techniques; iii. Safe removal of hand-gloves	1 day	Most of this capacity building activities were on-the Job training, conducted by health facility staff.	
	3. Community Health Volunteers	i. Health Education on Covid-19 ii. Water, Sanitation and Hygiene iii. Waste types – segregation of waste iv. Use of PPEs  v. donation of hand hygiene materials  v. Market Place Hygiene	3 days	UNDP  i. World vision ii. Rotary Club UNICEF iii. Lake Victoria water services iv. Red-Cross v. Living Goods v. SETH vi. Care Kenya	
	4. CHVs; Traders and Boda-Bodas (motor-cycle riders) in Busia and Bumala markets		1 day	AMREF	
	4. Preventive and Promotive (PHOs, CHAs; Cough-Monitors and lab sputum specimen-riders)	Health Education through Barraza's (chiefs ad administrators meetings)	-	-	

Source: Interview data

**Table 6: Knowledge of Health Care workers on critical moments for hand-hygiene.**

Professional Category	Number	Number of Correct critical moments stated by respondents					
		5	4	3	2	1	0
Nurses	4	0	3	1	0	0	0
Medical Officers	-	-	-	-	-	-	-
Clinical Officers	5	0	1	3	1	0	0
Laboratory Technologists	5	0	1	1	2	1	0
Public Health Officers	2	0	1	0	0	0	1
Nurse attendants	2	0	0	1	0	1	0

Source: Primary data from interviews

**Table 7: Health care workers knowledge of the effectiveness of alcohol based sanitizer.**

Professional Category	Minimum time needed to kill most germs using alcohol-based sanitizer			
	0-20 sec	21-30 sec	More than 60 sec	Don't Know
Nurses (N4)	3 (75%)	0	0	1(25%)
Laboratory Technology (N5)	2(40%)	0	0	3(60%)
Clinical Officers (N5)	1(20%)	0	3(60%)	1(20%)
Public Health Officers (N2)	1(50%)	1(50%)	0	0
Nurse attendants (N2)	0	0	0	2(100%)

Source: Primary data through interviewing

## Disposal of Waste

The study found an elaborate waste management system in the study facilities. These included segregation and coding of waste into four categories. Black coded bin liners for non-infectious waste; yellow coded liners for infectious waste; red coded liners for highly infectious waste including stained gloves, amputations, placentas etc., and blue coded liners for radioactive materials.

This study sought to establish the number of dustbins distributed and regularly emptied in the various departments in the study facilities. The results showed that 6 out of 7 maternity wards (87.7%); 4 out of 7 laboratories (57.1%); and 3 out of 7 pharmacies (42.9%); had bins provided and emptied. The study team estimated that overall, only 50% of the departments had dustbins which were regularly emptied (Appendix 4).

The study also observed the collection, storage and disposal of infectious waste especially tissues used for cough and sneezing; menstrual hygiene materials; and used masks. With regard to coughing and sneezing, the team was not able to observe due to limited time.

However, with regard to menstrual hygiene, the study team visited the female wards including maternity, and found that in all health facilities, disposal of menstrual hygiene materials was done properly.

Regarding the proper disposal of masks, the research team observed that only 3 out of 7 health facilities (42.9%) disposed used face masks according to the recommended standards. The team also observed that waste labelled for disposal through burning was done in all the facilities.

## Compliance with Hand-hygiene Guidelines

In order to assess compliance with hand –hygiene practices in the health facilities, the WHO guidelines were used as the analytical framework. The results are presented in Table 6 below.

As can be seen from the data on Table 8 above, compliance on the overall guidelines varied from one facility to another, but more importantly, even within one facility, compliance varied widely between the departments within the same facility.

Compliance with guidelines was best at the MCH (100%), laboratories (85.7%) and at the CCCs (83.3%) and in the provision of hand-hygiene stations in all the facilities (85%) covered in this study. The findings also show a generally acceptable level of compliance (57.1% each) in the provision of alcohol-based sanitizers or soap and water, the usability of hand hygiene facilities and in refilling of the hand hygiene stations (Appendix 4).

The research team found that there was poor compliance in respect of obligatory use of hand hygiene stations before passing the entrance to any building in the facility. Only 2 out of 7 health facilities (28.6%) had

**Table 8: Compliance with WHO Hand-Hygiene Guidelines.**

Guideline	Observation	Compliance Rate
a. One or several hand hygiene stations for hand washing with soap and water or for hand-rub with alcohol-based hand-rub in front of the entrance of the health facility	4/7 health facilities had alcohol-based sanitizers or soap and water	57.1%
b. Quantity and usability of hand hygiene stations	- 6/7 health facilities had hand hygiene stations	85%
	Only 4/7 were useable	57.1%
c. Installation, supervision and regular refilling of the equipment by public health authorities	- Only 4/7 of facilities were regularly refilled	57.1%
d. Obligatory use of hand hygiene stations before passing the entrance to any building in the facility	2/7 facilities	28.5%
e. Facilities to ensure continuous presence of functional hand hygiene stations either with alcohol-based hand –rub dispenser or soap, water and disposable towels for health workers where PPEs are put off or waste is handled	MCH – 7/7	100%
	OPD – 4/7	57.1%
	Pharmacy – 5/7	71.4%
	Lab – 6/7	85.7%
	Wards	57%
	CCC	83.3
f. Functional hand –hygiene facility available within 5 meters of toilets	3/7	42.9%

Source: Observation data in the study facilities

security enforcing this activity. Similarly, there was poor compliance (42.9%) with the requirement that hand-hygiene facility be available within 5 meters of toilets. Respondents explained that in most rural health facilities, pit-latrines which are at minimum 40feet away from the facility are in use and its therefore difficult to provide hand-hygiene facilities there because of more often they are stolen. (Appendix 4)

## Main Successes of the Hand-Hygiene Initiative in the Study Areas

Across the three study areas, respondents reported that the main successes associated with hand hygiene are:

**The reduction of diarrheal diseases** (cholera, typhoid and related conditions).

Indeed to substantiate this assertion, the study team reviewed data relating to diarrheal diseases for two (2) years prior to the Covid -19 pandemic (2018 and 2019) during which little attention was directed on hand-hygiene. The study team also reviewed data on diarrheal diseases for 2020 and 2021, two 2 years of enhanced implementation of hand hygiene practices due to the COVID-19 pandemic. Table 2 below shows the prevalence of diarrheal diseases in 2018, 2019, 2020 and 2021 in the study facilities as captured by Kenya Health Information System (KHIS) as at end of January 2022.

The Table 9 above shows a general trend towards declining cases of diarrheal diseases in all the study facilities especially between 2020 and 2021. Whereas there are some cases of diarrhea increases in Alupe

**Table 9: Diarrheal disease cases in study health facilities as of 31<sup>st</sup> Dec. 2021**

Sub-county	Facility	No. of cases				
		2018	2019	2020	2021	Trend
Teso North	Kocholya Hospital	890	709	834	186	Declining
	Angurai Health Centre	820	1692	1086	250	Declining
	Malaba Health Centre	1054	1330	505	183	Declining
Teso South	Alupe Hospital	114	99	248	37	
	Amukura Health Centre	201	238	108	64	Declining
Matayos	Matayos Health Centre	658	350	433	121	
	Busia County Referral Hospital	2929	3024	1451	382	Declining

Source: KHIS, 2018, 2019, 2020 and 2021.

#### Appendix 5: Hand –Hygiene Study – Consent Information Form

Hello, my name is William Okedi, I work for Alupe University College. I am the PI in this research. You have been chosen at random to be in a study about hand hygiene practices. The purpose of this research is to inform policy makers, community leaders and to influence policy development in support of enhanced prevention and control of Covid -19 disease in health facilities in Busia County. This will take about 40 min of your time. If you choose to be in the study, I will ask you questions about yourself; hand hygiene activities such as training; sanitation facilities; and hygiene practices in general. There will be no experiment to be done on you in this study. Please feel free to inform me what you may expect from this research study.

I however wish to point out that there are no foreseeable risks or benefits to you for participating in this study. There is no cost or payment to you. If you have questions while taking part, please stop me and ask. We will do our best to keep your information confidential but we cannot guarantee absolute confidentiality. We will link your answers to you initially by linking your name to a particular interview response sheet but this link will be removed later in order to protect you.

If you have questions about this research study, you may contact Dr. William Okedi on mobile phone 0718722000; email w.okedi@gmail.com or the Principal of Alupe University College, Professor Fabian Esamai on mobile phone 0724400189 or email fesamai2007@gmail.com in the event of a research related injury or if you were not treated well during the study or have concerns about your rights as a research participant.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decided to stop. May I continue?

I certify that I have consented -----Participant code -----

Researcher's Name-----

Signature -----

Date-----

hospital and Matayos health Centre in 2020, these may be as a result of their locations as Covid-19 treatment centers.

Whereas these findings seem to validate the statements of the respondents on the success of the hand-hygiene initiative, the study team cautions about the interpretation and attribution of this results solely to hand-hygiene.

#### Reduction of Upper Respiratory Tract Infections (URTIs)

The second major success attributed to Hand-Hygiene by the respondents was the reduction in URTI cases within the hospital staff and generally among the community members they serve. One Medical Officer in one of the study facilities said “Being a medical officer for the past five years, I used to constantly pick upper respiratory tract infections from the clinical areas, but since the second half of 2020, I have hardly suffered from Flue”. This sentiments were shared by several of the respondents.

To assess the merits of these statements, the study team examined URTI data in the study facilities. We assessed the URTI data Pre-hand-hygiene emphasis period (2018 and 2019) as well as during the hand-hygiene emphasis period (2020 and 2021). Table 9 shows the prevalence of URTIs in the study facilities during the periods under review.

Based on the available data shown on Table 10 above, the assertion that hand-hygiene has led to reduction in URTIs does not seem to be fully supported by the evidence. However, it appears there are marginal decreases in URTI cases in Kocholya hospital, Malaba and Amukura Health Centers. Furthermore, the study team could not entirely attribute this marginal decrease of URTIs cases to hand –hygiene practices alone.

#### Improved Environmental Sanitation and Accessibility to Water

Respondents reported that the Hand-Hygiene initiative enhanced availability of water and made the physical environment clean. As already presented and discussed under 5.2, the study found some success and challenges related to environmental health. The study team could not affirm this assertion in the absence of baseline data which was requested but not availed.

**Table 10: URTI Reported Cases in the study facilities 2018, 2020, 2021 and 2021.**

Sub-county	Facility	No. of cases				
		2018	2019	2020	2021	Trend
Teso North	Kocholya Hospital	4432	3079	2088	1592	Declining
	Angurai Health Centre	2608	3918	3067	4563	Increasing
	Malaba Health Centre	4788	7757	6799	5888	Declining
Teso South	Alupe Hospital	5312	5645	1817	2312	increasing
	Amukura Health Centre	7259	7351	5261	5122	Declining
Matayos	Matayos Health Centre	9337	7705	5157	6904	Increasing
	Busia County Referral Hospital	1196	10762	5667	7662	Increasing

Source: KHIS 2018, 2019, 2020 and 2021.

## Mobilized Resources towards Supporting Preventive Measures

Respondents reported that the hand-hygiene initiative, for the first time in their careers, catalyzed governments, development partners and civil society to direct resources towards preventive measures against covid-19. The resources made available included hand-hygiene facilities such as water tanks; materials such as soap, sanitizers; improved accessibility and availability of water for users; and, training of health workers and support staff on issues of Infection prevention and control and hand-hygiene practices.

Despite the lack of baseline data on the hand-hygiene initiative, the research team is convinced by the respondent's assertions and arguments. These are further supported by observation data on availability and accessibility of IPC materials and facilities for the prevention of COVID-19 disease through hand-hygiene.

## Qualitative Indicators of Successes

Several qualitative indicators, which were beyond the scope of this study were reported as positive impacts of the hand-hygiene practices by the respondents. These included Adoption of hand washing practices by both health workers and patients (for example people carry small bottles of sanitizers in their pockets); Changes in attitudes towards hand-hygiene, namely adoption of hand-washing and use of sanitizers even by children, churches; general community members and a decrease in sneezing and coughs among health professionals. Improved food hygiene practices such as washing fruits before eating, a practice not widely accepted prior to emphasis on hand-hygiene was mentioned as a success indicator.

## Main Challenges Facing the Hand-hygiene Initiative

Despite the overwhelming successes attributed to hand -hygiene, and infection prevention control in general, respondents also highlighted a number of constraining factors. These included:

### Dependency on External Partners and Civil Society Organizations

Respondents decried the tendency by the County government to depend on external development partners and agencies. They pointed out that most of the hand-hygiene facilities and materials together with capacity strengthening activities in terms of training; support for monitoring and supervision were provided by external partners. This is very well demonstrated in Table 1.

### Erratic Supplies of Hand Washing Facilities and Materials

Most respondents reported that the supply of hand-washing materials (soap, sanitizers, and water) was erratic and unreliable due to inadequate allocation of funds from the county government to the health sector despite the later submitting a comprehensive budget.

In some instances, water storage facilities had been stolen and never replaced, for example in one facility, hand -washing facilities (Tank, soap, sanitizers) placed in front of the mortuary vanished sometime in 2021 and has never been replaced. Regular breakdown of water supply systems and non-payment of power and water bills have conspired to deny the hand-hygiene initiative the acutely required commodities.

The research team observed that most of the facilities were installed in 2020 and early 2021, and over time, are worn-out, no maintenance or replacements have been made rendering hand-hygiene practices impracticable.

In the markets and Boda Boda shades neighboring the study facilities, the research team was informed that the hand washing facilities had been vandalized or stolen altogether and therefore no longer exist.

## Lack of Access to Piped Water

This is a major and long-standing problem affecting IPC and more specifically the hand hygiene initiative at Angurai Health Centre. The facility has no piped water supply and has to rely on water vendors, whom they pay on average between 15,000 and 20,000 Kenya shillings monthly. The lack of water coupled with the frequent lack of soap and sanitizers make the practice of hand-washing among staff and the community difficult.

Efforts by facility management to resolve the problem through engaging the County Government and CDF have been unsuccessful. This is despite the World Vision sponsored water supplies project passing close to the health facility.

## Irregular payment of support staff – Casuals (Cleaners)

Study respondents argued that one of the major threats to the Hand-hygiene initiative and the infection prevention and control programme in general is the inability of the County government to remit funds for their salaries. During an interview with one of the supervisors of the casual workers, he reported that he had worked in the facility for over 10 years as a casual worker. He lamented that cleaners were not valued and that for the last 10 months prior to the interview, he had not received any salary.

Most respondents complained that the Facility Improvement Fund (FIF) which was meant to enable facilities address their immediate operational challenges was not operationalized. This left the facility managers at the mercy of senior county officials who dished out advances (imprest) that hardly met the needs of the facility at their discretion.

## Partner Conditionality

Some respondents reported that noting the over-reliance by the County Government on partners to provide hand-hygiene facilities and materials, most development partners demanded 50/50 resource contribution towards projects to be implemented in the county. However, in most circumstances the County Government has declared its inability to contribute its required portion of resources and thus making it difficult to sustain hand hygiene activities in the county.

## Laxity in the Observation of Covid-19 Protocols following Relaxation by Government

Respondents reported that following the announcement by the Government of the relaxation of Covid-19 protocols, most members of the community as well as government workers outside the health sector, felt and perceived the relaxation to mean COVID-19 has been eradicated. One of the respondents estimated that adherence to the protocols before the government announcement of relaxation of protocols, was about 70%. However, he asserts that the adherence rate after the announcement dropped down to 20%. This assertion seems to get credence from this study where only 2 out of 7 health facilities had security officers present at the gate to enforce hand hygiene practices at the entrance to the facility.

## Enabling Factors for the Implementation of Hand Hygiene

The research team sought the main enabling factors to the implementation of the hand hygiene initiative from the respondents. Majority of the respondents said the main enabling factors for implementation of the initiative were:-

- i. The clear commitment of national and county governments by providing clear policy framework, guidelines; leadership and resources to support the hand-hygiene initiative.

**Table 10: Analysis of the root causes of the challenges affecting hand hygiene initiative.**

Problem affecting H/Hygiene	Root cause of problem	What can be done to solve problem	Is proposed solution feasible	Will action lead to Sustainability of H/washing?	
				Yes	No
1. Dependency on external partners and CSOs	i. Failure to operationalize the Facility Improvement Fund (FIF)	- County Government to Operationalize the FIF	Yes	Yes	
	ii. Biased allocation of resources to curative services	- County Assembly and the County Government to objectively allocate resources for Preventive and promotive health services	Yes	Yes	
	iii. County Government not contribute its share of funds to partnership	- County Health Management Team to honor partnership agreements by allocating their fair share of resources	Yes	Yes	
2. Erratic Supplies of Hand washing facilities/materials	i. Biased allocation by the County Health Management	- proper planning, prioritization and balanced allocation of resources	Yes	Yes	
	ii. Dependency on external partners	- Allocate internal resources	Yes	Yes	
	iii. Theft of facilities	- Strengthen security and ensure culprits are punished	Yes	Yes	
	iv. Lack of maintenance and replacement of facilities	- Operationalize the Facility Improvement Fund	Yes	Yes	
Lack of Piped Water at Angurai Health Centre	i. poor planning and lack of objective priority setting	i. CHMT to allocate resources to enable existing water scheme to deliver water to H/C	Yes	Yes	
	ii. CHMTs failure to operationalize the FIF	ii. Operationalize the Facility Improvement Fund	Yes	Yes	
Irregular payment to casuals and cleaners	Poor planning, prioritization and biased resource allocation	CHMT to do proper planning, prioritization and allocation of resources	Yes	Yes	
Partner Conditionality	i. Dependence on external partners by county Government	CHMT to honor partner agreements and allocate incremental resources to agreed projects	Yes	Yes	
Lack of Observation of Covid – 19 protocols	i. Relaxation of Covid-19 protocols including hand hygiene.	mis-understood to mean COVID-19 is eradicated	Yes	Yes	

Source: Primary data from interviews.

- ii. The support from the development partners and civil society to address the pandemic, especially in providing physical hand-hygiene facilities such as installation of water tanks; provision of hand washing such as soap; hand sanitizers; financial support for monitoring and supervision of the initiative and training of the technical and support staff.
- iii. The perceived threat of Covid-19, the susceptibility of the entire population and absence of any cure for the disease led to only one option, prevention of the pandemic through hand hygiene practices.
- iv. The receptiveness of the community to the COVID-19 prevention messages especially on hand hygiene practices disseminated by health workers and through other media channels. This enabled patients and their relatives visiting the health facilities to voluntarily use the hand hygiene stations and properly wash their hands with water and soap.

### Potential for Sustainability of Hand – Hygiene initiative

From face value, based on the challenges enumerated above, it would seem that the hand hygiene initiative is unsustainable. However, a closer analysis of the problems affecting the initiative suggests that the root cause of the problems is lack of commitment by the County Management Team and the lack of political will by the leadership in the County to facilitate and support the hand hygiene initiative.

A rapid analysis of the challenges and how they can be resolved as suggested by the respondents is presented in table below.

Based on the above analysis of the potential sustainability of Hand-Hygiene activities, it is clear that the potential for the hand-hygiene initiative to be sustainable is high for the following reasons:-

- i. The analysis of the root causes of the constraining factors to hand hygiene as seen in table above, shows that the suggested remedial measures are feasible and if implemented can remove the hindrance to hand-hygiene practices leading to the sustainability of the initiative in the long-run.

- ii. That a one-off investment in piped water supply to Angurai Health Centre can save up-to between 1.8 to 2.4 million Kenya Shillings that the County Government of Busia spends annually in purchasing water for the facility from water vendors and hawkers ensuring sustainability of the hand-hygiene initiative.
- iii. The willingness of the development partners to share costs with the County Government of Busia is in the right direction towards sustainability of the initiative.
- iv. Operationalizing the Facility Improvement Fund (FIF) policy which among others shifts planning and budgeting roles to the local facility management committee will enable a realistic planning, prioritization and allocation of resources to address such basic but extremely important life-saving preventive measures such as hand-hygiene.

## CONCLUSION AND RECOMMENDATIONS

Following the findings and discussions based on the study objectives, the main conclusions of this study are as follows:

1. The hand-hygiene initiative has contributed to the reduction of water borne diseases especially diarrheal diseases and improvements in environmental sanitation in the study facilities.
2. The hand-hygiene initiative has also influenced the allocation of resources to preventive and promotive health services including strengthening the capacity of the health-workforce on promotive and preventive health through trainings
3. The study has identified key constraining factors, all of which are amenable to corrective measures through the good will of leadership of the County health services and the county political leadership
4. Through in-depth analysis of the root-causes of the challenges affecting implementation of the hand-hygiene initiative, this study concludes that this initiative is sustainable.

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## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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