

**COVID-19 Health Care Worker
Survey
Papua New Guinea, 2020**

***Barriers and Enablers experienced by Health Care Workers in
Papua New Guinea in swabbing for COVID-19***

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Cover photo: Concerns over provincial testing as COVID-19 cases pass 500 in PNG. © RNZ

<https://www.rnz.co.nz/international/pacific-news/425729/concerns-over-provincial-testing-as-covid-cases-pass-500-in-png>

I just want to say thank you for conducting this survey by helping all the health facilities around PNG to make a report that will allow the PNG government to see the challenges and thoughts of the health care workers around PNG and come up with. Lab technician, health centre

Is it possible for the NDOH to fast track this survey and tend to us ASAP? In case of an outbreak at XX Clinic I will not be able to tend to my patients because we lack water and power supply as well as the necessary equipment needed to do swabbing. Health worker's final comments to the interviewer. Community health worker, health centre

I am very happy and grateful to be part of a team that is fighting this pandemic Covid-19 to help protect my people and also this pandemic has helped me by broadening my knowledge in the field of my studies. Nurse, provincial hospital

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Interviewers

We would like to express our gratitude to the following people, without whose dedication the survey could not have taken place.

Dylan Niaga, Rachel Kuso, Bryan Hobri, Andrew Kumbakor Jnr, Mecklyn Jugari, Bertoh Dobunawa, Norman May and Edietha Dagina.

ABBREVIATIONS

COVID-19	Coronavirus Disease 2019
HCW	Health Care Worker
MRAC	Medical Research Advisory Committee
ODK	Open Data Kit
PDCO	Provincial Disease Control Officer
PPE	Protective Equipment
PHA	Provincial Health Authorities
PNG	Papua New Guinea
SARS-Cov-2	Severe Acute Respiratory Syndrome - Coronavirus - 2
SOP	Standard Operating Procedure

I thought it is important that we know the situation in our family and in our community. I explained to the other health care workers in my centre that is just another disease we need to manage in Papua New Guinea.....I went out into the community and did awareness about COVID-19 and the need to do swabbing, it does not mean you have COVID-19 but will let us know what is the situation in our community. Health extension officer, health centre

The Pandemic of Covid-19 is very challenging so we need support from the government to support us in all means so that Covid-19 can become a normal disease/virus like all the other virus and diseases that are already existed. Officer in charge, district hospital

The interviewee suggests the following recommendations

- 1. a surveillance phone be provided to communicate*
- 2. Transportation is available but there is always no fuel, hence if we can provide fuel.*
- 3. They have not received PPE [personal protective equipment] at all since the outbreak*
- 4. Mobile testing- go into villages.* Nurse, health centre

EXECUTIVE SUMMARY

This report presents the findings from a nationwide health care worker (HCW) survey. The overall aim of the survey was to understand from the HCWs perspective the challenges they face in swabbing patients for COVID-19 and to identify local solutions for these challenges in order to increase swabbing and improve testing rates.

This exercise was led by a team from the World Health Organization's Global Outbreak Alert and Response Network in partnership with the Papua New Guinea Joint Agency Taskforce National Control Centre for COVID-19.

Testing is an essential component of Papua New Guinea's (PNGs) response to the COVID-19 pandemic. Testing data is vital to understand the spread of the pandemic and ensure that the response is appropriate and targeted. If testing does not occur, we will not be able to identify and isolate cases and contacts and prevent further transmission. From the start of the pandemic training on swabbing for COVID-19 has been conducted for HCWs across PNG. However, the number of swabs sent for testing remains significantly lower than the number of patients identified with reported respiratory symptoms (e.g., suspected COVID-19, influenza-like-illness, severe acute respiratory infections). As of the 31st December 41 540 swabs for COVID-19 have been conducted across PNG. Monthly COVID-19 testing targets have been set for each province with a monthly target of 4656 tests nationally.¹ Presently, provinces are testing well below these targets.

It is vital to understand the challenges and barriers that are contributing to low testing rates across PNG in order to inform targeted response measures to increase testing. Localized solutions to enhance swabbing are important to identify in order to inform appropriate recommendations that can be implemented at the local level.

In order to identify barriers to swabbing and local solutions to these barriers we conducted a national telephone survey with HCWs who had been trained to collect swabs for COVID-19.

Key Findings

Survey response rate of 70.3 % (407) was achieved from the study participants. Provincial participation was 95% (21/22) with district representation of 80.9% (72/89). Respondents were predominately male, 59 % (240) and the median age was 43.4 years (ranging: 22-66 years).

Barriers

The main barriers to the collection of COVID-19 swabs mentioned by HCW included;

- Few staff trained to collect COVID-19 swabs
- Inadequate staffing at health facilities to cope with the additional burden of swabbing for COVID-19
- Inadequate supplies of personal protective equipment
- Lack of applied training and supervision in donning and doffing PPE
- Lack of refrigerators and/or cold boxes for storage of COVID-19 specimens
- Transport for specimen collection is irregular or unreliable

- Lack of logistical support for patient COVID-19 triage including infrastructure and staffing.
- Misinformation around COVID-19 in the community and among health care workers
- Stigma associated with wearing personal protective equipment

Enablers

Commonly identified enabling factors that helped facilitate HCW collecting COVID-19 swabs included;

- Community awareness / education and risk communication
- A consistent and sufficient supply of personal protective equipment and equipment needed to collect COVID-19 specimens
- Multiple staff trained on swabbing for COVID-19
- A specific area at the health centre dedicated to triage, screening and swabbing
- Recruitment of additional staff at the health centre to focus on COVID-19 related activities such as triage and swabbing
- Provision of refrigerators and/or cold boxes for storage of COVID-19 specimens
- Availability of reliable and regular transport for specimen collection
- Outreach programs with a focus on creating awareness around COVID-19 and the collection of specimens

Recommendations

1. Roll out refresher and additional training to the provinces on swabbing and the use of PPE, with focus on the district and rural health facilities. Training should be applied and practical with supervision on correct technique. Participants should feel confident to collect swabs and use PPE safely at the end of the training
2. Develop a community engagement plan for advocacy meetings and awareness, health promotion and risk communication at all levels
3. Integrate COVID- 19 surveillance and response activities into the existing public health programs at the national, provincial and district levels
4. A regular supply chain with close monitoring of stock at all levels and timely replenishment. No health facility should experience stock out of PPE or equipment needed for swabbing
5. Procurement of standardized fridges, cool boxes/eskies and triage tents and prioritize the need per province
6. Develop an organizational structure and mechanisms to ensure adequate staffing and funding to respond adequately and manage future emergencies/ outbreak at the national and provincial levels

BACKGROUND

In December 2019 an unusual respiratory illness of unknown origin was identified. The causative pathogen was subsequently identified as a coronavirus and named the SARS-Cov-2 virus. The human disease caused by this virus was named COVID-19. In March 2020, in response to the growing spread of the SARS-Cov-2 virus and increasing reports of COVID-19 cases, the World Health Organization declared a pandemic.²

At the time of this report (February 2021), over 102 million people have been reported to have contracted COVID-19 with over 2,2 million deaths attributed to complications associated with the disease.³ On the 1st March, 2020, PNG reported the first confirmed case of COVID-19. As of the 3rd February, a total of 867 confirmed COVID-19 cases have been reported across PNG with nine deaths.⁴

Testing is an essential component of PNGs response to the COVID-19 pandemic. Testing data is vital to understand the spread of the virus and inform the response. While a number of HCWs have been trained to collect swabs for COVID-19 testing, testing rates have remained low across PNG. It was deemed necessary to understand the challenges and barriers that are contributing to low testing rates across PNG in order to inform targeted response measures to increase testing. It is also important to explore HCWs perspectives on enabling factors and local solutions to increase swabbing across PNG and thereby, increase testing rates.

To inform the design and implementation of interventions to increase testing in PNG a HCW survey was designed and implemented between November 30th and December 18th 2020.

The overall aim of the Health Care Worker Survey

The overall aim of the survey was to understand from the HCWs perspective the challenges they face in swabbing patients for COVID-19 and identify local solutions for these challenges in order to increase specimen collection and improve testing rates.

Specific Objectives of the Health Care Worker Survey

1. Identify barriers and enablers experienced by HCWs in swabbing for COVID-19.
2. Identify local solutions for these challenges in order to improve testing uptake
3. Assess the knowledge, attitudes and practices of HCWs on testing for the SARS-Cov-2 virus.

Location

The survey was conducted in all 20 provinces of PNG and the autonomous region of Bougainville and the National Capital District of Port Moresby. Figure 1 provides a provincial breakdown of PNG.

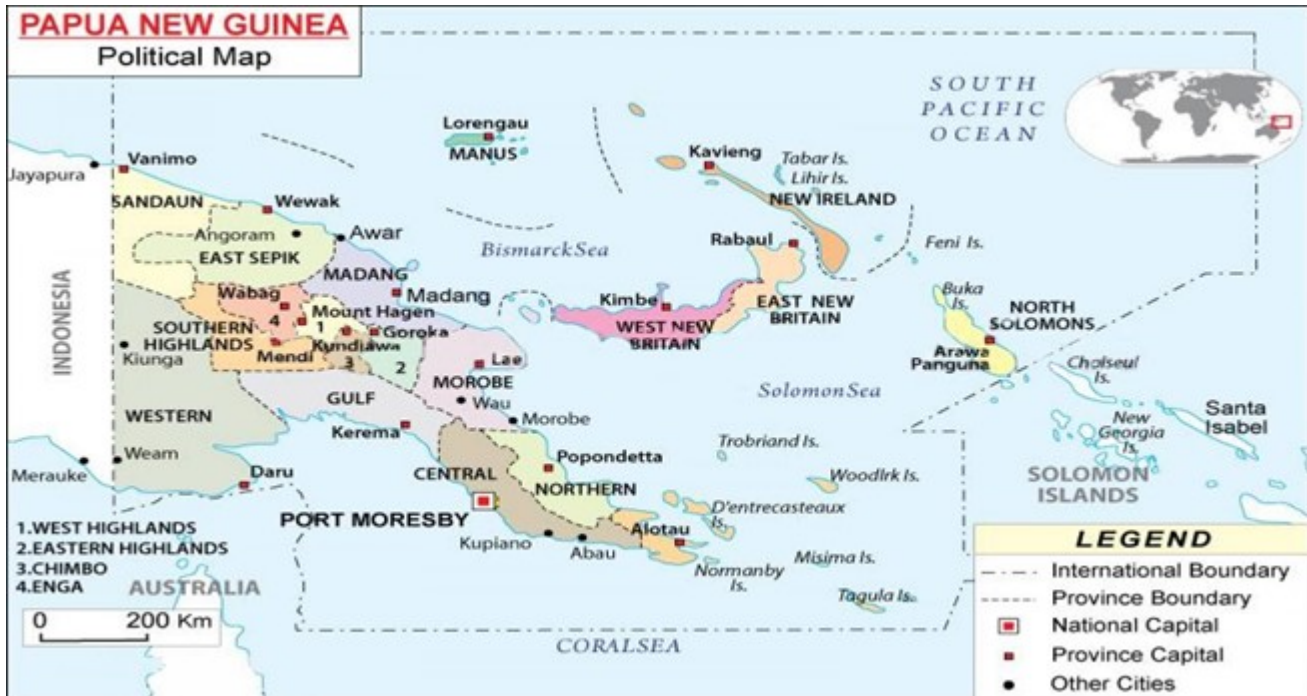


Figure 1: Provincial map of Papua New Guinea¹

METHODOLOGY

A mixed-methods cross-sectional study design was employed to meet the study objectives.

Participant selection

A list of all health care workers in PNG who had been trained to collect COVID-19 swabs from patients for testing for the SARS-Cov-2 virus was obtained from the Provincial Health Authorities (PHAs). The Provincial Disease Control Officers (PDCOs) were requested to provide contact details for trained staff.

The combined list with contact details of 579 trained HCWs was used as the sampling frame. Anticipating a 50% response rate, a sample size of 290 HCWs was considered a sufficient sample for a descriptive analysis of barriers and enablers to inform targeted public health response.

¹ Map sourced from <https://maps-papua-new-guinea.com/papua-new-guinea-political-map>

Survey development

Findings from an initial scoping and engagement exercise were used to inform the development of survey questions. Refer to Appendix 1 for a copy of the Scoping and Engagement Report. The PNG Standard Operating Procedure (SOP) for COVID-19 testing provided the basis for developing questions related to Knowledge, Attitudes and Practice.

The enhanced testing criteria for COVID-19 surveillance within the PNG context includes;

- Anyone that meets the case definition for COVID-19; ‘suspect case’, ‘probable case’ and a ‘confirmed case’

Suspect case

- A patient with acute respiratory illness (fever and at least one sign/symptom of respiratory disease (e.g., cough, shortness of breath), AND with no other aetiology that fully explains the clinical presentation AND a history of travel to or residence in a country/area or territory reporting local transmission of COVID-19 disease during the 14 days prior to symptom onset.
- A patient with any acute respiratory illness AND having been in contact with a confirmed or probable COVID-19 case in the last 14 days prior to onset of symptoms;
- A patient with severe acute respiratory infection (fever and at least one sign/symptom of respiratory disease (e.g., Cough, shortness breath) AND requiring hospitalization AND with no other aetiology that fully explains the clinical presentation.

Probable case

- A suspect case for whom testing for COVID-19 is inconclusive

Confirmed case

- A person with laboratory confirmation of COVID-19 infection, irrespective of clinical signs and symptom
- Anyone with symptoms of Influenza like illness (ILI), Severe Acute Respiratory Syndrome (SARI) and pneumonia-like illnesses
- Anyone requiring clearance for quarantine, travel or employment reasons
- Contacts of positive COVID-19 cases
- Anyone voluntarily for testing and others not meeting the case definitions but seems necessary for swabbing

Participants were asked to self-rate confidence in donning and doffing PPE and collecting a nasopharyngeal swab, using a 5-point scale. They were also asked to self-rate fear of contracting COVID-19 while collecting a swab from a patient.

The survey questions were initially structured in English and translated into Tok Pisin by professional translators. Back translation was conducted by bi-lingual HCWs to check for construct and content validity. Once the survey translation was finalized it was converted into an electronic data collection form using the Open-Source Data Kit (ODK™).

Data collection

Pre-test: The survey and data collection methodology were pre-tested with four health facilities from four different districts, not included in the final sample. At the end of the interview, participants in the pilot were asked to comment on the length of the survey, ease of understanding, content and offered the opportunity to make recommendations for improvement. The survey was further adapted based on feedback from the pre-test.

Survey administration: Surveys were administered through telephone interviews. Eight students from Divine Word University were recruited and trained to conduct the telephone interviews. Interviewers received one day of training on interview techniques and the ODK survey data collection form. Interviewers were provided opportunity to conduct practice interviews and further developed proficiency during the pilot test.

A pilot test was conducted with volunteer interviewees from the National Department of Health, the PNG Joint Agency Taskforce National Control Centre for COVID-19 and HCWs who were not responsible for collecting specimens for COVID-19. The pilot test provided important insight into the feasibility of conducting telephone interviews in the context of PNG. Identified HCWs were initially contacted via text message and informed that they would be called to participate in a telephone survey on swabbing for COVID-19.

During the follow-up telephone call interviewers read the information sheet to the HCW where the purpose of the study, the timing of the interview and how the data will be used was explained to the HCW (see Appendix 2). The HCW was also informed that the survey will be conducted anonymously and that their name will not be recorded anywhere on the data collection form. Oral consent was sought prior to continuing with the interview. Once the interviewee consented to the interview the interviewer established a suitable day/time to conduct the interview. If the interviewee indicated, they had time the interview was conducted during the initial call.

The interviewer recorded responses directly into the ODK™ electronic survey form. An interview log sheet was provided to each interviewer to log the number of times a HCW had been called, number of text messages sent, whether the HCW had been successfully contacted, if they had consented to be interviewed and if the interview had been successfully completed. Due to connectivity challenges in PNG it was agreed that a total of five text messages would be sent and 15 call attempts would be conducted over a 7-day period prior to classifying the HCW as non-contactable (lost to follow-up).

Quality control: The use of an electronic data collection system facilitated data completeness and accuracy. Skip logic was employed to increase time efficiency and reduce duplication in questions. Regular review of survey data provided opportunity to identify errors in reporting. Interviewers were monitored by a team lead who assessed interview quality and provided feedback as required.

Data analysis

Survey data was downloaded and stored securely on the two lead researchers' computers. Data was cleaned using Stata Data Analysis and Statistical Software (Statacorp v15) and analyzed using Microsoft Excel.

Survey data analysis occurred throughout the data collection period. Descriptive analysis was conducted, including a summary of participant demographics, distribution of health facilities represented by respondents, and summary of responses. Where responses were rated using scores, medians, inter-quartile range, means and standard deviations were reported as relevant.

Consent / Ethical Issues

This study was approved by the PNG Medical Research Advisory Committee (MRAC # 20.24). Informed consent was sought prior to interview. This study was developed by Papua New Guinean health staff and therefore was sensitive to Papua New Guinean culture and social values.

RESULTS

Response Rate

From the provincial lists provided, 579 HCWs with full names and contact details were identified and used as the sampling frame for the survey. All HCWs in the sampling frame were contacted by short mobile text messages (SMS) and phone calls using both Digicel and B Mobile/Telikom. A response rate of 70.3 % (n=407) was achieved, 19 HCWs refused to participate in the survey and 153 HCWs were classified as lost to follow up (Figure 2)

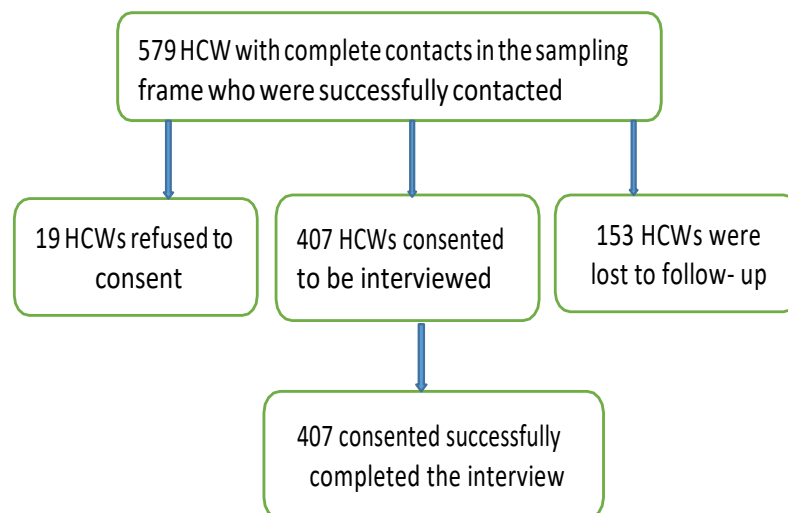


Figure 2: Response rate health care worker COVID-19 survey, Papua New Guinea, 2020.

¹ Lost to follow up in this survey refers to the health care workers who were successfully contacted by phone or mobile text and responded expressing their willingness to participate but upon further follow up, were unable to be reached to complete the survey.

Health care workers from 21/22 provinces participated in the survey. One province did not participate due to communication issues faced in trying to reach provincial staff to obtain lists of trained staff. District representation was 80.9% (72 of 89 districts across PNG), refer to Table 1.

Table 1: Health care worker COVID-19 survey respondents by Province and District (n=407), Papua New Guinea, 2020

Province (n=22)	Number districts of in province	Number (%) districts participating	Number (%) eligible sample by province	Number (%) HCW participating by province
TOTAL	89	72 (80.9%)	579	407 (70.3%)
Autonomous Region of Bougainville	3	3 (3.4%)	35 (6.0%)	20 (4.9%)
Central	4	3 (3.4%)	23 (4.0%)	16 (3.9%)
Easter Highlands	8	7 (7.9%)	22 (3.8%)	16 (3.9%)
East New Britain	4	4 (4.5%)	62 (10.7%)	32 (7.9%)
East Sepik	6	3 (3.4%)	10 (1.7%)	9 (2.2%)
Enga	5	1 (1.1%)	20 (3.5%)	9 (2.2%)
Gulf	2	0 (0%)	0 (0%)	0 (0%)
Hela	3	2 (2.2%)	16 (2.8%)	14 (3.4%)
Jiwaka	3	3 (3.4%)	57 (9.8%)	27 (6.6%)
Madang	6	6 (6.7%)	64 (11.1%)	45 (11.1%)
Manus	1	1 (1.1%)	44 (7.6%)	16 (3.9%)
Milne Bay	4	4 (4.5%)	15 (2.6%)	15 (3.7%)
Morobe	9	5 (5.6%)	22 (3.8%)	17 (4.2%)
National Capital District	3	3 (3.4%)	65 (11.2%)	47 (11.5%)
New Ireland	2	2 (2.2%)	16 (2.8%)	12 (2.9%)
Oro (Northern)	2	2 (2.2%)	44 (7.6%)	26 (6.4%)
Sandaun (West Sepik)	4	4 (4.5%)	22 (3.8%)	17 (4.2%)
Simbu (Chimbu)	6	5 (5.6%)	8 (1.4%)	8 (1.9%)
Southern Highlands	5	5 (5.6%)	13 (2.2%)	8 (1.9%)
Western (Fly)	3	2 (2.2%)	66 (11.4%)	22 (5.4%)
West New Britain	2	2 (2.2%)	12 (2.1%)	8 (2.0%)
Western Highlands	4	4 (4.5%)	26 (4.5%)	23 (5.7%)

Respondents

Respondents were predominantly male, 59% (n=240). More than three quarters of the respondents were between 20 to 59 years, with the median age of 43.5 years. Given the health care workforce is female dominated in PNG (WHO: Human Resource for Health Country profile PNG, 2018), it's interesting to note that there were more males than females across all the age groups (Figure 3).

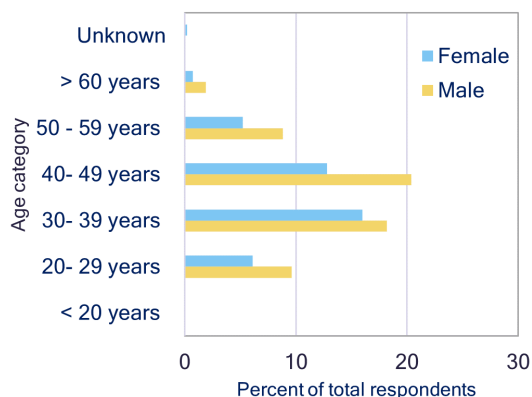


Figure 3: Respondent demographics by sex and age category, health care worker COVID-19 survey, PNG 2020 (n=407)

More than one third (37%) of respondents were nurses and 31% (n=126) were Community Health Workers (CHWs). Health Extension Officers (HEOs) made up 19% (n=78) of respondents while the remaining 11% included other health and non-health workers (Table 2).

Of the total respondents, 92.9% (n=378) had received training on swab collection for suspected COVID-19 cases (swabbers training) and 89% (n=364) indicated that their current responsibility included swabbing for COVID-19 (Table 2).

Approximately one third (33.4%) respondents worked at health centres, 27.8% were based at provincial hospitals, and 14.7% at district hospitals.

Other types of facilities include provincial and district health offices, inmate's clinic etc.

The majority of the HCWs (76.7%) were working at a government run facility, 19.2% for a church health organization, 3.2% in private health facilities, while 0.7% (n=3) worked with other organizations, including St John Ambulance (Table 3).

Table 2: Respondent characteristics, health care worker COVID-19 Survey, Papua New Guinea, 2020 (n=407)

Characteristic	N (%)
Sex	
Male	240 (59%)
Female	167 (41%)
Age: Median [Range]	43.5 (23-66)
Age category	
< 20 years	0 (0%)
20 - 29 years	64 (15.7%)
30 – 39 years	139 (34.2%)
40 – 49 years	135 (33.2%)
50 – 59 years	57 (14.0%)
>= 60 years	11 (2.7%)
Unknown	1 (0.2%)
Qualification in Health Service	
Doctor	6 (1.5%)
Health Extension Officer	78 (19.2%)
Nursing Officer	150 (36.9%)
Community Health Worker	126 (31.0%)
Lab Technician	28 (6.9%)
Surveillance Officer	2 (0.5%)
Environmental Health Officer	6 (1.5%)
Others	11 (2.7%)
<i>Anaesthetic officer:</i>	1 (0.2%)
<i>Non - Health Care Workers:</i>	6 (1.5%)
Position in Health Service	
Role includes swabbing for COVID-19	364 (89.4%)

Table 3: Characteristics of Health Facilities as reported, health care worker COVID- 19 survey PNG, 2020

Type of Health Facility	N (%)	Organisation running the health facility, n (%)				Number and percentage HCW trained (n=407)
		Government	Church	Private	Other	
Provincial Hospital	113 (27.8%)	113 (27.8%)	0	0	0	98 (24.1%)
District Hospital	60 (14.7%)	50 (12.3%)	10 (2.5%)	0	0	55 (13.5%)
Health Centre	136 (33.4%)	91 (22.4%)	44 (10.8%)	0	1 (0.2%)	133 (32.7%)
Sub Health Centre	22 (5.4%)	8 (2.0%)	14 (3.4%)	0	0	22 (5.4%)
Urban Day Clinic	34 (8.4%)	24 (5.9%)	6 (1.5%)	3 (0.7%)	1 (0.2%)	34 (8.4%)
Community Health Post	14 (3.4%)	9 (2.2%)	4 (1.0%)	1 (0.2%)	0	14 (3.4%)
COVID-19 facility	8 (2.0%)	3 (0.7%)	0	5 (1.2%)	0	5 (1.2%)
Aid Post	5 (1.2%)	3 (0.7%)	1 (0.2%)	1 (0.2%)	0	5 (1.2%)
Other	15 (3.7%)	11 (2.7%)	0	3 (0.7%)	1 (0.2%)	12 (2.9%)
TOTAL	407 (100)	312 (76.7%)	78 (19.2%)	13 (3.2%)	3 (0.7%)	378 (92.9%)

Storage and Transportation of COVID- 19 specimens

The capacity to store and transport specimen varied across the types and levels of facilities. Overall, only 40.5 % (165) participants reported their facility had a refrigerator that was able to store COVID- 19 specimens².

Health care workers in provincial and district hospitals reported fewer issues with storage and transportation of specimens. In contrast, HCWs in rural periphery health facilities, health centres, sub centres, community health posts and aid posts reported challenges in their capacity for storage and transportation of COVID-19 specimens (Table 4).

At XX province they only do swabbing on specific dates depending on flights and they tend to miss many potential cases due to sometimes flights do get cancelled. Nurse, provincial hospital

Our only mode to transport the specimens is through dinghy. Hiring the dinghy is very expensive. Community health worker, community health post

² Note vaccine fridges are not used to store COVID-19 specimens due to the risk of contamination and impact on vaccine cold chain

Table 4: Facility capacity for storing and transporting COVID-19 specimens, health care worker COVID-19 survey, PNG 2020 (n=407)

Type of Health Facility	N =407 (%)	Facility capacity for storage and transportation, n (%)			
		Fridge for storing COVID-19 swabs	Cold Box/esky	Ability to make ice packs	Access to specimen transportation
Provincial Hospital	113 (27.8%)	87 (77%)	104 (92%)	98 (86.7%)	101 (89.4%)
District Hospital	60 (14.7%)	31(51.7%)	54 (90%)	55 (91.7%)	52 (86.7%)
Health Centre	136 (33.4%)	20 (14.7%)	89 (65.4%)	84 (61.8%)	95 (69.9 %)
Sub Health Centre	22 (5.4%)	4(33.6%)	9 (40.9%)	14 (63.6%)	8 (36.4%)
Urban Day Clinic	34 (8.4%)	5 (14.7%)	24 (70.6%)	22 (64.7%)	25 (73.5%)
Community Health Post	14 (3.4%)	0 (0%)	8 (57.1%)	6 (42.9%)	10 (71.4%)
COVID-19 facility	8 (2%)	8 (100%)	8 (100%)	6 (75%)	8 (100 %)
Aid Post	5 (1.2%)	0 (0%)	4 (80%)	3 (60%)	3 (60 %)
Other	15 (3.7%)	10 (66.7 %)	12 (80%)	10 (66.7%)	11 (73.3)
TOTAL (n=407)	407 (100)	165 (40.5%)	312 (76.7%)	298 (73.2%)	313 (76.9%)

NB: The responses reflect the thoughts and assessment of individual staff working at the facility, there could have been more than one respondent working at the same facility but with different opinions

Overall access to transport for COVID-19 specimen collection was 76.9 % as indicated in table 4. Figure 4 provides an overview of respondents' understanding of the frequency of transport availability for COVID- 19 specimen collection at their facility.

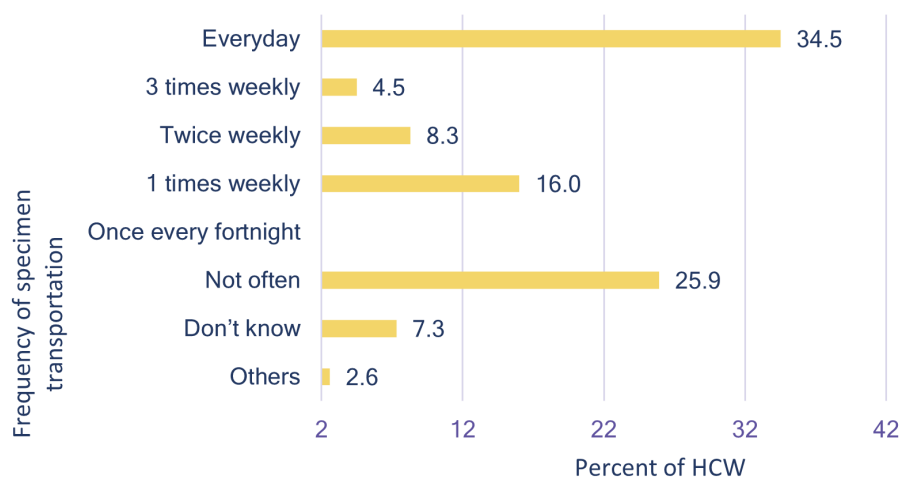


Figure 4. Frequency of transport availability to collect specimens (n=313)

Of those reporting access to specimen transport, 81/313 respondents (25.9%) stated that specimen transportation was irregular or ad hoc. Table 5 provides a breakdown of frequency of specimen transport by type of health facility.

Table 5: Frequency of specimen transportation by facility, health care worker COVID- 19 survey, PNG 2020 (n=313)

Frequency of specimen transportation	Everyday	Three times a week	Twice weekly	Once a week	Once a fortnight	Not often	Don't know	Others	Total
Provincial Hospital (n=113)	36 (31.9%)	6 (5.3%)	9 (8.0%)	18 (15.9%)	1 (0.9%)	17 (15.0%)	11 (9.7%)	3 (2.7%)	101 (89.4%)
District Hospital (n=60)	13 (21.7%)	3 (5.0%)	8 (13.3%)	9 (15.0%)	0	16 (26.7%)	2 (3.3 %)	1 (1.7%)	52 (86.7%)
Health Centre (n=136)	29 (21.3%)	1 (0.7%)	8 (5.9%)	15 (11.0%)	2 (1.5%)	33 (24.3%)	5 (3.7 %)	2 (1.5%)	95 (69.9 %)
Sub Health Centre (n=22)	3 (13.6%)	0 (0%)	0	1 (4.5%)	0	2 (9.1%)	1 (1.4%)	1 (1.4%)	8 (36.4 %)
Urban Day Clinic (n=34)	11 (32.4%)	3 (8.8%)	0	3 (0.8%)	0	4 (11.8%)	3 (8.8%)	1 (4.5%)	25 (73.5%)
Community Health Post (n=14)	0 (0%)	0	1 (7.1%)	3 (21.4%)	0	5 (35.7%)	1 (7.1%)	0	10 (71.4%)
COVID-19 facility (n=8)	8 (100%)	0	0	0	0	0	0	0	8(100%)
Aid Post (n=5)	0 (0%)	0	0	0	0	3 (60.0%)	0	0	3(60.0%)
Other (n=15)	8 (53.3%)	1 (6.7%)	0	1(6.7%)	0	1 (6.7%)	0	0	11 (73.3%)
Total (n=313)	108 (34.5%)	14 (4.5%)	26 (8.3%)	50 (16.0%)	3 (1.0%)	81 (25.9%)	23 (7.3%)	8 (2.6%)	313 (100.0%)

NB: The responses reflect the thoughts and assessment of individual staff working at the facility, there could have been more than one respondent working at the same facility but with different opinions.

Health care workers knowledge, attitude and practices (KAP)

The majority of HCWs reported that COVID-19 swabbing should be conducted on individuals who have symptoms congruent with COVID-19 (95.8%, n=390) and those with respiratory symptoms (78.4 %), while 42.5 % also stated that swabbing for COVID-19 should be conducted on people needing clearance for work or travel permits. Some HCWs (9.6 %, n=39) indicated other reasons for swabbing for COVID- 19. These are listed in Table 6.

The majority of HCWs surveyed, 89% (364), indicated that their current responsibility included swabbing for COVID-19, with a median number of swabs collected per respondent of 3 (IQR: 0-23). Most respondents confirmed they had received training in donning and doffing PPE (369, 90.7%) and swabbing for COVID-19 (378, 92.9%), however, only 83.3% (339) reported receiving training on how to collect a nasopharyngeal swab.

It was reported that in some trainings, trainees observed instructors donning and doffing PPE and taking a nasopharyngeal swab but were not given the opportunity to practice themselves. Of those trained in swabbing, only 61.7 % (209/339) reported having practiced collecting a nasopharyngeal swab during their training.

The median self-rated confidence score for donning and doffing PPE was 4 (IQR - interquartile range: 3-5), and for collecting a nasopharyngeal swab was 4 (IQR: 3-5), where zero was 'not confident' and five was 'very confident'. Respondents were asked to score their level of fear of contracting COVID-19 during the swabbing process. The median self-rated fear score was 2 (IQR: 0-5), where zero was 'not afraid' and five was 'very afraid'.

Table 6: Health Care Worker Knowledge, Attitudes and Practices related to the specimen collection, health care worker COVID- 19 survey, PNG 2020 (n=407)

Who should be swabbed for COVID-19? [Response to this question enabled multiple answers]	N (%)
Someone who has any of these symptoms - fever, cough, shortness of breath, sore throat, loss of smell or taste, fatigue	390 (95.8 %)
Anyone with symptoms of a respiratory illness (ILI, SARI, Pneumonia)	319 (78.4 %)
People who require a clearance swab (e.g., quarantine, work, travel)	173 (42.5%)
People who have had contact with a confirmed case of COVID-19	113 (27.8%)
Everyone who asks / volunteers to be swabbed	44 (10.8%)
I don't know	2 (0.5%)
No-one, we don't have COVID-19 in this community	0 (0 %)
Others (listed below):	39 (9.6%)
<i>Patients with other comorbidities</i>	12 (2.9%)
<i>Adults more than 40 years and elderlies</i>	10 (2.5 %)
<i>All health care workers</i>	5 (1.2 %)
<i>Illegal border and check point crossers</i>	4 (1.0%)
<i>Children</i>	3 (0.7%)
<i>Pregnant and breastfeeding mothers</i>	2 (0.5 %)
<i>Hotel guests and staff</i>	1 (0.2 %)
<i>Young people – socially active and mobile</i>	1 (0.2 %)
<i>Anyone with recent travel history</i>	1 (0.2 %)
Have you received training in the use of Personal Protective Equipment (PPE) for collecting COVID-19 specimens?	
Yes	369 (90.7)
No	37 (9.1)
Don't know	1 (0.2)
Confidence score for donning and doffing PPE: Median [IQR], Where 0 = not confident at all and 5 = very confident like an expert Mean [sd]	4 (3, 5) 4 (1)
*Lowest confidence score was amongst the Surveillance Officers Median (Range)	3.5 (0-5)

Have you received training on how to do a nasopharyngeal swab for collecting a specimen for COVID-19?	
Yes	339 (83.3%)
No	68 (16.7%)
Don't know	0
As a part of the training, did you practice taking a nasopharyngeal swab on someone else?	
Yes	209 (51.4%)
No	130 (31.9%)
Don't know	68 (16.7%)
Confidence score for collecting a nasopharyngeal swab: Median [range], Where 0 = not confident at all and 5 = very confident like an expert Mean [sd]	4 (0-5) 4 (1)
*Lowest Confidence score is amongst the CHWs: Median (Mean)	4 (3.4)
Number of swabs taken for COVID-19	
Median [IQR], Mean [sd]	3 (0, 23) 39 (114)
0	155 (38.1%)
1-4	47 (11.5%)
5-9	32 (7.9%)
10-14	19 (4.7%)
15-19	13 (3.2%)
20+	141 (34.6%)
Which type of swab do you normally do for COVID-19?	
Nasopharyngeal swab	267 (65.6%)
Oropharyngeal swab	132 (32.4 %)
Other	3 (0.7%)
Fear score on Fear of getting COVID-19 while swabbing a patient: Median [range], Where 0 = not afraid at all and 5 = very afraid I will get COVID-19 Mean [sd]	2 (0-5) 2 (2)
*The highest fear score is amongst Others Median (Range)	5 (0-5)

Barriers to swabbing for COVID-19

Barriers to swabbing for COVID-19 were summarized into four main themes: human resources, equipment and logistics, health care workers attitudes and community attitudes as outlined in tables 7A-E. Figure 5 illustrates the most commonly reported barriers. Respondents could report multiple barriers across any of the categories. (for a complete summary of responses under each category refer to Appendix 2).

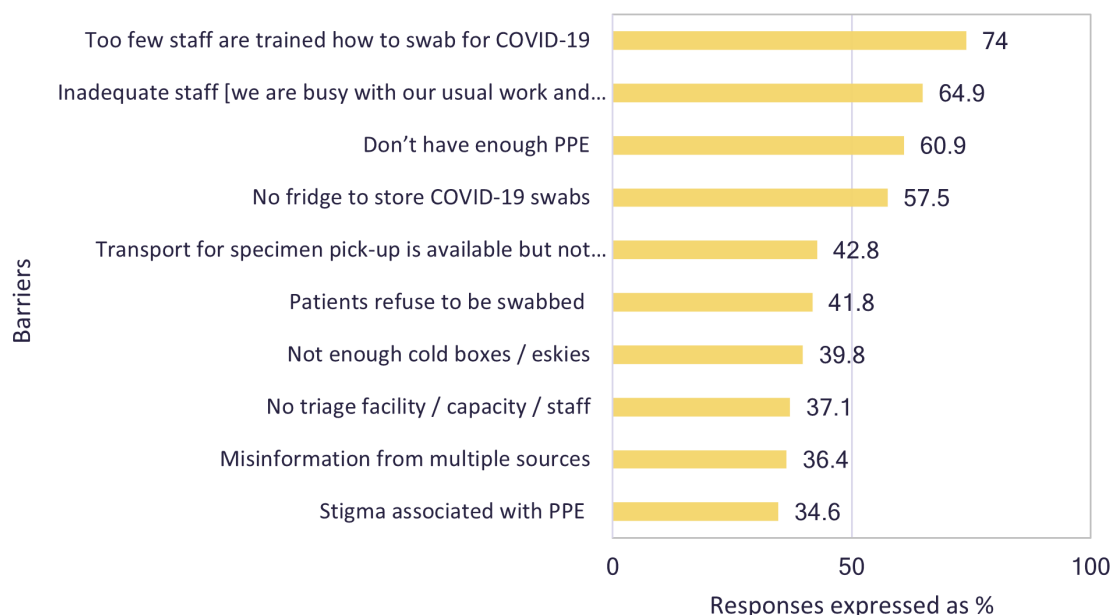


Figure 5. Top 10 identified barriers to specimen collection for COVID- 19 testing, health care workers Figure survey, PNG 2020

Human resources and training

Overall, the three most commonly reported barriers to swabbing for COVID-19 were too few staff trained to do swabbing (74%, n=301), inadequate staffing at the facility (64.9%, n= 264).

We are a District Hospital and are very busy with our clinical work. Two of us have been trained but it is not enough if we are going to swab everyone that meets the case definition. Nurse, district hospital

We also face problems when health workers are absent due to patrol, outreach activities and leave. We have no-one to cover their work. How can we get time for swabbing? Health extension officer, health centre

7 staffs have been trained for collecting swabs for COVID 19 but there are no equipment and logistics available. Community health worker, health centre

Logistics and transportation

The most common logistics challenges associated with swabbing were inadequate supplies of PPE (60.9%, n=248), no regular transport and lack of other necessary items related to specimen collection.

We attended the training but till now, were not given any equipment to do swabbing and sampling for covid-19. Nurse, health centre

Community is willing and coming forward for swabbing but logistics are letting health care workers down. Community health worker, healthcentre

We have only one esky that we use to store specimen to be transported to the labs and when the esky is delayed to be transported back to our facility we can't collect and store specimens for Covid-19 therefore can the government provide us with some esky. Nurse, provincial hospital

We are running out of stock with face mask, gloves and hand sanitizers. XX hospital is located out of the city so more awareness needs to be done in terms of COVID-19 swabbing. Nurse, district hospital

We are trained to do swabbing for Covid-19 but we are not given enough PPE supply to carry out our work. Community health worker, health centre

Transportation issues were highlighted in terms of transporting specimens but also in health workers ability to carry out community awareness programs. Transport availability, and costs associated with fuel and hiring transport were highlighted.

We need funding for fuel and transportation of HCWs to carry out awareness as well as swabbing and sampling of patients. Nurse, urban day clinic

Health care worker and community attitudes

Staff and community attitudes were also reported to contribute to challenges in the collection of COVID-19 swabs. Two of the main challenges associated with health care worker attitudes reported by respondents were that health care workers feared contracting COVID-19 during swabbing (31%, n=126) and that HCWs had no interest in working on COVID-19 (24.3%, n=99).

There is a lack of training and knowledge on swabbing, No consent form is provided for health care workers. There is no confidence in swabbing patients for covid-19. Community health worker, urban day clinic

They are trained but are not doing their job because they are afraid of getting Covid-19. Quality assurance officer, provincial hospital

With respect to community attitudes, respondents reported patients refused to be swabbed for COVID-19 (41.8%, n=170) and 36.4% (n=148) stated that misinformation related to COVID-19 circulating in the community had a negative impact on patients' willingness to be swabbed.

Fear amongst the community is a major challenge.... during the lockdown period the community attacked the HCWs and stoned the ambulances when they went to get swabs because they were not informed and there was not aware. Nurse, provincial hospital

The community say that the disease is fake and they refuse to be tested. Community health worker, health centre

Stigmatization associated with PPE. When a member of the community sees someone talking to a health care worker in PPE, or collecting a swab from a patient, they assume the person has COVID-19. This results in stigmatization in the community that can have significant impact on an individual, their family and their community. Nurse, Health Centre

Misinformation and multiple sources of information was mentioned as leading to confusion in the community. This led to community members not believing the information provided by the health care worker, as they had heard conflicting information from a family member, or someone they trust in the community. Extract from interview notes

A comparison of challenges to swabbing for COVID-19 by facility type showed that issues associated with human resources, and health worker / community attitudes were consistent across facilities. However, staff from remote facilities reported more challenges associated with equipment and logistics than from urban facilities.

Long delays in receiving test results were also discussed by respondents as a barrier to other community members being tested and a barrier to HCWs promoting testing. Refer to Appendix 2 for summary tables.

The community is cooperative but is very impatient with the prolonged delay in getting their results. Community health worker, district hospital

One of the main challenges faced by the people up at XX is the results of specimens not been sent on time and also, they did not receive the full number of specimens, so they are calling on the NDoH to look into this issue. Community health worker, health centre

Additional Barriers: lack of coordination and lack of information

Additional barriers to swabbing mentioned in the open-ended questions included a perceived lack of coordination at the facility and provincial level and a lack of information for HCWs related to the COVID-19 response nationally and locally in their province.

I am not able to utilize the training I received for covid-19 due to protocol at the health facility. Health extension officer, provincial hospital

There is no cooperation among health workers and non-compliance by the communities. Community health worker, provincial hospital

We are not actively participating in the surveillance for the covid-19, because the administration is not supporting us with funds to carry out our work. Health extension officer, provincial hospital

The Rural Health Authority is not taking Covid-19 seriously because it is not in the rural areas right now. Community health worker, health centre

The top management team are not taking COVID 19 seriously. Most facilities here at XX province are not collecting swabs even though we have many presenting cases have COVID 19 symptoms. Community health worker, urban day clinic.

We are not getting any updates, reports or statistics of Covid-19 from the authorities so lately we didn't do any swabbing for Covid-19, also we want the government to fund more trainings so that all our health care workers will be well equipped. Community health worker, community health centre

We are not actively participating in the surveillance for the covid 19, because the administration are not supporting us with funds to carry out our work.. Health extension officer, provincial hospital

Enablers for swabbing for COVID-19

Health care workers shared their thoughts on potential measures to enhance swabbing for COVID-19. The most commonly reported enabling factor was having a greater focus on community awareness and risk communication related to COVID-19 and the need for testing (80.8%, n=329), Figure 6.

Other challenges faced around community attitudes and behaviors is that they don't know how the swabbing procedure or how they will get swabbed. But once they know. They did not have any issues. Community health worker, urban day clinic

The community should be involved in doing awareness in their area. Unit manager, provincial hospital

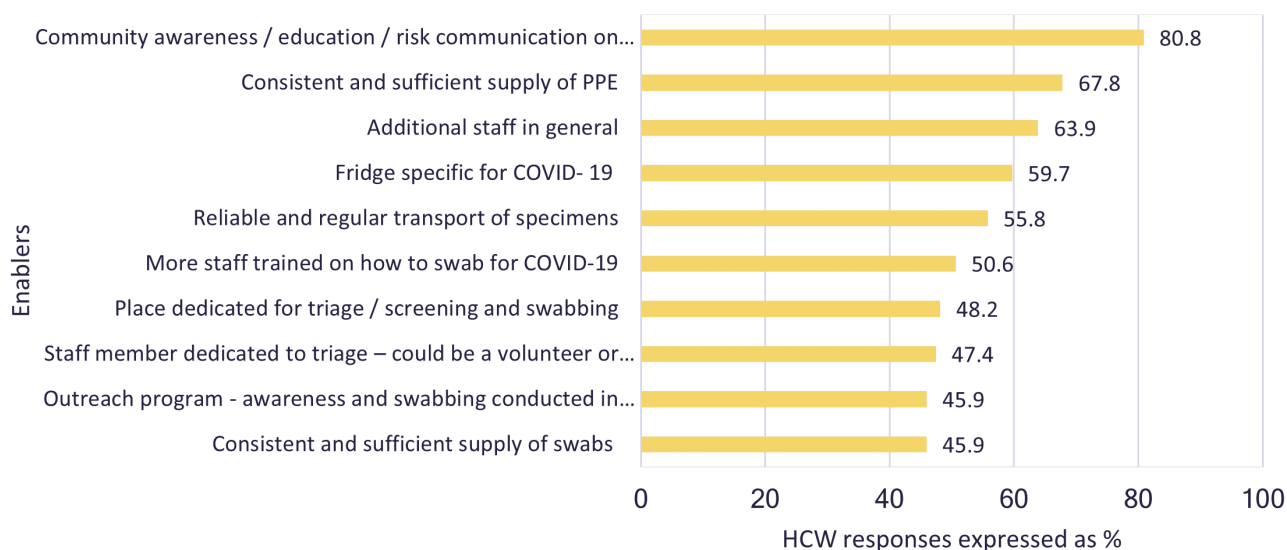


Figure 6: Top 10 enabling factors to specimen collection and transportation for COVID- 19, health worker survey, PNG 2020

Increase human resources and ensure consistent supply of logistics

Sixty-eight percent (n=276) of HCWs said there must be a consistent and sufficient supply of PPE and 63.9% (n=260) reported that an increase in staffing would enhance swabbing capacity at their facility. Other enablers included supplying a fridge specific for storing COVID-19 specimens (59.7%, n=243), ensuring regular and reliable transport for specimen collection (55.8%, n=227) and training more staff to swab. For a complete summary of responses to all categories refer to Appendix 2.

Recruit more volunteers especially the trained CHW's [community health workers] with no position and put them on casual allowances. Health extension officer, health centre

Engage new graduates in fields like nursing etc, to go into districts and do COVID testing as part of their trainings and award them Certificates for Participating in the fight during this global pandemic. This would really help districts and village. Health extension officer, health centre

Health care workers safety is paramount, so PPE [personal protective equipment] is a big need. Nurse, provincial hospital

We need reliable transportation for health workers to carry out training and awareness to the rural areas to increase swabbing for COVID-19. Medical officer, provincial hospital

Success stories were also discussed during the interview and captured in the open-ended questions in the survey.

The health workers do not face any challenges with the community's participation and awareness on covid-19. The community understands and work together with the clinical staff. Health extension officer, health centre

Enhance community awareness

Some HCWs had led or participated in community sensitisation and community engagement around COVID-19. This was viewed as having a positive impact on people's willingness to be tested.

At the facility where I am working there is still ongoing awareness, but it will be more effective if the awareness is done in small groups such as per household, schools and families. Clinical supervisor, health centre

It is important to integrate covid-19 into a normal health routine so that people will feel free to come and get tested without getting the feeling of being discriminated by their communities, families or others. Health extension officer, health centre

Health care workers should vary out more awareness in the rural areas so that when the HCW do test on people they are aware of what the test is for. Health extension officer, provincial hospital

Enhanced training

Health care workers often mentioned the need for refresher training and the training of additional staff. Training surge capacity staff was also mentioned to ensure there were adequate numbers of people trained to swab if a surge of suspect cases was to occur.

The need for practical applied training with ongoing supervision on correct technique was highlighted by many HCWs and deemed necessary to increase staff confidence in safe practice and decrease fear of contracting COVID-19 during the swabbing process.

Train more HCW across the country well and thoroughly because they were not trained well initially but instead were given only videos to watch without proper practical hence making it difficult to do more swabbing effectively and efficiently. Health extension officer, district hospital

More time should be given on the practical sessions during the training due to the mixture of health professionals and their varied levels of understanding. Confidence is very important, and it must be built during the training before taking the swabbing. Volunteer, provincial hospital

Health care workers need more training in swabbing in order to boost their confidence so they can help in swabbing patients for COVID-19. Nurse, urban day clinic

Additional recommended enablers: system improvement and regular communication

Other recommendations to improve swabbing for COVID-19 were mentioned when participants were given the opportunity to add any suggestions that had not been captured in the survey. Additional suggestions were related to improving systems for surveillance, testing and the safe management of exposed HCWs.

Integrated COVID-19 into a normal health routine so that people will feel free to come and get tested without getting the feeling of being discriminated by their communities, families or others. Health extension officer, health centre

There is a need for effective leadership in the management and also support from PHA [Provincial Health Authorities]. Health extension officer, provincial hospital

There should be more support from higher authorities in assisting us to help fight the virus by providing more equipment and supplies. Health extension officer, provincial hospital.

The NDoH should be more involved with the health facilities in order to prevent misinformation. Only one reliable information should be distributed to all health facilities and the community, so we all know what's happening. Health extension officer, district hospital

Updated and reliable information should be shared across to all health facility to prevent misinformation and confusion. Health extension officer, health centre

A desire for cross-learning from other provinces was highlighted

There should be a swap between different Covid-19 front-liners in different provinces of PNG to go and work in other provinces, so that they will try to understand the different culture, challenges and practices in those different provinces and come up with solutions. Nurse, district hospital

The importance of receiving results in a timely manner was discussed by a number of respondents and some strategies mentioned included the need for testing capacity in closer proximity to health centers, greater use of Gene Expert technology was mentioned.

Genetic expert machines to be provided to our provincial hospital for testing so that patients will get their results quickly as possible. Nurse, provincial hospital

A number of respondents discussed the importance of providing a space for the isolation and quarantine of exposed HCWs to reduce risk of further transmission in the community.

I want the surveillance manager in the Province to look into staff welfare and well-being. The COVID-19 workers should be quarantined and have a proper resting room. Nurse, provincial hospital

The desire for regular communication with the health workforce on developments in the COVID-19 response was mentioned by many participants.

We would like regular feedbacks from the PDCO [Provincial Disease Control Officer] to keep the rural area updated and informed about Covid-19. Health extension officer, health centre

DISCUSSION

Papua New Guinea confirmed its first COVID-19 case on March 1st 2020 and as of 3rd February 2021 a total of 867 confirmed COVID-19 cases have been reported, with nine deaths. In the initial outbreak response, testing was very limited. As more information, guidelines and testing procedures became available, HCWs have been trained to collect swabs for COVID-19. However, testing rates have remained low. Testing is a vital component of PNG's outbreak response strategy, as the information generated through testing will provide an insight to guide a targeted national response.^{5, 6, 7}

The main objective of the study was to understand the HCWs perspective and identify the challenges around swabbing for COVID-19 as well as to explore enablers and local solutions that could be used to enhance COVID-19 swabbing and thereby, improving testing rates nationally. Our findings have highlighted some similar challenges to those experienced by frontline HCWs in other countries responding to the COVID-19 pandemic.^{8, 9}

Strengthening workforce capacity

Investment is needed in strengthening the workforce at the facility level. Recommendations from HCWs included increasing staff numbers in general, providing refresher training, training more staff to strengthen surge capacity, and ongoing supervision. In terms of sustainability, it is important to train and upskill additional staff to manage increasing demands as PNG is experiencing a surge in cases. Training an alternate workforce was discussed, and at some facilities had been trialed. HCWs reported an underemployment of qualified HCWs. In some settings they had identified new graduates and retired HCWs, bringing them on as volunteers to assist with additional COVID-19 related activities. While this model was recognized to have been effective in meeting a need in the initial response, this was with the caveat that these individuals should be compensated for the time they work to ensure sustainability of this model over the longer term.

A comprehensive training program for staff involving both theory and practice-based training, with ongoing refreshers, is essential to build and maintain the skills required by frontline HCWs responding to the pandemic. In terms of sustainability, it is also important to train and upskill additional HCWs to manage increasing demands as PNG is now experiencing surges of cases.

Taking into consideration the risk of infection and contamination during collection, transportation and processing of COVID-19 samples, the lack of biosafety equipment like PPE, the lack of adequate training and supervision in donning and doffing, will increase transmission risks to staff.¹⁰ A surge of cases could take out the whole health workforce. Our study identified lack of PPE and inadequate applied practical training as one of the greatest challenges to swabbing. This is of a major concern, establishing reliable supply chains of PPE and refresher training focused on practical application and supervision of correct technique is an urgent priority in order to protect the health workforce.

Logistics and supply

Our findings indicate that a lack of refrigerators and/or cold boxes for storing COVID-19 specimens, along with irregular and unreliable transportation, inhibit HCWs ability to do swabbing. WHO recommends that respiratory samples should be kept refrigerated (4-8°C) and sent to the laboratory within 24 - 72 hours of collection. However, if samples cannot be transported within this period, it is recommended that samples are frozen at -70° until the samples are sent, ensuring that cold chain is maintained throughout.^{10, 11} This is a real challenge in PNG as most facilities do not have the capacity to freeze specimens. Meeting the cold chain protocols established by WHO will require a coordinated and collaborative effort from all levels of service to support healthcare facilities to build the capacity for storage and transportation of specimens within these timeframes. The lack of available cold chain for specimen storage has likely had a major impact on swabbing and therefore, overall testing rates.

There is a need to employ innovative strategies to address the access and supply chain issue in PNG. Unmanned aerial vehicles (UAVs), more commonly known as 'drones', have been trialled in a number of countries as a means for transporting medical supplies.¹² UAVs may offer a solution for timely specimen transport in PNG, where there are significant challenges associated with infrastructure and accessibility. However, any approach would need to be considered in the context of health system integration and long-term sustainability.

A lack of logistical support for patient COVID-19 triage, including infrastructure and staffing, were also concerns raised by HCWs. This may require respective management levels to take heed of and tap into other resources to build the capacity of staff and facility to respond adequately to the outbreak as a similar experience in UK with HCW redeployment⁸

Our study has shown the need for dedicated areas for triage, screening and swabbing for COVID-19 at health facilities. Due to the infectiousness of the disease, HCWs have been reluctant to do screening and sample collection without a designated and private area where they can reduce the risk of spreading the infection to other patients. Building a dedicated triage or a sample collection booth at health facilities specifically for respiratory specimen collection like for COVID-19 will reduce the risk of viral transmission and facilitate increased testing.^{10, 11}

Health worker and community perceptions

Our survey identified that misinformation around COVID-19 in the community and among HCWs has caused confusion, fear and stigma associated with wearing PPE. Health care workers indicated that stigma associated with PPE was a barrier to swabbing in PNG. Findings from our study showed that risk perception among the community had resulted in stigmatization of HCWs, which had at times resulted in violent attacks against health workers and their families. A study conducted with HCWs in Egypt also found that HCWs directly involved in the care of COVID-19 patients had a significantly higher level of stigma from their neighbours and the community due to false beliefs and misinformation about COVID-19 from media sources.⁹

This study highlights the importance of taking into consideration the HCWs perspectives on local solutions and enablers as they share their experiences during the time of the response as field officers. Most HCWs have expressed greater focus on community awareness and risk communication related to COVID- 9 to reduce fear and stigma. Other studies have highlighted how collaboration with community organizations

to address stigma and raise awareness could reduce and prevent disease-related stigma.^{13, 14}

In response to fear among frontline workers during the Ebola Virus Disease (EBV) outbreak in West Africa in 2014-2016, national governments collaborated with mobile network providers to facilitate the provision of low-cost, high-impact mobile health (mHealth) solutions, providing education interventions to promote changes in knowledge, attitudes and practice.¹⁵ The use of mHealth technology as a means of information dissemination, knowledge exchange, and dissemination of resources and training materials has been shown to be acceptable to frontline workers in multiple settings.^{16, 17, 18} The implementation of this technology in PNG could also serve to meet other needs mentioned in our study such as improvement of information flows from the national and provincial levels to the district health centres, and regular communication on developments in the COVID-19 response. Health care workers in our study reported feeling disconnected from the COVID-19 response, mHealth technology could be used to improve staff morale by enabling them to feel part of the national response efforts.

Strengths and Limitations

This is an incredible study and was the first time a telephone survey has been used in PNG to gather the perspectives of HCWs in a short span of time. The method of data collection was cheap, fast and the quality of the information gathered was extremely good which facilitated data analysis. The survey included HCWs who worked in different levels of health facilities across the country and who were directly involved in the COVID- 19 pandemic response. Reaching a 70% response rate using this novel telephone interview approach is a great achievement in this study and is encouraging and promising for the use of future telephone surveys as a data collection method for public health research in PNG.

There were some limitations to this study. Firstly, the completeness of lists submitted by PHAs was low, meaning that the sampling frame for the study may have missed a number of trained HCWs. We had a high proportion of respondents from hospital settings, which may not reflect the challenges of rural health facilities; noting that training for swabbing for COVID- 19 has been focused at larger facilities. The nature of our sampling frame meant that we may have included responses from multiple HCWs at the same facility. As responses were based on HCWs individual perspectives, there may have been differing responses for the same facility. However, due to the time factor, we felt that a rapid, cross-sectional snapshot of HCW's individual experiences and opinions would provide adequate understanding of the major issues impacting COVID-19 swabbing. Thirdly, due communication issues with some telecommunication network providers in certain provincial locations, we were unable to reach some participants, which may have introduced some bias in our study.

CONCLUSION

Since the start of the COVID- 19 pandemic, there have been limited studies conducted in different countries to understand the impact of pandemic on HCWs and the challenges they face in their frontline roles. This is the first study conducted in PNG to understand from the HCWs perspective the challenges they face in collecting swabs for COVID-19 and identifying local solutions for these challenges in order to increase specimen collection and improve testing rates.

The study concludes that low testing rates have been due to low staff capacity compounded with equipment and logistic issues inhibiting swabbing. Importantly, the study identified local solutions that can be scaled up to increase swabbing for COVID-19. The prioritization of activities to improve swabbing and increase testing coverage should be: the development of a community and HCW engagement strategy focused on the importance of COVID- 19 swabbing, additional trainings for HCW with a focus on the district and rural facilities, and development of supply chain monitoring mechanism at the national and provincial health levels.

Finally, we recommend follow up studies to assess and evaluate the impact of interventions designed to improve testing rates and the provision of ongoing feedback to strengthen the national and provincial response to COVID- 19 testing in PNG.

I just want to say thank you for conducting this survey by helping all the health facilities around PNG to make a report that will allow the PNG government to see the challenges and thoughts of the health care workers around PNG and come up with better policies. Nurse, provincial hospital

We are at the rural village health centre and we need to have more training and education about Covid-19, swabbing and on using PPE, because Covid-19 will stay and become a normal health routine disease/virus. Health worker's final comments to the interviewer. Health extension office, health centre

RECOMMENDATIONS

Based on survey findings a number of key recommendations have been developed for the NDoH, NCC, PHAs and the broader emergency response and recovery teams.

Can the Surveillance Unit COVID 19 Response team go down to X Health Center to give a refresher training on the PPE donning and doffing and also on swabbing procedure and COVID 19 protocols so that they will build more confidence'

'We don't have enough workforce capacity, we are busy with our regular programs, we can't stop the clinic to do swabbing'

'Community are willing and coming forward for stabbing but Logistics are letting HCWs down'

Short term recommendations

- 1 Roll out refresher and additional training to the provinces on swabbing and the use of PPE, with focus on the district and rural health facilities. Training should be applied and practical with supervision on correct technique. Participants should feel confident to collect swabs and use PPE safely at the end of the training
- 2 Develop a community engagement plan for advocacy meetings and awareness, health promotion and risk communication at all levels. The plan should capture what appropriate communication medium to be used, target audience, timing and location
- 3 A regular supply chain with close monitoring of stock at all levels and timely replenishment. No health facility should experience stock out of PPE or equipment needed for swabbing

Long-term recommendation

1. Integrate COVID- 19 surveillance and response activities into the existing public health programs at the national, provincial and district levels
2. Procurement of standardized fridges, cool boxes/eskies and triage tents and prioritize as per provincial need
3. Develop provincial and national monitoring mechanism strategy for stocks of equipment and logistics.
4. Develop an organizational structure and mechanisms in place, ensuring adequate staffing and funding to respond adequately and manage future emergencies/ outbreak in the province.
5. Design a standardised specimen collection booth for larger health facilities and clinics doing specimen collection.

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Appendix 1: Scoping and Engagement Report



Appendix 2: Barriers and enablers summary tables

Table 7a: Identified barriers to specimen collection for COVID-19 testing by key themes, health worker survey, PNG 2020

Barriers	N (%)
Human Resources	
Too few staff are trained how to swab for COVID-19	301 (74.0%)
Inadequate staff [we are busy with our usual work and don't have time for swabbing]	264 (64.9%)
No Risk allowance / compensation	125 (30.7%)
Equipment / Logistics	
Don't have enough PPE	248 (60.9%)
No fridge to store COVID-19 swabs (<i>refers to non -vaccine fridge</i>)	234 (57.5%)
Transport for specimen pick-up is available but not regular	174 (42.8%)
No / not enough cold boxes / eskies	162 (39.8%)
No triage facility / capacity / staff	151 (37.1%)
Don't have swabs	138 (33.9%)
No privacy area for patients at the Health Centre - for screening and swabbing	137 (33.7%)
No ability to make ice	122 (30.0%)
Health worker attitudes	
Health workers are afraid of getting COVID-19	126 (31.0%)
Health workers have no interest to work on COVID-19	99 (24.3%)
Community attitudes / behaviours	
Patients refuse to be swabbed	170 (41.8%)
Misinformation from multiple sources	148 (36.4%)
Stigma associated with PPE	141 (34.6%)
People don't believe in COVID-19	137 (33.7%)
The community believes they are not at risk of COVID-19 - white man's disease	87 (21.4%)

Table 7a: Identified human resource barriers to swabbing for COVID-19 testing by health facility type, health worker survey, PNG 2020

Health Facility type	Barriers: Human Resource				
	Too few staff trained	Not enough staff	Risk allowances	Incentives	No staff trained
Provincial Hospital (n=113)	83 (73.5 %)	71 (62.8 %)	40 (35.4 %)	31 (27.4 %)	12 (10.6 %)
District Hospital (n=60)	48 (80 %)	43 (71.7 %)	26 (43.3 %)	18 (30 %)	5 (8.3 %)
Health Centre (n=136)	104 (76.5 %)	88 (64.7 %)	35 (25.7 %)	14 (10.3 %)	15 (11.0 %)
Sub Health Centre (n=22)	18 (81.8 %)	16 (72.7 %)	2 (9.1%)	2 (9.1%)	2 (9.1%)
Urban Day Clinic (n=34)	25 (73.5 %)	23 (67.6 %)	8 (23.5%)	4 (11.8%)	3 (8.8%)
Community Health Post (n=14)	8 (57.1%)	8 (57.1%)	5 (35.7 %)	5 (35.7 %)	4 (28.6%)
COVID-19 facility (n=8)	1 (12.5 %)	4 (50%)	3 (37.5%)	0	0
Aid Post (n=5)	4 (80 %)	4 (80 %)	0	0	1 (20 %)
Other (n=15)	10 (66.7 %)	7 (46.7 %)	6 (40.0 %)	2 (13.3 %)	2 (13.3 %)
Total (n=407)	301 (74.0%)	264 (64.9 %)	125 (30.7 %)	76 (18.7 %)	44 (10.8%)

Table 7c: Identified equipment and logistics as barriers to COVID- 19 swabbing at different facility level, health worker survey, PNG 2020

Health Facility types	Barriers: Equipment and Logistics										
	No fridge to store swabs	Not enough PPE	No cool box/esky	Transport available but not regular	No triage facility	No privacy to screen and do swabbing	No swabs	No ability to make ice	No transport	No universal transport medium	No power or irregular electricity
Provincial Hospital (n=113)	32 (28.3%)	71 (62.8 %)	24 (21.2 %)	35 (31.0 %)	40 (35.4 %)	39 (34.5 %)	34 (30 .1%)	14 (12.4 %)	18 (16.0%)	17 (15.0 %)	4 (3.5%)
District Hospital (n=60)	25 (41.7%)	39 (65%)	17 (28.3 %)	29 (48.3 %)	23 (38.3 %)	25 (41.7 %)	17 (28.3 %)	8 (13.3 %)	14 (23.3 %)	6 (10 %)	9 (15 %)
Health Centre (n=136)	113 (83.1%)	89 (65.4%)	73 (53.7 %)	66 (48.5 %)	55 (40.4 %)	43 (31.6 %)	60 (44.1%)	59 (43.4%)	48 (35.3 %)	30 (22.1%)	30 (22.1%)
Sub Health Centre (n=22)	17 (77.3%)	11 (50 %)	16 (72.3 %)	15 (68.2 %)	6 (27.3 %)	6 (27.3 %)	7 (31.8 %)	12 (54.5%)	13 (59.1 %)	4 (18.2 %)	6 (27.3 %)
Urban Day Clinic (n=34)	25 (73.5%)	18 (53.0%)	14 (41.2%)	14 (41.2 %)	10 (29.4 %)	6 (17.6 %)	8 (23.5 %)	12(35.3)	9 (26.5 %)	3 (8.8 %)	0
Community Health Post (n=14)	13 (92.8%)	7 (50 %)	11 (78.6%)	8 (57.1%)	8 (57.1 %)	11 (78.6 %)	5 (35.7%)	9 (64 %)	8 (57.1%)	1 (7.1 %)	5 (35.7%)
COVID-19 facility (n=8)	0	0	0	2 (25 %)	0	1 (12.5 %)	0	0	0	0	0
Aid Post (n=5)	5 (100%)	5 (100%)	4 (80 %)	1 (20 %)	4(80 %)	3 (60 %)	3 (60 %)	4 (80 %)	2(40%)	2 (40%)	1 (20 %)
Other (n=15)	4 (26.7 %)	8 (53.3%)	3 (20 %)	4 (26.7%)	5 (33.3 %)	3 (20 %)	4 (26.7 %)	4 (26.7 %)	5 (33.3 %)	1(6.7%)	3 (20 %)
Total (n=407)	234 (57.5 %)	248 (61%)	162 (39.8%)	174 (42.8%)	151 (37.1%)	137 (33.6%)	138 (34%)	122 (30.0 %)	117 (28.7 %)	64 (15.7 %)	58 (14.3 %)

Table 7c: Identified equipment and logistics as barriers to COVID- 19 swabbing at different facility level, health worker survey, PNG 2020

Health Facility types	Equipment and Logistics										
	No fridge to store swabs	Not enough PPE	No cool box/esky	Transport available but not regular	No triage facility	No privacy to screen and do swabbing	No swabs	No ability to make ice	No transport	No universal transport medium	No power or irregular electricity
Provincial Hospital (n=113)	32 (28.3%)	71 (62.8 %)	24 (21.2 %)	35 (31.0 %)	40 (35.4 %)	39 (34.5 %)	34 (30 .1%)	14 (12.4 %)	18 (16.0%)	17 (15.0 %)	4 (3.5%)
District Hospital (n=60)	25 (41.7%)	39 (65%)	17 (28.3 %)	29 (48.3 %)	23 (38.3 %)	25 (41.7 %)	17 (28.3 %)	8 (13.3 %)	14 (23.3 %)	6 (10 %)	9 (15 %)
Health Centre (n=136)	113 (83.1%)	89 (65.4%)	73 (53.7 %)	66 (48.5 %)	55 (40.4 %)	43 (31.6 %)	60 (44.1%)	59 (43.4%)	48 (35.3 %)	30 (22.1%)	30 (22.1%)
Sub Health Centre (n=22)	17 (77.3%)	11 (50 %)	16 (72.3 %)	15 (68.2 %)	6 (27.3 %)	6 (27.3 %)	7 (31.8 %)	12 (54.5%)	13 (59.1 %)	4 (18.2 %)	6 (27.3 %)
Urban Day Clinic (n=34)	25 (73.5%)	18 (53.0%)	14 (41.2%)	14 (41.2 %)	10 (29.4 %)	6 (17.6 %)	8 (23.5 %)	12(35.3)	9 (26.5 %)	3 (8.8 %)	0
Community Health Post (n=14)	13 (92.8%)	7 (50 %)	11 (78.6%)	8 (57.1%)	8 (57.1 %)	11 (78.6 %)	5 (35.7%)	9 (64 %)	8 (57.1%)	1 (7.1 %)	5 (35.7%)
COVID-19 facility (n=8)	0	0	0	2 (25 %)	0	1 (12.5 %)	0	0	0	0	0
Aid Post (n=5)	5 (100%)	5 (100%)	4 (80 %)	1 (20 %)	4(80 %)	3 (60 %)	3 (60 %)	4 (80 %)	2(40%)	2 (40%)	1 (20 %)
Other (n=15)	4 (26.7 %)	8 (53.3%)	3 (20 %)	4 (26.7%)	5 (33.3 %)	3 (20 %)	4 (26.7 %)	4 (26.7 %)	5 (33.3 %)	1(6.7%)	3 (20 %)
Total (n=407)	234 (57.5 %)	248 (61%)	162 (39.8%)	174 (42.8%)	151 (37.1%)	137 (33.6%)	138 (34%)	122 (30.0 %)	117 (28.7 %)	64 (15.7 %)	58 (14.3 %)

Table 7d: Identified health care worker attitudes as barriers to COVID- 19 swabbing at different facility level, health worker survey, PNG 2020

Health facility types	Health Workers Attitudes and Behaviors			
	HCW afraid of getting COVID- 19	Health Care Worker not interested in working on COVID-19	Don't get results quickly	Stigma from communities
Provincial Hospital (n=113)	43(38.1%)	34 (30 .1%)	21 (18.6%)	25 (22.1%)
District Hospital (n=60)	29 (48.3%)	18 (30.0%)	15 (25.0%)	16 (26.7%)
Health Centre (n=136)	34 (25%)	26 (19.1%)	10 (7.4%)	17 (12.5%)
Sub Health Centre (n=22)	3 (13.6%)	3 (13.6%)	2 (9.1%)	0
Urban Day Clinic (n=34)	10 (29.4 %)	10 (29.4 %)	2 (5.6%)	3 (8.8 %)
Community Health Post (n=14)	2 (14.3 %)	6 (1.5 %)	2 (14.3%)	3 (21.4)
COVID-19 facility (n=8)	0	0	1 (12.5 %)	0
Aid Post (n=5)	0	0	0	1 (20 %)
Other (n=15)	5 (33.3 %)	2 (13.4)	5 (33.3 %)	5 (33.3 %)
Total (n=407)	126(31.0%)	99 (24.3 %)	55 (13.5 %)	67 (16.5 %)

Table 7e: Identified community attitudes as barriers to COVID- 19 swabbing at different facility level, health worker survey, PNG 2020

Health Facility type	Community Attitude and Behavior						
	Patients refuse to be swabbed	A lot of misinformation	Stigma associated with PPE	"Don't believe in COVID-19	Not at Risk (old, co-morbidities)	Patients don't return	Community don't trust HCW
Provincial Hospital (n=113)	51 (45.1%)	45 (39.%)	45(39.8%)	44(38.9%)	25(22.1%)	16(14.2%)	8 (7.1%)
District Hospital (n=60)	30 (50%)	20 (33%)	29 (48.3%)	14 (23.3%)	6 (10%)	159(25%)	8(13.3%)
Health Centre (n=136)	47 (34.6 %)	51 (37.5 %)	36 (26.5%)	46 (33.8%)	41(30.1%)	2(16.2%)	7 (5.1%)
Sub Health Centre (n=22)	4 (18.2%)	6 (27.%)	6 (27.3%)	9 (40.9%)	2 (9.1%)	1 (4.5%)	1 (4.5%)
Urban Day Clinic (n=34)	22 (64.7%)	11 (32.%)	10 (29.4%)	11 (32.4%)	7 (20.6%)	10(29.4%)	4 (32.4%)
Community Health Post (n=14)	7 (50 %)	5 (35.%)	5 (35.7%)	6 (42.9 %)	2 (14.3%)	2 (14.3%)	2(14.3%)
COVID-19 facility (n=8)	0	0	2 (25 %)	0	0	1(12.5%)	0
Aid Post (n=5)	2 (40%)	4 (80%)	1 (20 %)	2 (40%)	0	0	0
Other (n=15)	7 (46.7%)	6 ((40 %)	7 (46.7%)	5 (33.3 %)	4 (26.7%)	2 (13.3)	2 (13.3)
Total (n=407)	170 (41.8%)	148 (36.4 %)	141 (34.6 %)	137 (33.7 %)	87 (21.4%)	69 (17.0%)	32 (7.9%)

Table 8a: Identified enablers to specimen collection for COVID-19 testing by key themes, health worker survey, PNG 2020

Enablers	N (%)
Human Resources	
Additional staff - more staff in general	260 (63.9%)
More staff trained on how to swab for COVID-19	206 (50.6%)
A staff member dedicated to triage - could be a volunteer or HCW	193 (47.4%)
A staff member dedicated to swabbing for COVID-19	180 (44.2%)
Health care workers should receive a risk allowance / compensation	139 (34.2%)
Volunteers should receive an incentive / stipend / payment	96 (23.6%)
Recruit volunteers to work on COVID-19 screening, swabbing and health promotion / risk communication	91 (22.4%)
Equipment / Logistics	
A consistent and sufficient supply of PPE	276 (67.8%)
A fridge to store swabs and make ice packs	243 (59.7%)
Reliable and regular transport of specimens	227 (55.8%)
A place dedicated for triage / screening and swabbing	196 (48.2%)
A consistent and sufficient supply of swabs	187 (46.0%)
Cold boxes / eskies	155 (38.1%)
A consistent and sufficient supply of UTMs - transport medium	108 (26.5%)
Health worker attitudes	
Refresher training on swabbing for COVID-19	164 (40.3%)
Health promotion with health care workers so they understand COVID-19	135 (33.2%)
Increased inclusion and engagement of health workers in the response	106 (26.5%)
Community attitudes / behaviours	
Community awareness / education / risk communication on the importance of COVID-19 and the need for swabbing	329 (80.8%)
Outreach program - awareness and swabbing conducted in the community	187 (45.9%)
Consistent messaging to prevent confusion	144 (35.4%)
Someone to talk with community leaders to sensitise the people to COVID-19	100 (24.6%)

Table 8b: identified solutions to human resources to enable specimen collection for COVID-19 testin, health worker survey, PNG 2020

Health Facility type	Enabler: Human Resource						
	Additional staff in general	Staff designated to triage	Staff dedicated to swabbing for COVID- 19	More staff trained on how to swab for COVID- 19	Volunteer to screen and swab	Volunteers should receive incentives	HCW should receive risk allowance/ compensation
Provincial Hospital (n=113)	69 (61.1 %)	53 (46.9 %)	57 (50.4 %)	61 (54.0%)	21(18.6%)	28 (24.8%)	49 (43.4%)
District Hospital (n=60)	34 (56.7%)	32 (53.3%)	35 (58.3 %)	31(51.7%)	12 (20.0 %)	17 (28.3 %)	26 (43.3 %)
Health Centre (n=136)	94 (69.1%)	66 (48.5%)	52 (38.2 %)	71 (52.2 %)	33 (24.3%)	27 (19.9 %)	36 (26.5 %)
Sub Health Centre (n=22)	15 (68.2%)	12 (54.5%)	11 (50 %)	6 (27.3%)	3 (13.6%)	7 (31.8%)	6 (27.3%)
Urban Day Clinic (n=34)	24 (70.6%)	16 (47.1)	13 (38.2%)	16 (47.1%)	9 (26.5%)	10 (29.4%)	12 (35.3%)
Community Health Post (n=14)	7 (50%)	7 (50%)	6 (42.9 %)	8 (57.1%)	6 (42.9 %)	4 (28.6%)	4 (28.6%)
COVID-19 facility (n=8)	3 (37.5%)	2 (25.0%)	0	0	1 (12.5 %)	1 (12.5 %)	1 (12.5 %)
Aid Post (n=5)	3 (60%)	1(10%)	2 (20%)	4 (80 %)	2 (20%)	0	0
Other (n=15)	11(73.3%)	4 (26.7%)	4 (26.7%)	9 (60 %)	4 (26.7%)	2 (13.3 %)	5 (33.3 %)
Total (n=407)	260 (63.9%)	193 (47.4%)	180 (44.2%)	206 (50.6%)	91 (22.4 %)	96 (23.6%)	139 (34.2%)

Table 8c: identified solutions to human resources to enable specimen collection for COVID-19 testin, health worker survey, PNG 2020

Health Facility types	Enablers: Equipment and Logistics							
	Fridge to store swabs and make ice packs	Cool box to keep swabs in	Good supply of PPE	Good supply of swabs	Good supply of UTMs	More reliable power supply	Dedicated place for triage/ swabbing	Reliable and regular Transport for specimens
Provincial Hospital (n=113)	36 (31.8%)	24 (21.2%)	77 (68.1%)	46 (40.7%)	30 (26.5%)	8 (7.1%)	54 (47.8%)	52 (46.0%)
District Hospital (n=60)	25 (41.7%)	14 (23.3%)	35 (58.3 %)	19 (31.7%)	11 (18.3%)	12 (20%)	34 (56.7%)	35 (58.3 %)
Health Centre (n=136)	115 (84.6%)	69 (50.7%)	102 (75%)	83 (61.0%)	46 (33.8%)	25 (18.4%)	63 (46.3%)	82 (60.3%)
Sub Health Centre (n=22)	16 (72.7%)	16 (72.7%)	14 (63.6%)	12 (54.5%)	5 (22.7%)	5 (22.7%)	8 (36.4%)	20 (90.1%)
Urban Day Clinic (n=34)	28 (82.4%)	16 (47.1%)	24 (70.6%)	14 (41.2%)	9 (26.5%)	1 (2.9%)	15 (44.1%)	17 (50%)
Community Health Post (n=14)	13 (92.9%)	9 (64.3 %)	10 (71.4%)	6 (42.9 %)	2 (14.3%)	6 (42.9 %)	11 (78.6%)	12 (85.7%)
COVID-19 facility (n=8)	0	0	0	0	0	0	0	0
Aid Post (n=5)	5 (100 %)	4 (80 %)	5 (100 %)	3 (60 %)	1 (10 %)	1(10 %)	3 (60 %)	3 (60 %)
Other (n=15)	5 (33.3 %)	3 (20%)	9 (60%)	4 (26.7%)	4 (26.7%)	4 (26.7%)	8 (53.3%)	6 (40%)
Total (n=407)	243 (59.7%)	155 (38.1%)	276 (67.8%)	187 (45.9%)	108 (26.5%)	62 (15.2%)	196 (48.2%)	227 (55.7%)

Table 8d: Identified solution to health care workers attitude to enable specimen collection for COVID-19 testing, health worker survey, PNG 2020

Health facility types	Enablers: Health Workers Attitude and Behaviour		
	Staff raining on swabbing for COVID- 19	Health Promotion with HCW to understand COVID- 19	HCW to be more involved or included with COVID- 19 work
Provincial Hospital (n=113)	45 (39.8 %)	45 (39.8 %)	28 (24.8 %)
District Hospital (n=60)	31 (51.7 %)	16 (26.7 %)	16 (26.7 %)
Health Centre (n=136)	52 (38.2 %)	42 (30.9 %)	41(30.1 %)
Sub Health Centre (n=22)	11 (50 %)	9 (40.9 %)	8 (36.4 %)
Urban Day Clinic (n=34)	10 (29.4 %)	10 (29.4 %)	5 (14.7 %)
Community Health Post (n=14)	6 (42.9 %)	6 (42.9 %)	4 (28.6%)
COVID-19 facility (n=8)	0	0	1 (12.5 %)
Aid Post (n=5)	3 (60 %)	2 (20%)	0
Other (n=15)	6 (40 %)	5 (33.3%)	3 (20 %)
Total (n=407)	164 (40.3%)	135 (33.2%)	106 (26.0%)

Table 8e: identified solution to community attitude to enable specimen collection for COVID-19 testing, health worker survey, PNG 2020

Health Facility types	Enablers: Community Attitude and Behaviour			
	Community leaders to sensitize people to COVID- 19	Community awareness and risk communication	Consistent messaging to prevent confusion.	Outreach program by HCW- awareness & swabbing in Community
Provincial Hospital (n=113)	24 (21.2%)	93 (82.3%)	49 (43.4%)	53 (46.9%)
District Hospital (n=60)	19 (31.7%)	44 (73.3%)	27 (45%)	28 (46.7%)
Health Centre (n=136)	36 (26.5 %)	115 (84.6%)	46 (33.8%)	66 (48.5%)
Sub Health Centre (n=22)	5 (22.7%)	18 (81.8%)	3 (13.6%)	11(50%)
Urban Day Clinic (n=34)	5 (14.7%)	29 (85.3%)	10 (29.4%)	14 (41.2%)
Health Post (n=14)	4 (28.6%)	12 (85.7%)	2 (14.3%)	5 (35.7%)
COVID-19 facility (n=8)	0	2 (25%)	0	1 (12.5%)
Aid Post (n=5)	2 (20%)	4 (80%)	3 (60%)	4 (80%)
Other (n=15)	5 (33.3 %)	12 (80%)	4 (26.7%)	5 (33.3 %)
Total (n=407)	100 (24.6%)	329 (80.3%)	144 (35.4%)	187 (45.9%)

Appendix 3: Health Care Worker Survey Questionnaire

Key
*Interviewer script + questions = bold
*Interviewer prompts = <i>un-bolded and italicised</i> , with []
*Response options = normal text

Health Care Worker Survey - COVID-19 Specimen Collection, Papua New Guinea 2020

Version 7 (22 November 2020)

No	Questions/Interviewer script	Notes for interviewers
1.	Interview Date: _____ / _____ / _____(DD/MM/YYYY)	
2.	Interviewer Name:	
	<p>Good morning/afternoon/evening, am I speaking with <i>[Health Care Workers name]</i>?</p> <p>Hi, my name is _____, I am calling from the National Department of Health's Surveillance Unit for the COVID-19 response. How are you today?</p> <p>We are talking to health care workers across PNG to better understand the challenges health care workers face in swabbing patients for COVID-19. The PHA CEOs have all received a letter signed by the Incident Manager informing them of this survey. Are you able to talk with me for about 10-15 minutes and share your experience?</p> <p><i>[If now is not a good time, ask to arrange an alternative time to call back - write down the name, telephone number and agreed time for the call-back]</i></p> <p>Thank you for agreeing to talk to me. I want to let you know that this short interview is confidential and I will not be recording your name on the form. We will be asking some questions about your facility, about training, and some of the challenges you are experiencing. We also want to know what measures could help your facility collect more swabs for COVID-19.</p> <p>Please ask me to explain any questions that are not clear and let me know if you would prefer not to answer a question. You are free to stop the interview at any time.</p> <p>The information you provide will help us understand the challenges and make recommendations to help increase swabbing for COVID-19.</p>	

3.	<p>Are you happy to continue?</p> <p><input type="checkbox"/> Yes</p> <p><input type="checkbox"/> No</p>	
3a	<p>Thankyou - as I mentioned this should not take more than 10-15 minutes of your time.</p> <p>Would you like the interview to be in English or Tok Pisin?</p> <p><input type="checkbox"/> English</p> <p><input type="checkbox"/> Tok Pisin</p>	This will only appear if they answer yes to Q3
3b	<p>Do you mind telling me why you do not want to be interviewed?</p> <p>_____</p>	This will only appear if they answer no to Q3
4.	<p>Can you tell me which province you work in?</p> <p><input type="checkbox"/> Autonomous Region of Bougainville</p> <p><input type="checkbox"/> Central</p> <p><input type="checkbox"/> Eastern Highlands</p> <p><input type="checkbox"/> East New Britain</p> <p><input type="checkbox"/> East Sepik</p> <p><input type="checkbox"/> Enga</p> <p><input type="checkbox"/> Gulf</p> <p><input type="checkbox"/> Hela</p> <p><input type="checkbox"/> Jiwaka</p> <p><input type="checkbox"/> Madang</p> <p><input type="checkbox"/> Manus</p> <p><input type="checkbox"/> Milne Bay</p> <p><input type="checkbox"/> Morobe</p> <p><input type="checkbox"/> National Capital District</p> <p><input type="checkbox"/> New Ireland</p> <p><input type="checkbox"/> Oro (Northern)</p> <p><input type="checkbox"/> Sandaun (West Sepik)</p> <p><input type="checkbox"/> Simbu (Chimbu)</p>	

	<input type="checkbox"/> Southern Highlands <input type="checkbox"/> Western (Fly) <input type="checkbox"/> Western Highlands <input type="checkbox"/> West New Britain	
5.	District	The list of districts will appear based on the province selected in Q4
6.	What type of Health Facility are you working in? <input type="checkbox"/> Provincial Hospital <input type="checkbox"/> District Hospital <input type="checkbox"/> Community Health Post <input type="checkbox"/> Health Centre <input type="checkbox"/> Urban Day Clinic <input type="checkbox"/> Sub Health Centre <input type="checkbox"/> Aid Post <input type="checkbox"/> Other (please specify):	<p>If 'Other' is selected. A box will appear for you to type an answer.</p> <p>This will happen for all questions where there is an 'Other' option.</p>
7.	Is the health facility where you work run by? <input type="checkbox"/> Government <input type="checkbox"/> Church <input type="checkbox"/> Private <input type="checkbox"/> Other (please specify):	
8.	How many health staff are working at your facility?	You can only answer with a number for this question, no words
9.	How many of these staff are trained to do swabbing for COVID-19?	You can only answer with a number for this question, no words
10.	Does your role including swabbing for COVID-19? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
11.	Does the health facility where you work have: a) A fridge to store swabs?	

	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know b) Cold box / esky? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know c) Ability to make ice packs? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know d) Access to specimen transportation (car, boat, plane)? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
	e) Approximately how often are you able to transport specimens? <input type="checkbox"/> Everyday <input type="checkbox"/> 3 times a week <input type="checkbox"/> 2 times a week <input type="checkbox"/> Once a week <input type="checkbox"/> Once every 2 weeks <input type="checkbox"/> Not very often (only as needed or requested) <input type="checkbox"/> Don't know <input type="checkbox"/> Other (please specify):	This will only appear if they answer yes to Q11d)
	As I mentioned we are very interested in understanding from a health care worker's perspective about the challenges you experience at your facility in swabbing patients for COVID-19.	
12.	Can you please explain to me the main challenges you face? <i>[mark all that are mentioned by the respondent]</i>	

	<p>Do you have challenges around Human Resources?</p> <p><input type="checkbox"/> Manpower - we are busy with our usual work and don't have time for swabbing</p> <p><input type="checkbox"/> Too few staff are trained how to swab for COVID-19 - Only a small number of staff trained to swab and those swabbing having multiple other duties</p> <p><input type="checkbox"/> No staff trained how to swab for COVID-19</p> <p><input type="checkbox"/> Staff at this health centre are unable to swab as they are at higher risk (eg. older, co-morbidities, pregnancy)</p> <p><input type="checkbox"/> Incentives - we were told we would get paid for swabbing but we have not received any money</p> <p><input type="checkbox"/> Risk allowance / compensation - we should be given compensation for swabbing because of the risk of getting infected with COVID-19</p> <p><input type="checkbox"/> Insurance - no insurance for ourselves or our families</p> <p>Do you have any challenges around Equipment / Logistics?</p> <p><input type="checkbox"/> No fridge to store swabs</p> <p><input type="checkbox"/> No / not enough cold boxes or eskies</p> <p><input type="checkbox"/> No ability to make ice</p> <p><input type="checkbox"/> We don't have enough PPE</p> <p><input type="checkbox"/> We don't have swabs</p> <p><input type="checkbox"/> We don't have UTMs (Universal Transport Medium)</p> <p><input type="checkbox"/> No power / irregular power</p> <p><input type="checkbox"/> Not enough stationary (printing etc)</p> <p><input type="checkbox"/> No access to COVID-19 educational material (posters etc)</p> <p><input type="checkbox"/> No way to transport the specimens from the health centre to the lab</p> <p><input type="checkbox"/> Transport for specimen pick-up is available but not regular</p> <p><input type="checkbox"/> No triage facility / capacity / staff</p> <p><input type="checkbox"/> No privacy area for patients at the Health Centre - for screening and swabbing</p> <p>Do you have any challenges around health worker attitudes?</p> <p><input type="checkbox"/> COVID-19 is not a problem in our community - so there is no need for swabbing</p> <p><input type="checkbox"/> Health care workers just not interested in working on COVID-19</p>	
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<p><input type="checkbox"/> We feel left out, not involved in the COVID-19, we receive no information</p> <p><input type="checkbox"/> We have more important health problems in the community</p> <p><input type="checkbox"/> We/I don't know what to do if the test is positive</p> <p><input type="checkbox"/> We/I don't feel confident to manage/follow up a positive case</p> <p><input type="checkbox"/> Health care workers are afraid - afraid of getting COVID-19</p> <p><input type="checkbox"/> Health care workers are afraid - afraid of stigmatization from their colleagues</p> <p><input type="checkbox"/> Health care workers are afraid - afraid of stigmatization from their family</p> <p><input type="checkbox"/> Health care workers are afraid - afraid of stigmatization from the community</p> <p><input type="checkbox"/> We don't get the results of the test - takes too long for the test result</p> <p>Do you have any challenges around community attitudes / behaviours?</p> <p><input type="checkbox"/> Patients refuse to be swabbed</p> <p><input type="checkbox"/> I ask patients to return for testing but they don't return - some facilities have specific days dedicated for COVID-19 swabbing</p> <p><input type="checkbox"/> Stigma associated with the PPE - when the community see the PPE they are afraid</p> <p><input type="checkbox"/> Stigma associated with the PPE - when they see someone being swabbed they think that person has COVID-19 and the person is stigmatised</p> <p><input type="checkbox"/> The community believes that God will protect them so they don't need to be tested</p> <p><input type="checkbox"/> The community believes they are not at risk of COVID-19 (eg. strong immune systems; white man's disease)</p> <p><input type="checkbox"/> Patients don't trust me - I am not from this community.</p> <p><input type="checkbox"/> A lot of misinformation - people get information from other sources and don't believe what I tell them</p> <p><input type="checkbox"/> The community doesn't know about COVID-19 (no awareness)</p> <p><input type="checkbox"/> The community has heard of COVID-19 but doesn't believe in it</p> <p>Did the HCW mention something not listed ? <i>[If so please click on 'Other' and type it in the box]</i></p> <p><input type="checkbox"/> Other (please specify):</p>	
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	<p>Did the HCW say they had no challenges? <i>[Clarify with them that they do not or would not face any challenges in collecting swabs for COVID-19 before selecting this box]</i></p> <p><input type="checkbox"/> No challenges</p>	
	<p>We are also very interested in finding out what would help to increase swabbing for COVID-19 in your health facility. Can you share with me some thoughts on what you think would increase swabbing in your facility?</p>	
13.	<p>What would help to increase swabbing for COVID-19 at your facility? <i>[mark all that are mentioned by the respondent]</i></p> <p>Are there any measures related to Human Resources?</p> <p><input type="checkbox"/> Manpower - more staff in general</p> <p><input type="checkbox"/> A staff member dedicated to triage - could be a volunteer or HCW</p> <p><input type="checkbox"/> A staff member dedicated to swabbing for COVID-19</p> <p><input type="checkbox"/> More staff trained on how to swab for COVID-19</p> <p><input type="checkbox"/> Staff for health promotion / risk communication</p> <p><input type="checkbox"/> Recruit volunteers to work on COVID-19 screening, swabbing and health promotion / risk communication</p> <p><input type="checkbox"/> Volunteers should receive an incentive / stipend / payment</p> <p><input type="checkbox"/> Health care workers should receive incentives</p> <p>- Can you provide some more information about what kind of incentives you think staff should receive?</p> <p>_____</p> <p><input type="checkbox"/> Health care workers should receive a risk allowance / compensation</p> <p>Are there any measures related to Equipment / Logistics?</p> <p><input type="checkbox"/> A fridge - to make ice packs and store specimens</p> <p><input type="checkbox"/> A cold box/esky to keep the swabs in</p> <p><input type="checkbox"/> A good supply of PPE</p> <p><input type="checkbox"/> A good supply of swabs</p> <p><input type="checkbox"/> A good supply of UTMs</p> <p><input type="checkbox"/> More reliable power supply</p>	<p>If the option for HCW incentives is selected, a sub-question will appear asking them to give more information about what kind of incentives.</p>

	<p><input type="checkbox"/> More stationary (printing etc)</p> <p><input type="checkbox"/> More COVID-19 educational material (posters etc)</p> <p><input type="checkbox"/> Place dedicated for triage / screening / swabbing - eg. private area or tent</p> <p><input type="checkbox"/> Reliable and regular transport for the specimens</p> <p>Are there any measures related to health worker attitudes?</p> <p><input type="checkbox"/> Refresher training on swabbing for COVID-19 - some trained early on but have not taken a swab</p> <p><input type="checkbox"/> Health promotion with the health care workers so they understand COVID-19</p> <p><input type="checkbox"/> We should be more involved / included. We should receive information about COVID-19 and the response.</p> <p>Are there any measures related to community attitudes / behaviours?</p> <p><input type="checkbox"/> Someone to talk with community leaders to sensitise the people to COVID-19</p> <p><input type="checkbox"/> Community awareness / education / risk communication on the importance of COVID-19 and the need for swabbing</p> <p><input type="checkbox"/> Consistent messaging to prevent confusion</p> <p><input type="checkbox"/> Outreach program - HCW should conduct awareness and swabbing in the community</p> <p>Did the HCW mention something not listed? [If so please click on 'Other' and type it in the box]</p> <p><input type="checkbox"/> Other (please specify):</p> <p>Did the HCW say they had no thoughts on what could increase swabbing for COVID-19 in their facility? [Refer back to any challenges mentioned and ask them if they can think of any measures that could be introduced around these challenges]</p> <p><input type="checkbox"/> No thoughts on what would help to increase swabbing for COVID-19</p>	
14.	<p>Can you tell me, which persons should be swabbed for COVID-19?</p> <p><i>[Mark all mentioned by the respondent. If they say "someone who meets the case definition" ask them if they can be more specific]</i></p>	<p><i>This question has been moved up to be earlier in the interview</i></p>

	<input type="checkbox"/> Someone who has any of these symptoms - fever, cough, shortness of breath, sore throat, loss of smell or taste, fatigue <input type="checkbox"/> Anyone with symptoms of a respiratory illness (ILI, SARI, Pneumonia) <input type="checkbox"/> People who have had contact with a confirmed case of COVID-19 <input type="checkbox"/> People who require a clearance swab (eg. quarantine, work, travel) <input type="checkbox"/> Everyone who asks / volunteers to be swabbed <input type="checkbox"/> No-one, we don't have COVID-19 in this community <input type="checkbox"/> I don't know <input type="checkbox"/> Other (please specify):	
	Now I want to finish by asking a few questions about yourself	
15.	Have you received training in the use of Personal Protective Equipment (PPE) for collecting COVID-19 specimens? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
16.	Can you score between 0 and 5 how confident you feel in donning and doffing PPE? Where 0 = not confident at all and 5 = very confident like an expert. <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
17.	Have you received training on how to do a nasopharyngeal swab for collecting a specimen for COVID-19? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
17a	As a part of the training, did you practise taking a nasopharyngeal swab on someone else? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	This question only appears if they 'yes' to training (Q17)
18.	Can you score between 0 and 5 how confident you feel in doing a nasopharyngeal swab on a patient? Where 0 = not confident at all and 5 = very confident like an expert. <input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	This question only appears if they 'yes' to training (Q17)
19.	Approximately how many times have you swabbed a patient for COVID-19?	Only able to answer with a number for this question, no words

19a	<p>Which type of swab do you normally do for COVID-19? <i>[If the respondent normally does both types, select both]</i></p> <p><input type="checkbox"/> Nasopharyngeal swab (nose)</p> <p><input type="checkbox"/> Oropharyngeal swab (throat)</p> <p><input type="checkbox"/> Other (please specify):</p> <p><input type="checkbox"/> Not applicable</p>	<p>This question will always appear now. If the person says '0' swabs in Q19, select 'Not applicable' for this question.</p> <p>You now have the option to select both types of swabs if the person says both.</p>
20.	<p>Can you score between 0 and 5 how afraid you are of getting COVID-19 if you swab a patient? Where 0 = not afraid at all and 5 = very afraid I will get COVID-19</p> <p><input type="checkbox"/> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5</p>	
	<p>Now, a couple of questions about your background in health.</p> <p>Can you please tell me what is your highest qualification? And also what is your position at your health facility?</p>	
21.	<p>Qualification:</p> <p><input type="checkbox"/> Doctor</p> <p><input type="checkbox"/> Health Extension Officer</p> <p><input type="checkbox"/> Nurse</p> <p><input type="checkbox"/> Community Health Worker</p> <p><input type="checkbox"/> Lab Technician</p> <p><input type="checkbox"/> Environmental Health Officer/Health Inspector (EHO)</p> <p><input type="checkbox"/> Other (please specify):</p>	
22.	<p>Position at the health facility: <i>[Mark all mentioned by the respondent]</i></p> <p><input type="checkbox"/> Officer in Charge</p> <p><input type="checkbox"/> Nursing Officer</p> <p><input type="checkbox"/> Health Promotion Officer</p> <p><input type="checkbox"/> Program - Family Health</p> <p><input type="checkbox"/> Program - EPI (Immunization)</p> <p><input type="checkbox"/> Program - TB</p> <p><input type="checkbox"/> Program - HIV</p> <p><input type="checkbox"/> Program - Malaria</p> <p><input type="checkbox"/> Lab Technician</p> <p><input type="checkbox"/> Surveillance Officer (Provincial or District)</p>	

	<input type="checkbox"/> Disease Control Officer (Provincial or District) <input type="checkbox"/> District Health Manager <input type="checkbox"/> Other (please specify):	
23.	How many years have you worked in health?	Only able to answer with a number for this question, no words
	Lastly, can you please confirm your age and sex for me? We are asking everyone these last questions so that we are able to know the age group and sex of those who were interviewed.	
24.	Age:	Only able to answer with a number for this question, no words
25.	Sex: <input type="checkbox"/> Male <input type="checkbox"/> Female <input type="checkbox"/> Other	
	<p>Thank you so much for your time and for answering these questions. As I mentioned, I will not record your name so your responses are confidential.</p> <p>The information you have provided will help us understand the challenges and make recommendations to help improve testing for COVID-19.</p> <p>We are speaking to HCW across PNG and will make a report on the findings from this survey. We will send the report to the PHAs and to your health facility.</p> <p>Do you have any questions for me?</p> <p>Do you have any final comments or thoughts you'd like to share with me?</p> <hr/>	