

COMPREHENSIVE OCCUPATIONAL HEALTH SERVICES FOR HEALTHCARE PROFESSIONALS



FOREWORD

The emergence of COVID-19 has highlighted the immense stress and pressure that frontline healthcare workers experience daily. Since the start of the pandemic, frontline healthcare workers have been shown to be at a disproportionately high risk of SARS-CoV-2 infection. When lacking fundamental resources, for example personal protective equipment, health care workers can be put at even higher risk of infection or chronic disease. This can be further complicated in low-income settings where healthcare systems are lacking resources and can have a high burden of infectious diseases. This can put an enormous strain on the health care workers and can lead to mental health problems and staff absence exacerbating the problem.

The overall aim of the ICAROZ project is to establish a comprehensive occupational health service model including SARS-CoV-2 testing integrated with screening for major causes of morbidity and mortality with rapid feedback of results and linkage to care.

This Manual of Operations is a compilation of the essential standard operating procedures and instructions to plan, set up, and run a comprehensive occupational health program. It outlines routine procedures to mitigate the risk of substandard implementation and promotes a standardized and high-level operation. The purpose of this Manual of Operations is twofold:

1. To provide guidance and standard operating procedures to provide a variety of occupational health services and more broadly in how to implement an occupational health service programme for healthcare workers.
2. To provide a clear manual and guidance for program staff to understand their roles and responsibilities in providing a high-quality occupational health service.

This document has proven to be invaluable to ICAROZ staff and our hope is that other countries will be able to adopt and implement occupational health services by following this Manual of Operations to mitigate occupational risks for healthcare workers as they stand in the frontline of this pandemic.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome	MoHCC	Ministry of Health and Child Care
ART	Antiretroviral Therapy	MUAC	Mid-Upper Arm Circumference
BBT	Blood-Based Test	NPS	Nasopharyngeal Swab
BMI	Body Mass Index	OHS	Occupational Health Services
BP	Blood Pressure	ODK	Open Data Kit
CKD	Chronic Kidney Disease	PCR	Polymerase Chain Reaction
COVID-19	Coronavirus Disease-2019	PEP	Post Exposure Prophylaxis
(e)CRF	(electronic) Case Record Form	PHC	Primary Health Clinic
CSU	Counselling Services Unit	PPE	Personal Protective Equipment
DBP	Diastolic Blood Pressure	SARS-CoV-2	Severe Acute Respiratory Syndrome - Coronavirus - 2
DHS	Demographic Health Survey	sBP	Systolic Blood Pressure
FAQ	Frequently Asked Question	SOP	Standard Operating Procedure
GAD-7	Generalised Anxiety Disorder - 7 (questions)	SSA	Sub-Saharan Africa
Hb	Haemoglobin	SSQ-14	Shona Symptom Questionnaire - 14 (questions)
HbA1c	Haemoglobin A1C	TB	Tuberculosis
HCW	Health Care Worker	VIAC	Visual Inspection with Acetic acid and Cervicography
HIV	Human Immunodeficiency Virus	WHO	World Health Organisation
HIVST	HIV Self-Testing		
IEC	Information, Education, and Counselling		
IPC	Infection and Prevention Control		
IPV	Intimate Partner Violence		

GLOSSARY OF TERMS

Frontline Health Care Workers: For the purpose of this manual frontline health care workers are those providing health services either in patient facing roles such as nurses, community health workers, midwives, nursing aids, physiotherapists and doctors to name a few or non-patient facing roles including administrators, domestics and security staff.

Clients: Frontline healthcare workers employed by the health facilities that ICARoz visits to offer services who decide to undergo screening and testing.

Partner Health Facility: Health facilities that are closest to location where ICARoz is working, partnered for client referrals, and for accessing certain treatments such as ART, cervical cancer screening, diabetes or hypertension treatment.

Post Exposure Prophylaxis (PEP): PEP is any preventive medical treatment started after exposure to an infectious agent in order to prevent the infection from occurring. In the context of this manual, PEP refers to treatment given to prevention acquisition of HIV infection

Red-flag sign: Sign that signals significant risk of danger or harm to individual or to others and require an urgent response from intervention team.

Research Team: BRTI and LSHTM staff who will be responsible for maintaining the ICARoz protocol's integrity. This includes coordinating activities, ensuring that data is captured appropriately, ensuring that regulatory necessities are up to date.



Overview of ICAROZ

Frontline healthcare workers (HCW) are at disproportionately high risk of SARS-CoV-2 infection globally. In the US and UK HCWs had a 11.6 times increased risk of SARS-CoV-2 compared to the general population and the risk remained >3-fold when adjusting for the likelihood of receiving a test¹. This is further complicated in sub-Saharan Africa (SSA) by the high burden of diseases (HIV, tuberculosis (TB), diabetes, hypertension), which may put HCWs at high risk of severe SARS-CoV-2 disease^{2,3}. While working in an overstretched health care system like Zimbabwe may already lead to burn out among HCWs the additional stress experienced by the SARS-CoV-2 pandemic may result in increased mental health problems^{1,4}.

The overall aim of the ICAROZ project is to establish a model comprehensive occupational health service (OHS) including SARS-CoV-2 testing integrated with screening for major causes of morbidity and mortality to frontline HCWs with rapid feedback of results. ICAROZ offers screening for SARS-CoV-2, TB, HIV, diabetes, hypertension, eye health, anaemia, chronic kidney disease (CKD) and mental health. Testing is accompanied by appropriate advice regarding quarantine and triage for clinical care as appropriate.

PURPOSE OF THE MANUAL

This manual is a guide for delivering the ICAROZ project and is divided into three sections:

Section 1: Describes the project with the flow of clients through the service and includes information and data management procedures

Section 2: Details of how to deliver each service component

Section 3: Discusses safety considerations for staff and training

The purpose of the manual is:

- 1) To guide the OHS provision team in implementing and delivering the services
- 2) To serve as a “live” record of any changes made in the project
- 3) To develop a reference repository of common questions and issues raised by frontline healthcare workers accessing the services

The manual should be read with the ICAROZ protocol and SOPs.

ACKNOWLEDGEMENTS

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SECTION 1

General information



1. ICAROZ

This chapter describes the principles underlying ICAROZ, the content of the project, as well as how, by whom and where the service will be delivered.

1.1 Principles underlying ICAROZ

The COVID-19 pandemic has added considerable stress to an already overstretched health care system in Zimbabwe. This has led to increased risk of anxiety, burn out, and general mental health problems among HCWs who have been working throughout the pandemic^{1,4}. HCWs are also at increased risk of SARS-CoV-2 infection, compounded by the high burden of undiagnosed conditions (HIV, TB, diabetes, anaemia, or hypertension)^{5,6}.

There are five main principles and aims underlying ICAROZ:

1. There is a **high rate of undiagnosed conditions**, especially among HCWs^{5,6}. ICAROZ aims to provide screening for common chronic conditions to facilitate linkage to care and treatment to improve health and well-being.
2. Occupational risks of HCWs include airborne (e.g. TB, SARS-CoV-2, chickenpox and influenza) and bloodborne infections (HIV, hepatitis B and C)⁷. ICAROZ offers screening for some of these conditions to allow for earlier diagnosis and treatment if applicable and **prevent nosocomial transmission**^{8,9}.
3. For many HCWs in LMICs working conditions have been challenging even before the pandemic¹⁰. The lack of resources including consumables, equipment, infrastructure and skilled HCWs impeded on the ability to provide quality care. COVID-19 has aggravated the situation leading to mental health strain, burn out, anxiety and stress¹¹. ICAROZ is therefore offering **screening for common mental health conditions and referral to counselling**, which is provided by one of the partners.
4. HCWs are overstretched and lack time to go see their own healthcare provider¹². By offering OHS on site where they work, ICAROZ aims **to reach those without access**.
5. Confidentiality and choice is at the centre of the OHS delivered by ICAROZ. Clients are asked to choose which screening test they want to take up and the same holds true for referrals. The ICAROZ team are outsiders and do not work at the respective health facilities. The team is trained in how to **maintain confidentiality, respecting clients' autonomy while at the same time being supportive**.

1.2 Services within ICAROZ

The table below lists the comprehensive occupational health services for frontline HCWs.

Table 1.1: Summary of occupational health services provided by ICAROZ

Mental Health	<ul style="list-style-type: none"> ■ Self-administered audio-assisted using electronic tablets or paper hard copies ■ Assessed using both Shona Symptom Questionnaire (SSQ-14) and the Generalized Anxiety Disorders assessment (GAD-7)^{13,14} ■ Workplace violence (WHO questionnaire) and intimate partner violence screening (DHS questionnaire) are assessed^{15,16} ■ Clients are referred to Counselling Services Unit (CSU) if SSQ \geq 8 or if GAD \geq 10 or if a red flag (suicidal thoughts or hallucinations) is present. Clients are also referred to Musasa if they display intimate partner violence but no red flag is present
Eye Health	<ul style="list-style-type: none"> ■ Long vision is assessed using the PEEK acuity app and short vision is assessed using a near vision chart¹⁷ ■ Clients are referred to local eye clinic if either eye scores 6/12 or higher for long vision
Hypertension	<ul style="list-style-type: none"> ■ Blood pressure (BP) is measured 3x and the lowest measurement is used as the client's BP measurement ■ Hypertension is defined as systolic BP >140mmHg and/or diastolic BP >90mmHg¹⁸ ■ Malignant hypertension and hypertensive pregnant women are referred to the emergency department
Diabetes	<ul style="list-style-type: none"> ■ Haemoglobin A1c (HbA1c) measurements are taken and a client is referred if HbA1c \geq 6.5%¹⁹ ■ Along with the HbA1c results, a glucose result (mmol/L) is given. If HbA1c \geq 6.5% and glucose \geq 20 mmol/L, the client must be referred for urgent review at the emergency department¹⁹
Anaemia	<ul style="list-style-type: none"> ■ Haemoglobin (Hb) is assessed and a client is referred if Hb < 8.0 g/dL²⁰
HIV	<ul style="list-style-type: none"> ■ Opt-out HIV testing ■ Testing methods: oral mucosal transudate (OMT) self-test either on site or at home and provider blood-based test (BBT) ■ No reporting of results for at home OMT tests ■ Clients who test positive or who are known positives and aren't accessing care are referred
Respiratory infections (SARS-CoV-2, Tuberculosis, influenza, etc.)	<ul style="list-style-type: none"> ■ Respiratory symptom screen including a runny nose, sneezing, coughing, fever, headache, myalgia/arthritis, fatigue, pharyngitis, diarrhoea, night sweats, skin rash, lymphadenopathy, oral ulcers and loss of smell or taste^{21,22} ■ Measurement of oxygen saturation ■ Based on the number of respiratory infection symptoms (\geq1)

	<p>a nasopharyngeal swab and sputum sample is collected and sent to the laboratory for testing.</p> <ul style="list-style-type: none"> ■ Clients are informed of their positive results by telephone and provided with information and counselling regarding, complications, at-risk household contacts and preventing onward transmission. ■ Negative results are communicated by text message
Cervical Cancer	<ul style="list-style-type: none"> ■ Eligibility for cervical cancer screening is assessed by the nurse ■ HIV+ client is eligible if screened > 1 year ago ■ HIV- client is eligible if >30 years and screened > 3 years ago²³ ■ If eligible, client is referred to preferred clinic or hospital with a Visual Inspection with Acetic Acid and Cervicography (VIAC) department
Chronic Kidney Disease	<ul style="list-style-type: none"> ■ Those with known but poorly controlled hypertension/diabetes or newly diagnosed hypertension/diabetes are offered a blood test to measure creatinine levels²⁴ ■ Samples are sent to laboratory for testing and client is contacted with result within 48 hours
Hepatitis B (optional)	<ul style="list-style-type: none"> ■ Hepatitis B antigen test (rapid test) ■ A client would be referred to their local health clinic if test returns a positive result
STI screening (optional)	<ul style="list-style-type: none"> ■ Chlamydia and Gonorrhoea (CT/NG) urine testing using GeneXpert on site (results within 2 hours). Clients are either asked to wait for their results or given a call if positive results return and treat accordingly which includes partner notification. ■ The treatment for CT is azithromycin (1g PO) or doxycycline (100mg bd for 7 days)²⁵ ■ The treatment for GC is ceftriaxone (250mg IM) or kanamycin (2g IM)²⁶ ■ Trichomoniasis (TV) vaginal swab testing for women using Sekisui Diagnostics OSOM™ Trichomonas Rapid Test Kit. Clients are asked to wait for results and are treated on-site if positive ■ The treatment for TV is ceftriaxone (250mg IM) or doxycycline (100mg bd for 7 days)²⁷ ■ Syphilis testing if client is syndromic for CT/NG using SD Bioline POC test kit. A client is treated accordingly ■ The treatment for syphilis is ceftriaxone (250mg IM)²⁸
Referrals	<ul style="list-style-type: none"> ■ Referral locations: local clinics and health centres, CSU ■ Clients who are referred are followed up by phone by ICARoz staff at one month and those referred for HIV, hypertension, or diabetes are also followed up at three months ■ Also where possible those clients referred for HIV, hypertension, or diabetes will be offered another health check by ICARoz at their workplace 3 months after the initial screening

Prior to going to a facility, ICARoz coordinators organise meetings with the clinical directors, matrons, and line managers. An information pack is sent around and a poster advertising ICARoz services (**Figure 1.2**) is provided to inform all frontline health workers of the provided OHS at the chosen facility.

Once ICARoz has set up at a facility, client flow goes as shown in **Figure 1.1**. Firstly, a client arrives and is registered which includes being provided with an information sheet and personal ICARoz card with their unique ID and ICARoz contact information while they wait. Once they enter the services, they self-complete either an audio or paper-based mental health questionnaire and then have anthropometric measurements taken. Finally, they are invited to the screening and testing station where nurses provide point of care services. The tents are split between non-aerosol producing and aerosol producing tests to maintain infection prevention and control (IPC) (see Chapter 2) standards.

Clients who undergo testing which involves a sample being sent to a laboratory are followed up by telephone or face-to-face for communication of results if positive. Negative test results are also communicated either by telephone or through SMS and WhatsApp.

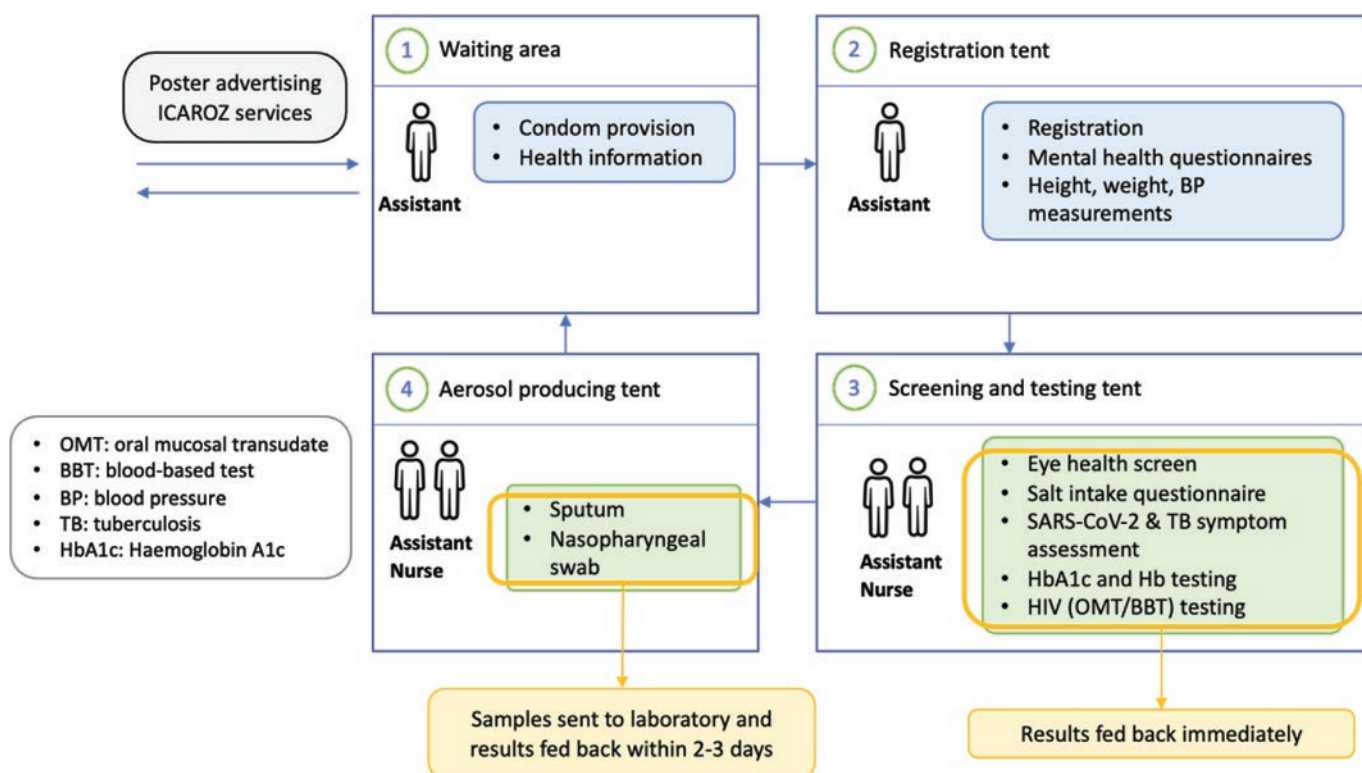


Figure 1.1 Client flow through ICARoz

FREE TESTING & SCREENING

FOR HEALTH CARE PROVIDERS,
SUPPORTING STAFF AT FACILITIES
& COMMUNITY HEALTH WORKERS.



The Ministry Of Health And Child Care in conjunction with the Biomedical Research And Training Institute will be conducting free testing and screening for the conditions below. We will be coming to your facility soon.

HYPERTENSION



DIABETES



TB



COVID - 19



HIV



ANAEMIA



EYE HEALTH



MENTAL HEALTH



We will be at your facility on:

- REMEMBER
1. MAINTAIN SOCIAL DISTANCING
 2. ALWAYS HAVE YOUR MASK

STAY SAFE FROM COVID 19

For more information do not hesitate to call or whatsapp the following number:

+263 779 620 788



This project is being facilitated by The Ministry Of Health And Child Care
in Collaboration with the Biomedical Research & Training Institute

Figure 1.2 ICARoz poster used to advertise services at hospitals in the Harare region

1.3 Service setup

Health facilities to be visited for OHS provision are identified based on need. In Harare, every welcoming facility (public/private) has been targeted. Outside of Harare, provincial, district and mission hospitals are currently being targeted. Contact is established with the city or provincial directors to seek permission to operate in health facilities of their jurisdiction. Once written permission is granted Clinical Directors of hospitals and nurses in charge of polyclinics are contacted. Details of the OHS programme, approval letters and MoHCC support letter are shared in writing. Any questions and clarifications are addressed by telephone, face to face meeting, or through a virtual meeting where more detailed information is provided (see Appendix 1). Prior to the ICARoz team arriving at the facility an outside area or rooms within the health facility are identified from which the team will operate. When operating outside, the ICARoz team brings tents from which to conduct the intervention whilst ensuring client privacy. The number of days the OHS is offered depends on the number of HCWs working at a facility. Ideally, the service operates until saturation is reached i.e. uptake of the service has slowed/ceased.

For infection prevention and control purposes (discussed more in detail in Chapter 2) the OHS is preferably operated outdoors using three tents that serve as a booth for each step of the process (**Figure 1.3**). The first one deals with registration, mental health screening and anthropometric measurements. The second comprises of a questionnaire on past medical history, SARS-CoV-2 contact and salt intake questionnaires, and non-aerosol producing screening and testing services (HIV testing, HbA1c measurements, etc.). Finally, the third tent is separate from the waiting area and the other tents, as the procedures to obtain NPS and sputum samples may generate aerosols.

At the start of each day, the team sets up the centre as follows:

1. Tents set up
2. Information, education, and counselling (IEC) materials laid out
3. Tents should have a small table, 3 chairs, waste bin, sharps bin (if applicable) and commodities (including IPC commodities: gloves, surgical masks, bleach for surface cleaning, alcohol wipes for equipment cleaning, hand sanitiser), forms and registers required to provide the service and document data (see Table 1.2 and Chapter 2 in Manual of Operations dealing with Infection Prevention and Control)
4. Items for service provision (tablets, commodities, medication, consumables, registers) to be available for access by each tent.

Table 1.2: Checklist of items required per day of service provision

Carried by team in a trunk			
Equipment	Consumables		Documents
Electronic tablets (4)	Paper forms, logs	Sharps bins	Protocol
Scale	Sputum jars	Gloves	Manual of Operations
Pedal bins	HbA1c kits	Needles	SOPs
Stadiometer	Haemocue kit	Vacutainers	Poster
Trunks	HIV OMT kits	Stationary	Consent Forms
Infrared thermometers	HIV BBT kits	Surgical masks	Laboratory request forms
Headphones	COVID-19 swab kit	Hand sanitiser	
HbA1c machine	Cooling box	Cleaning bleach	
Digital sphygmomanometer and cuffs (small, medium and large size)	Batteries	Alcohol wipes	
Haemocue machine	Participant cards		
Pulse oximeter			

1.4 ICAROZ team

A team comprises a minimum of two nurses and two trained assistants.

1.4.1 Responsibilities of all team members

Members of the ICAROZ team should:

- Work as a team, shift tasks and triage as appropriate to ensure the most efficient and effective delivery of services.
- Maintain a clean, tidy and well-organised working area and ensure that commodity supplies are maintained.
- Understand and have a thorough knowledge of the project and the intervention procedures as laid out in the SOPs, and the Manual of Operations respectively.
- Be familiar with the health facility they are providing services in.
- Communicate effectively with the administration, clinical director, nurse in charge and IPC team at the respective health facility
- Be aware of the services provided at surrounding clinics to make appropriate referrals if needed.
- Be familiar with the community-based organizations (CBOs), non-governmental organizations (NGOs) and other stakeholders providing health and other services to ensure effective referrals.
- Maintain an up-to-date list of relevant referral organisations.
- Keep the resources and IEC materials up to date.
- Seek advice from the team coordinator if they encounter any situation they don't feel comfortable handling.
- Record data and maintain documentation as per the Manual of Operations.
- Attend debrief meetings and training.
- Be responsible for their safety and the safety of clients.
- Interact with clients respectfully and ensure confidentiality is maintained at all times.

- Ensure clients understand what services are available and remind them that uptake of any or all services is their choice to make.

While the whole team will be responsible for service delivery and there will be overlap of roles, there will be certain tasks that will be the primary responsibility of specific team members. These are laid out below.

1.4.2 Role of assistants

- Work in the reception area and guide clients through the registration process.
- Manage the orderly flow of clients to health check-up tents, according to the order in which they attend (based on the order of arrival of clients).
- Explain the services to clients in the waiting area.
- Provide condoms in the waiting area.
- Supervise clients when they self-administer the mental health screening (either paper or audio-based using an electronic table).
- Measure weight and height according to the SOP.
- Measure blood pressure according to the SOP.
- Perform tasks as requested by nurse(s).

1.4.3 Role of nurse

- Ask about past medical history and medication, salt intake, previous SARS-CoV-2 contact, symptoms suggestive of SARS-CoV-2 and/or TB using standardised questionnaire.
- Offer different methods of HIV testing and counselling (HCT) and perform HIV testing using BBTs if requested.
- Perform screening for visual impairment using PEEK acuity application and near vision charts.
- Screen for eligibility for cervical cancer screening.
- Measure haemoglobin (Hb).
- Measure HbA1c.
- Draw blood for creatine testing when applicable.
- Perform nasopharyngeal swab, label sample, fill laboratory referral form and package the sample.
- Perform SARS-CoV-2 antigen test.
- Advise client on how to produce a good quality sputum samples, label sample, fill laboratory referral form and package the sample.
- Refer for appropriate services using the referral forms (except for mental health).
- Ensure that clients with conditions needing urgent attention such as high blood sugars or severe hypertension (especially in pregnancy) are referred as a matter of urgency.
- Provide supportive, non-judgemental IEC regarding screened conditions, particularly after an abnormal finding during screening.
- Consent clients to follow-up calls.
- Compile a list of clients needing referral for mental health and ensure that those with red flags (suicidal ideations and/or hallucinations) are referred urgently.
- Ensure contact information is correct .
- Enter data on services accessed and other data as per Manual of Operations.
- Ensure consistent availability of adequate supplies (commodities, consumables).
- Supervision of assistants.

1.5 Service delivery

The ICAROZ team delivers the OHS at chosen health facilities during working hours starting at 0900hrs until 1500hrs, with the last client consultation slot at 1450hrs. This allows the team to pack up and return to the office by end of day (EOD) and ensures that samples reach the laboratory during working hours. The service provision team is expected to be on-site by 0830hrs to set up. When providing services outside of Harare, the team may stay on-site or near the health facility. Operating times may change accordingly.

Regular and ad-hoc team meetings serve as debrief sessions where any challenges and changes to service delivery are discussed and formally recorded as well as assessing inventory to generate orders of consumables and avoid stock-outs. Training and re-trainings are also held during that time. Finally, the team utilises time away from health facilities to follow up with clients who were either referred to a different health service or who had outstanding laboratory results (i.e., influenza, COVID-19, and tuberculosis).



2. INFECTION PREVENTION AND CONTROL

The purpose of this section is to describe the IPC procedures to be used throughout the interaction with the client. IPC is the responsibility of all staff, including nurses, assistant, drivers, etc.

To be able to facilitate OHS delivery during the COVID-19 pandemic, certain measures must be taken to mitigate the associated risks - both for the ICAROZ team as well as the clients. In addition standard IPC precautions are necessary in any clinical setting to avoid infections with blood born viruses and other infectious agents such as Mycobacterium tuberculosis.

To recap what is known about SARS-CoV-2:

- COVID-19 is a respiratory illness caused by a virus called SARS-CoV-229.
- The virus is spread through aerosols and respiratory droplets (small and large particles) from infected people when they cough, sneeze, or speak. While droplets do not stay in the air for very long and tend to fall to the ground or surfaces within 1-2m, aerosols stay longer in the air and dependent on air flow may travel much further than 1-2m^{29,30}.
- There are specific procedures which have a high risk of producing aerosols. Nasopharyngeal swabs and production of sputum are such procedures.
- Another route of transmission is when a person touches contaminated surfaces and then touches their eyes nose or mouth leading to the transfer of the virus from the surface to the person^{30,31}. Given the route of transmission there are seven important measures to reduce transmission:

- 1** Vaccinations
- 2** Good ventilation
- 3** Face masks
- 4** Social distancing
- 5** Case finding
- 6** Cleaning
- 7** Hand hygiene

Figure 2.1 Main infection prevention and control measures

In health care settings additional measures to reduce transmission are implemented, this refers to the use of personal protective equipment (PPE). The ICAROZ team and clients are asked to wear face masks (see Section 2.1.3) and the ICAROZ team is provided with surgical scrubs which are changed every day. Whilst sometimes 'PPE' is used to refer to such measures, here we are using the term PPE to refer to additional protective clothing and face masks (such as N95 masks) used for aerosol generating procedures.

2.1 Procedures

There are 7 main procedures to be undertaken by ICAROZ staff to maintain COVID-19 risk mitigation.

2.1.1 SARS-CoV-2 Vaccination

Vaccines may reduce transmission and thus are a means to prevent transmission to colleagues and clients³². All staff must have received all required doses for SARS-CoV-2 vaccination prior to working in the field. This includes nurses, assistants and drivers. Currently available vaccines in Zimbabwe include Sinopharm, Sinovac and Covaxin. Initially somebody who had received two doses of vaccine was considered fully vaccinated. However, a third dose has been implemented on December 3rd 2021. In the future other vaccines may become available and may be recommended. Regular boosters may also become necessary.

SARS-CoV-2 vaccination is the most effective way to avoid severe disease and staff will not be allowed to work at ICAROZ unless vaccinated

2.1.2 Ventilation

Good ventilation with high air exchange is extremely important to reduce transmission^{30,33}. This is best achieved by providing services outdoors and ensuring that tent windows are open (without compromising client confidentiality). If the service is provided from dedicated rooms at health facilities, all windows must be kept open at all times to ensure adequate air flow. Clients should be asked to wait outside until their turn, preferentially in an outdoor waiting area.

Aerosol prone procedures such as nasopharyngeal swabs (NPS) and sputum sampling should always be done outside (away from clients who are waiting and patients visiting the health facility). If the service is operated from tents the NPS and sputum sampling tent should be separated from the waiting area and the other two tents.

2.1.3 Face masks

Face masks have been shown to reduce transmission significantly³⁴. This refers to any face masks (including cloth masks). However, surgical masks have a higher filtration potential than the widely available cloths masks currently used in Zimbabwe³⁵.

All clients and all ICAROZ team members should wear face (ideally surgical) masks at all times. If clients attend the service without face masks, they should be provided with a surgical mask by ICAROZ assistants. In addition, clients can be offered two triple layered reusable cloth face masks (DET30 - see Appendix 2) for use in the community. The cloth masks should be provided with the Shona or Ndebele package insert depending on where ICAROZ is operating and client preference. It should be explained that these face masks can be washed by hand with soap and water up to 30 times before their effectiveness is reduced.

Face masks need to be worn so that they cover mouth and nose. They are most effective when fitted properly and when they are not re-used. For example, once removed for lunch, the face mask should be discarded and a new one used.

2.1.2.1 Fitting³⁶

1. Wash hands with soap and water or hand sanitizer before putting on the mask
2. Determine which side of the mask is the front. The coloured side of the mask is usually the front and should face away from oneself, while the white side touches one's face
3. Fix the ear loops over both ears
4. Mould the stiff edge over the bridge of the nose using both hands
5. Secure the mask over the mouth and chin
6. Try to fit it snugly against the sides of the face
7. Make sure one can breathe easily

2.1.2.1 Removal³⁶

1. Clean hands with soap and water or hand sanitizer before touching the mask. Avoid touching the front of the mask. The front of the mask is contaminated. Only touch the ear loops/ties/band.
2. Face mask with ear loops: hold both of the ear loops and gently lift and remove the mask.
3. Throw directly into a dustbin if used during interactions with ICAROZ clients. If the face mask is being used for transport or in the office, one may place it in a safe place (e.g. in a separate compartment in a bag) for re-use.
4. Wash/sanitise hands again.

2.1.4 Social distancing

Avoid close contact (<1-2m) to other people and organize the flow of clients in a way that allows for enough space between them³³. Make sure one also stay at a safe distance from one's colleagues. When going on lunch or tea breaks, do so outside with at least 2m of distance. If social distancing is not possible (for example when sharing a car) one should wear a mask and increase ventilation by opening windows.

2.1.5 Case finding, isolation and quarantine of ICAROZ staff

This section details the procedures and flow of testing and care for SARS-CoV-2 in case an ICAROZ staff member displays symptoms or contact with a positive person both during work and outside of work. It covers:

- Most common symptoms of SARS-CoV-2 (COVID-19)
- What to do if symptoms emerge (when testing is necessary)
- Management of close contacts
- Steps taken if positive and/or symptomatic
- Symptom severity and stigma

2.1.5.1 Symptoms of SARS-COV-2 (COVID-19)³⁷

Cough (mostly dry, no phlegm)	Fever	Tiredness/weakness
Loss of sense of smell/taste	Sore throat	Joint aches and pain
Headache (new onset)	Runny nose	Diarrhoea

Severe symptoms (require medical review)

If you have any of the following symptoms please speak urgently with a medical professional. You will likely need to be reviewed in person

**Shortness of breath (difficulty breathing)
Chest pain
Confusion**

2.1.5.2 What should I do if I have any of the symptoms listed above?

- If you have any of these 9 symptoms you should stay at home and phone your direct line manager
- Find a room / area away from your household members and isolate there until you have spoken with someone and sought advice
- You should not take public transport or go out of the house. This is to prevent you transmitting SARS-CoV-2 to somebody else in case you have it

2.1.5.3 Do I need a SARS-CoV-2 (COVID-19) test if I have symptoms?

- Ideally yes, however for many reasons testing is not always possible or practical so this decision will be made in discussion with your line manager and/or doctor at BRTI
- Your line manager will discuss your case with one of the doctors at BRTI and they will decide if you need to be tested
 - o One of the doctors may call you to discuss your clinical history with you including severity of symptoms and comorbidities (diabetes, hypertension, etc); this is because we know that people with co-morbidities are at increased risk of severe disease
 - o The doctor may ask you about your household members and whether they have symptoms or any co-morbidities. This will help to assess the risk to household members. The discussion will also include the steps you should take to prevent transmission to vulnerable members of your household
 - o If there are concerns regarding your symptoms and the trajectory of your symptoms, we will arrange assessment and potential admission at Parirenyatwa Hospital

To minimise travel and transmission, we will not ask everybody to come to the BRTI office for a test. For example, if you are home, we will advise to attend closest clinic for testing. For somebody with symptoms the first port of call is their line manager. For people with mild or minimal symptoms, the line manager may advise the following:

1. Attend the local clinic for a SARS-CoV-2 antigen test
2. Stay at home and isolate until symptoms resolve for at least 24 hours (i.e. no symptoms for at least 24h)

If the staff member is found to have symptoms while in the office a lateral flow assay (SARS-CoV-2 antigen test) will be done by one of the nurses. Regardless of the result the staff members will be sent home and asked to isolate.

Staff members with a positive SARS-CoV-2 antigen test will be asked to isolate at home for 10 days. After the self-isolation period of 10 days, they can return to work if they have no symptoms for 24 hours.

Staff members who either did not have an antigen test or had a negative antigen test will be asked to stay at home until the symptoms resolve (for at least 24 hours). An antigen test will be performed before they return to work, and they will be allowed back at work if the antigen test is negative. If the antigen test is positive, they will be asked to isolate for another 10 days from the day of the positive test result.

In some circumstances (for example for hospital admission) a SARS-CoV-2 PCR test may be required. This will be facilitated through the ICAROZ service.

If during your home isolation you feel more unwell (i.e. develop shortness of breath, chest pain, etc.) you need to speak to a medical professional. Please contact your line manager or one of the BRTI doctors immediately.

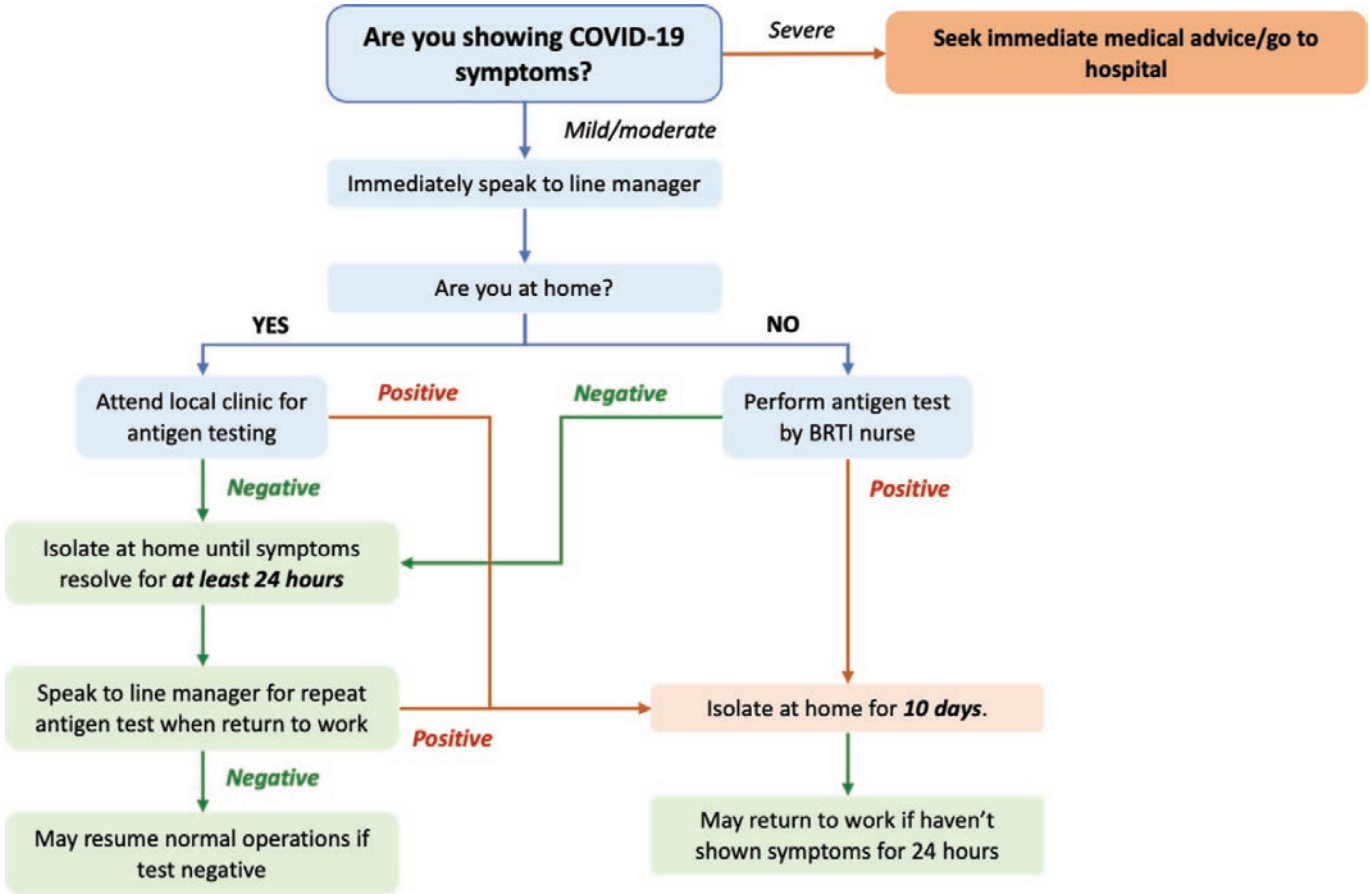


Figure 2.2 Flowchart of procedure if one has respiratory infection symptoms³⁸

If you are presumed to have the infection or have tested positive you must follow the following advice very carefully:



Figure 2.3 Advice if tested positive or presumed infected

2.1.5.4 What is a close contact?

- A close contact is someone who you spent more than 15 minutes in contact with in the two days before your symptoms began, or while you had symptoms and where you were closer than 2 meters apart, not wearing a mask, and indoors.
- This is usually someone who you live with or who you may meet socially e.g., at a bar, at a braai, while playing sports etc. Normally in these situations you will not be wearing a mask.
- If you test positive or are presumed to be positive for COVID-19 it is very important to speak with all those you believe you have had close contact and tell them to take steps to avoid further spread, including:
 - They need to isolate at home for 10 days and follow the advice above in bold as well (social distancing, masks, hand hygiene, etc.)
 - If they are well after the 10 days, then they can return to work.
 - If they develop symptoms, they should isolate for another 10 days after symptom onset.

2.1.5.5 Do my close contacts need testing?

- Although testing is very helpful it is not always required and especially in Zimbabwe, where there are shortages of testing kits and laboratory resources, testing must be prioritised for when it helps to make a decision,
 - **If someone has symptoms suggestive of SARS-CoV-2 infection after a close contact** (i.e., household member), then they can be presumed to have the infection and testing would not change the plan.
 - They need to isolate at home for 10 days after developing symptoms.
- A negative test one day does not stop a positive test from occurring the next day, so it is important to stay vigilant even after a negative test.
 - If any symptoms begin after a close contact someone must assume they are positive for the virus.

2.1.5.6 How long should I stay off work?

- You should stay off work for a minimum of 10 days from a positive test result.
 - If you are feeling well (for at least 24 hours) after the 10 days, you can return to work.
 - If you are still symptomatic then you need to continue to stay off work until you have 24 hours of no symptoms. You may require a negative test before returning to work.
 - Please discuss with your line manager on day 9 if you are still having symptoms.
- If you were not tested or had a negative PCR or antigen test, you should stay at home until your symptoms resolve (no symptoms for at least 24h)

2.1.5.7 What if I feel more unwell after I have a positive test?

- For most people symptoms are mild (fever, headache, fatigue, sore throat, cough) and require bed rest, fluids, and paracetamol (for pain and fever).
- A small number of people may become more unwell around day 7 of symptom onset. Therefore it is important to keep in contact with your line manager or the doctors at BRTI.
 - If you feel more unwell, we need to know as soon as is possible as you may require a medical assessment or admission.
 - We are particularly concerned about difficulty in breathing as this can indicate more severe disease. Please let us know immediately if this happens to you.

2.1.5.8 What if I am subjected to stigma by my team members, family members, community members? What if I feel extremely worried or afraid?

- SARS-CoV-2 is a virus belonging to a family of viruses that cause runny nose and sore throat. You should not feel embarrassed or ashamed because you have become infected. As you know, many millions across the world have become infected with SARS-CoV-2. It difficult to know where you “caught” SARS-CoV-2 as some people carry the virus without any symptoms.
- Most people with SARS-CoV-2 infection have mild symptoms or no symptoms at all. Try not to worry about it. Look after yourself in the same way you would with any other illness.
- Stay in contact with other people by phone while you are isolating.
- Please discuss any issues regarding stigma with your line manager.
- In addition, if you feel you would benefit from counselling, please discuss with your line manager who will refer you to CSU through the ICARoz programme.

2.1.6 Cleaning

2.1.6.1 Dedicated scrubs

All staff should wear scrubs, which should be changed at the end of each day. Staff should avoid taking the scrubs home. At the end of each day the scrubs should be disposed into a waste bag and handed to the designated staff member for machine washing at high temperature.

2.1.6.2 Surface cleaning

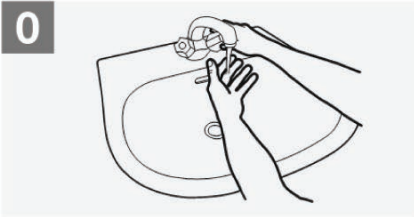
- Frequent cleaning of surfaces (especially those touched by many people such as door handles) is extremely important. Cleaning should be done with 0.5% hypochlorite (bleach, equivalent to 5000 parts per million). Make sure the bleach solution has been made up less than 30 days ago. The solution should not be exposed to light (this is the reason why the bottles are painted black). Hypochlorite may cause skin irritation and can ruin your clothes. Please use gloves when cleaning.
- Cleaning in the field should be done with disposable paper hand towels.
- Cleaning of electronic devices should be done with 70% alcohol (preferably a solution without glycerine) dependent on the device.
- All surfaces i.e., tables, chairs should be cleaned every day prior to starting work (with 0.5% hypochlorite or 70% alcohol) and after each client has been attended to all equipment and surfaces and surfaces should be cleaned again (e.g. chair, tables, BP machine, HbA1c machine)

2.1.7 Hand washing

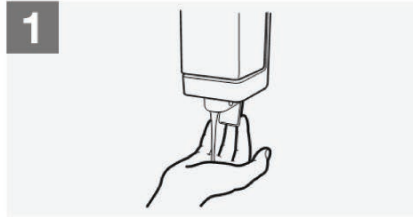
All staff should wash their hands regularly with soap and water, including between each client and the start and end of every day, as shown in Figure 2.2. If soap and water are not readily available, an alcohol-based hand sanitizer that contains at least 70% alcohol can be used (Figure 2.3).



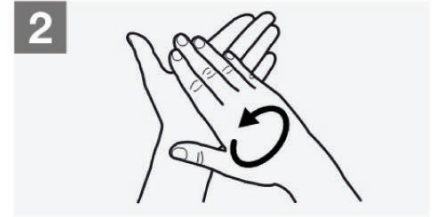
Duration of the entire procedure: 40-60 seconds



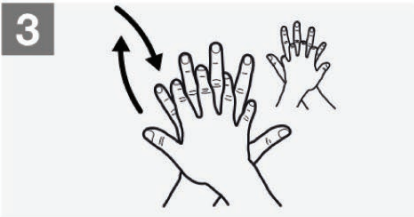
0 Wet hands with water;



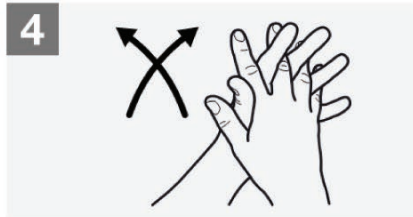
1 Apply enough soap to cover all hand surfaces;



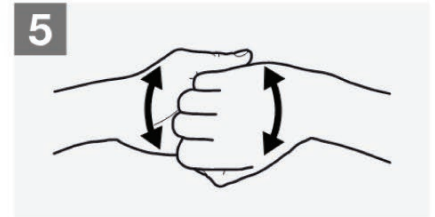
2 Rub hands palm to palm;



3 Right palm over left dorsum with interlaced fingers and vice versa;



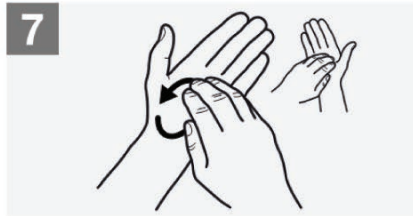
4 Palm to palm with fingers interlaced;



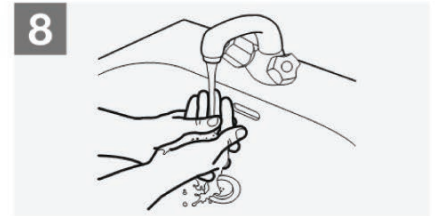
5 Backs of fingers to opposing palms with fingers interlocked;



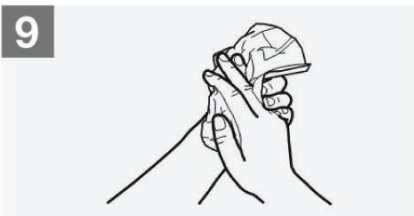
6 Rotational rubbing of left thumb clasped in right palm and vice versa;



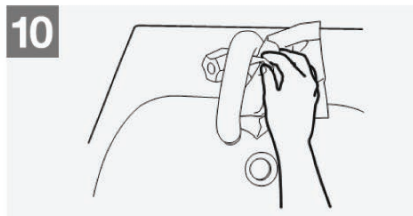
7 Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



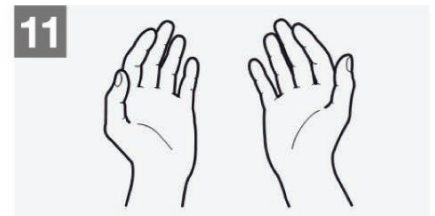
8 Rinse hands with water;



9 Dry hands thoroughly with a single use towel;



10 Use towel to turn off faucet;



11 Your hands are now safe.

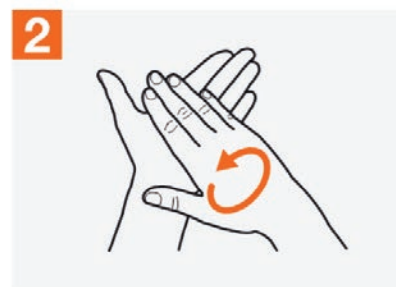
Figure 2.4 Hand washing (WHO)³⁹

2.1.8 Hand sanitizer use

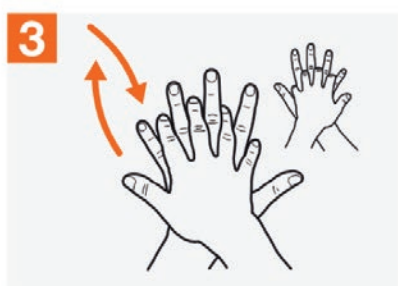
 **Duration of the entire procedure: 20-30 seconds**



Apply a palmful of the product in a cupped hand, covering all surfaces;



Rub hands palm to palm;



Right palm over left dorsum with interlaced fingers and vice versa;



Palm to palm with fingers interlaced;



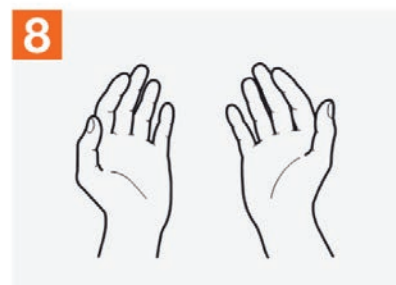
Backs of fingers to opposing palms with fingers interlocked;



Rotational rubbing of left thumb clasped in right palm and vice versa;



Rotational rubbing, backwards and forwards with clasped fingers of right hand in left palm and vice versa;



Once dry, your hands are safe.

Figure 2.5: Hand rubbing (WHO)39

2.1.9 Personal protective equipment

Gloves should be worn by nurses when they perform finger prick testing or draw bloods. Also staff should wear gloves when packaging samples for TB and SARS-CoV-2 testing. Additional PPE over and above surgical face masks and scrubs (except gloves, as above) is only necessary when performing aerosol prone procedures. When performing aerosol prone procedures PPE should include an N95 (or FFP2) mask, a disposable surgical gown or plastic apron and gloves. A face shield or goggles are mandatory if the procedure is aerosol producing⁴⁰. All staff performing aerosol generating procedure should have undergone mask fitting. N95 masks can be used for several hours (and over several days) by one member of staff, provided they are stored safely between usage⁴⁰. The fitting and removal of N95/FFP3 masks follows the procedures outlined in Section 2.1.3.

2.1.9.1 Fitting

Steps to put on personal protective equipment (PPE) including gown

1 Remove all personal items (jewelry, watches, cell phones, pens, etc.)



2 Put on scrub suit and rubber boots¹ in the changing room.

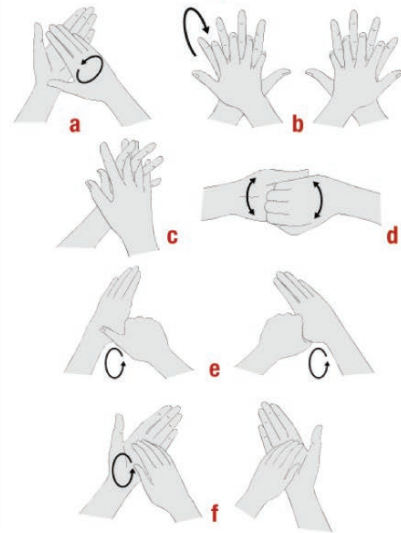


3 Move to the clean area at the entrance of the isolation unit.

4 By visual inspection, ensure that all sizes of the PPE set are correct and the quality is appropriate.

5 Undertake the procedure of putting on PPE under the guidance and supervision of a trained observer (colleague).

6 Perform hand hygiene.



7 Put on gloves (examination, nitrile gloves).



8 Put on disposable gown

made of fabric that is tested for resistance to penetration by blood or body fluids
OR to blood-borne pathogens.



9 Put on face mask.



10 Put on face shield OR goggles.



OR



11 Put on head and neck covering surgical bonnet covering neck and sides of the head (preferable with face shield) OR hood.



OR

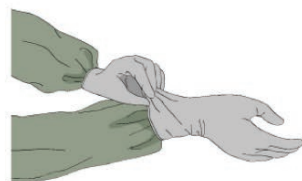


12 Put on disposable waterproof apron

(if not available, use heavy duty, reusable waterproof apron).



13 Put on second pair of (preferably long cuff) gloves over the cuff.



¹ If boots are not available, use closed shoes (slip-ons without shoelaces and fully covering the dorsum of the foot and ankles) and shoe covers (nonslip and preferably impermeable)

Figure 2.6 PPE fitting order⁴⁰

2.1.9.2 Removal

Steps to take off personal protective equipment (PPE) including gown

1 Always remove PPE under the **guidance and supervision of a trained observer** (colleague). Ensure that infectious waste containers are available in the doffing area for safe disposal of PPE. Separate containers should be available for reusable items.

2 Perform **hand hygiene** on gloved hands.¹

3 Remove **apron** leaning forward and taking care to avoid contaminating your hands. When removing disposable apron, tear it off at the neck and roll it down without touching the front area. Then untie the back and roll the apron forward.



4 Perform **hand hygiene** on gloved hands.

5 Remove **outer pair of gloves** and dispose of them safely. Use the technique shown in Step 17

6 Perform **hand hygiene** on gloved hands.

7 Remove **head and neck covering** taking care to avoid contaminating your face by starting from the bottom of the hood in the back and rolling from back to front and from inside to outside, and dispose of it safely.



OR



9 Remove the **gown** by untying the knot first, then pulling from back to front rolling it from inside to outside and dispose of it safely.



8 Perform **hand hygiene** on gloved hands.

10 Perform **hand hygiene** on gloved hands.

11 Remove **eye protection** by pulling the string from behind the head and dispose of it safely.



OR



12 Perform **hand hygiene** on gloved hands.

15 Remove **rubber boots** without touching them (or overshoes if wearing shoes). If the same boots are to be used outside of the high-risk zone, keep them on but clean and decontaminate appropriately before leaving the doffing area.²

16 Perform **hand hygiene** on gloved hands.

13 Remove the **mask** from behind the head by first untying the bottom string above the head and leaving it hanging in front; and then the top string next from behind head and dispose of it safely.



14 Perform **hand hygiene** on gloved hands.

17 Remove **gloves** carefully with appropriate technique and dispose of them safely.



18 Perform **hand hygiene**.

¹ While working in the patient care area, outer gloves should be changed between patients and prior to exiting (change after seeing the last patient)

² Appropriate decontamination of boots includes stepping into a footbath with 0.5% chlorine solution (and removing dirt with toilet brush if heavily soiled with mud and/or organic materials) and then wiping all sides with 0.5% chlorine solution. At least once a day boots should be disinfected by soaking in a 0.5% chlorine solution for 30 min, then rinsed and dried.

Figure 2.7 PPE removal order⁴⁰

1. Ensure that infectious waste containers are available in the doffing area for safe disposal of PPE. Separate containers should be available for reusable items.
2. Remove apron leaning forward and taking care to avoid contaminating your hands. When removing disposable apron, tear it off at the neck and roll it down without touching the front area. Then tear at the sides to release the back and roll the apron forward.
3. Remove eye protection by pulling the elastic from behind and over the head and put aside for disinfection.
4. Remove the mask from behind the head by first pulling the bottom elastic from behind over the head and leaving it hanging in front. Then pull the top elastic from behind and over the head to take the mask clear of your face. Dispose of it safely. Masks with ear-loops should be disposed by pulling both loops over the ears and forwards to bring the mask clear of the face.
5. Remove gloves carefully with appropriate technique and dispose of them safely. Pinch and hold the outside of the glove near the wrist area. Peel downwards, away from the wrist, turning the glove inside out. Pull the glove away until it is removed from the hand and hold the inside-out glove with the gloved hand. With your un-gloved hand, slide your finger/s under the wrist of the remaining glove, taking care not to touch the outside of the glove. Again, peel downwards, away from the wrist, turning the glove inside out. Continue to pull the glove down and over the inside-out glove being held in your gloved hand. This will ensure that both gloves are inside out, one glove enveloped inside the other, with no contaminant on the bare hands. Wash hands again at the end of the process.

(Figure 2.6)

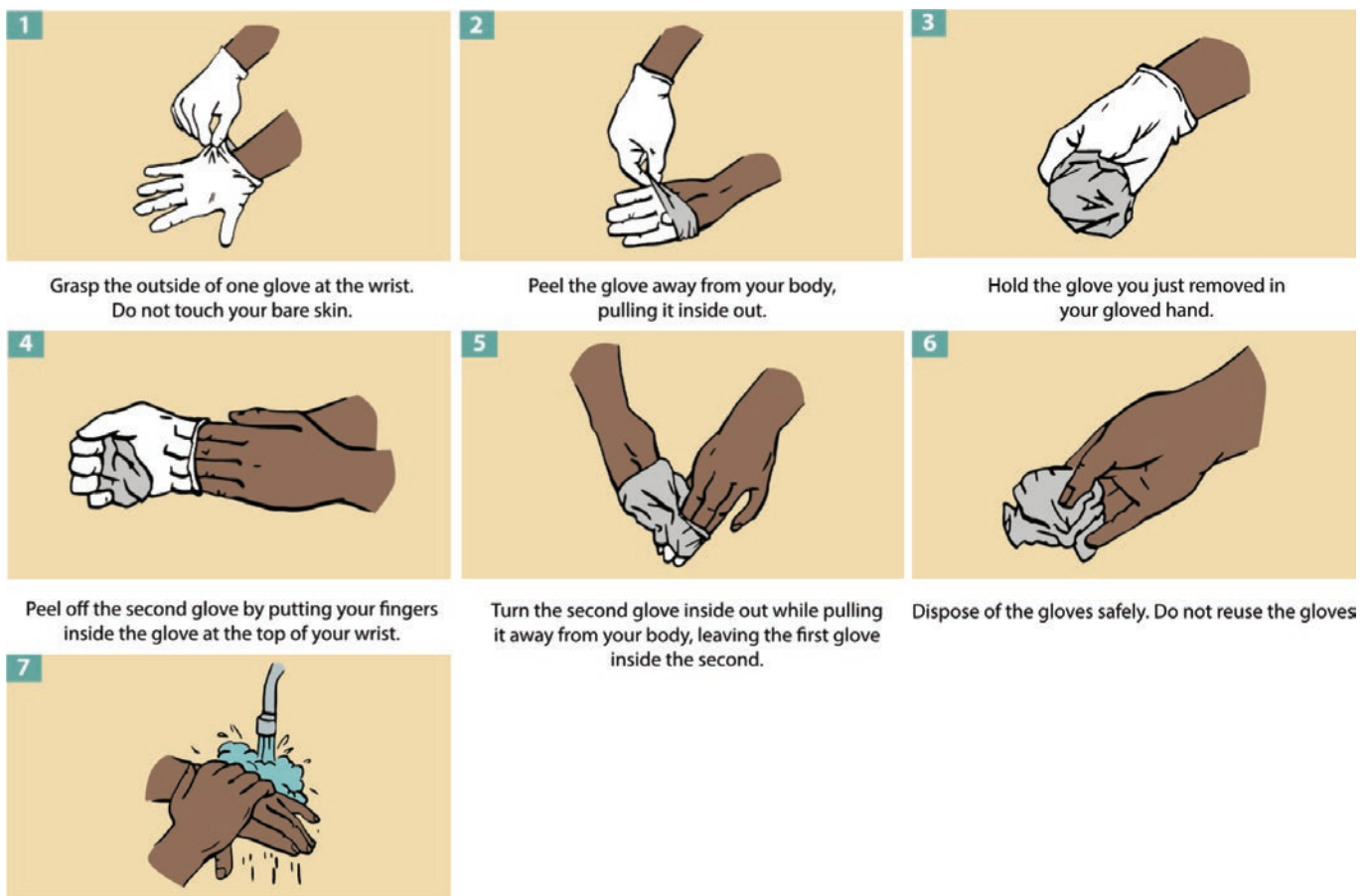


Figure 2.6: Glove removal⁴⁰

2.2 PPE for activities

Table 2.1 PPE for ICAROZ activities

Activity	Target personnel	PPE or procedure
Reception, enquiries, and information dissemination	Assistant	<ul style="list-style-type: none"> • Make sure all clients wear face masks (covering mouth and nose) • Fluid-repellent surgical mask • Hand hygiene • Physical distancing of 1-2 m
Registration tent Results collection	Assistant	<ul style="list-style-type: none"> • Fluid-repellent surgical mask • Hand hygiene • Cleaning and disinfecting surfaces • Physical distancing of 1-2 m
Screening tent	Nurses	<ul style="list-style-type: none"> • Fluid repellent surgical mask • Gloves (whilst doing finger-prick or blood sampling / handing specimens) • Hand hygiene • Cleaning and disinfecting surfaces
Samples collection (NPS and Sputum)	Nurses and assistants	<ul style="list-style-type: none"> • N95 face mask • Gloves • Disposable plastic apron • Face shield / goggles • Hand hygiene • Cleaning and disinfecting surfaces
Specimen transportation	Drivers	<ul style="list-style-type: none"> • Gloves (only when handling the specimen) • Fluid repellent surgical mask • Hand hygiene
Packing and unpacking equipment, trunks, tents etc	Nurses and assistants	<ul style="list-style-type: none"> • Fluid repellent surgical mask • Hand hygiene
Waste disposal	Assistants, nurses, driver	<ul style="list-style-type: none"> • Fluid repellent surgical mask • Plastic apron • Gloves • Hand hygiene



3. DATA COLLECTION AND MANAGEMENT

3.1 Data Collection

Electronic CRFs (eCRF) were designed to capture socioeconomic data, past medical history, uptake of service, results of screening results and whether a person was referred using SurveyCTO, a secure electronic mobile data collection and management system which is loaded onto tablets⁴¹. Collected data is uploaded to a secure Cloud Server hosted by SurveyCTO.

Upon arrival to the ICAROZ site, each client receives a unique ID number with a specific ICAROZ card, which includes the official phone number for the team in case the client needs to contact ICAROZ. By bringing this card with them, clients can also be identified as repeat visitors. The registration and booking process is shown in **Figure 3.1**.

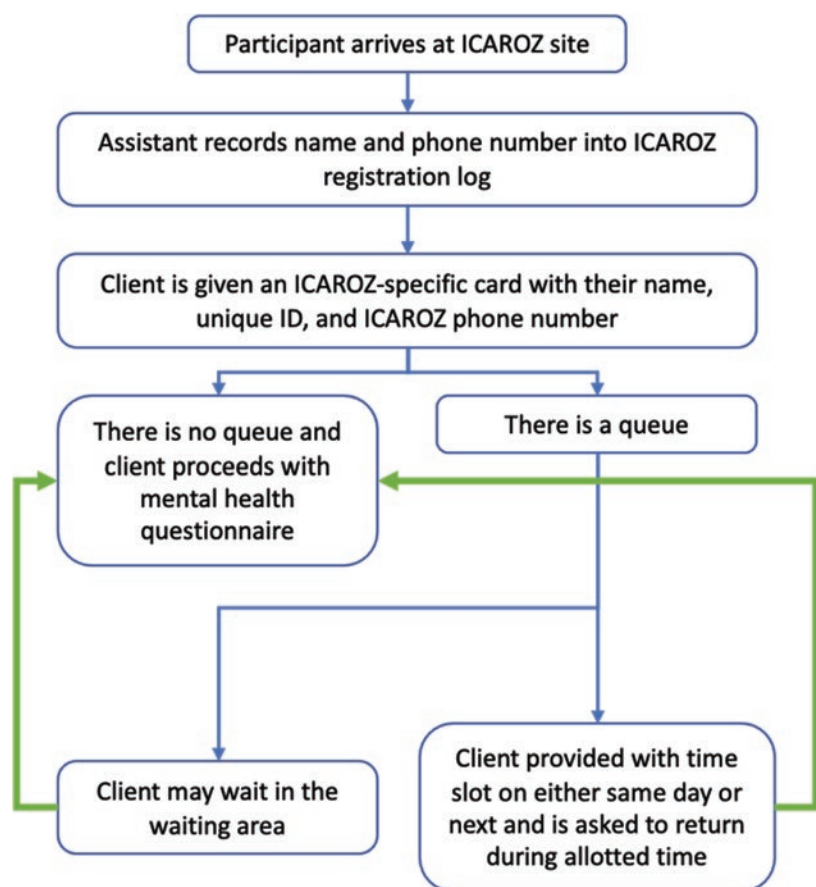


Figure 3.1 Flow of registration and booking process at ICAROZ

Data is entered into the tablets by ICAROZ nurses and assistants who have received training in electronic data entry. The mental health screening is self-administered either on a paper-form or on an electronic tablet supported by audio recordings. If the mental health screening is completed using a paper questionnaire, the paper questionnaire is labelled with the client's ICAROZ ID, and the scores are checked by the assistant and/or nurse to identify those needing referral for counselling. The paper-based questionnaire is entered into SurveyCTO in the data office. If the mental health screening is completed using audio-assisted questionnaires, the client answers the questions directly on an electronic table, which is handed to the assistant when complete. The assistant notes the scores and red flags for each of the mental health screening tools to facilitate referral.

Form R01 and R02, which cover questions related to medical history and any testing or screening that is undertaken at ICAROZ along with results of point-of-care tests are entered by the ICAROZ nurses into SurveyCTO. There are however some services that require laboratory testing which need following up as well as referrals and linkage to care follow-ups. For these services, results and follow-up are recorded on paper forms and then transferred onto the database by the data team as explained in Section 3.1.1

3.1.1 Test results

There are currently three tests that require sending a sample to a laboratory for testing:

1. **Sputum** samples for tuberculosis tests
2. **NPS** samples for SARS-CoV-2 testing (and influenza)
3. **Blood** samples for creatinine test (U&Es)

Optionally ICAROZ services could include STI testing in which case urine samples would be sent off for CT/NG testing.

In the case that a client provides a sputum sample or a NPS sample taken, that information is recorded onto form R01 and a separate laboratory referral form. Results are then entered onto a paper form by the laboratory staff and transferred into SurveyCTO by the central data team. ICAROZ staff are responsible for contacting the client and informing them of their results and providing any relevant IEC.

3.1.2 Referrals and linkage to care

As referrals and linkage to care are a main pillar of the ICAROZ service, there is a procedure and forms in place for how to refer and track linkage to care. This is further explained in Chapter 14.

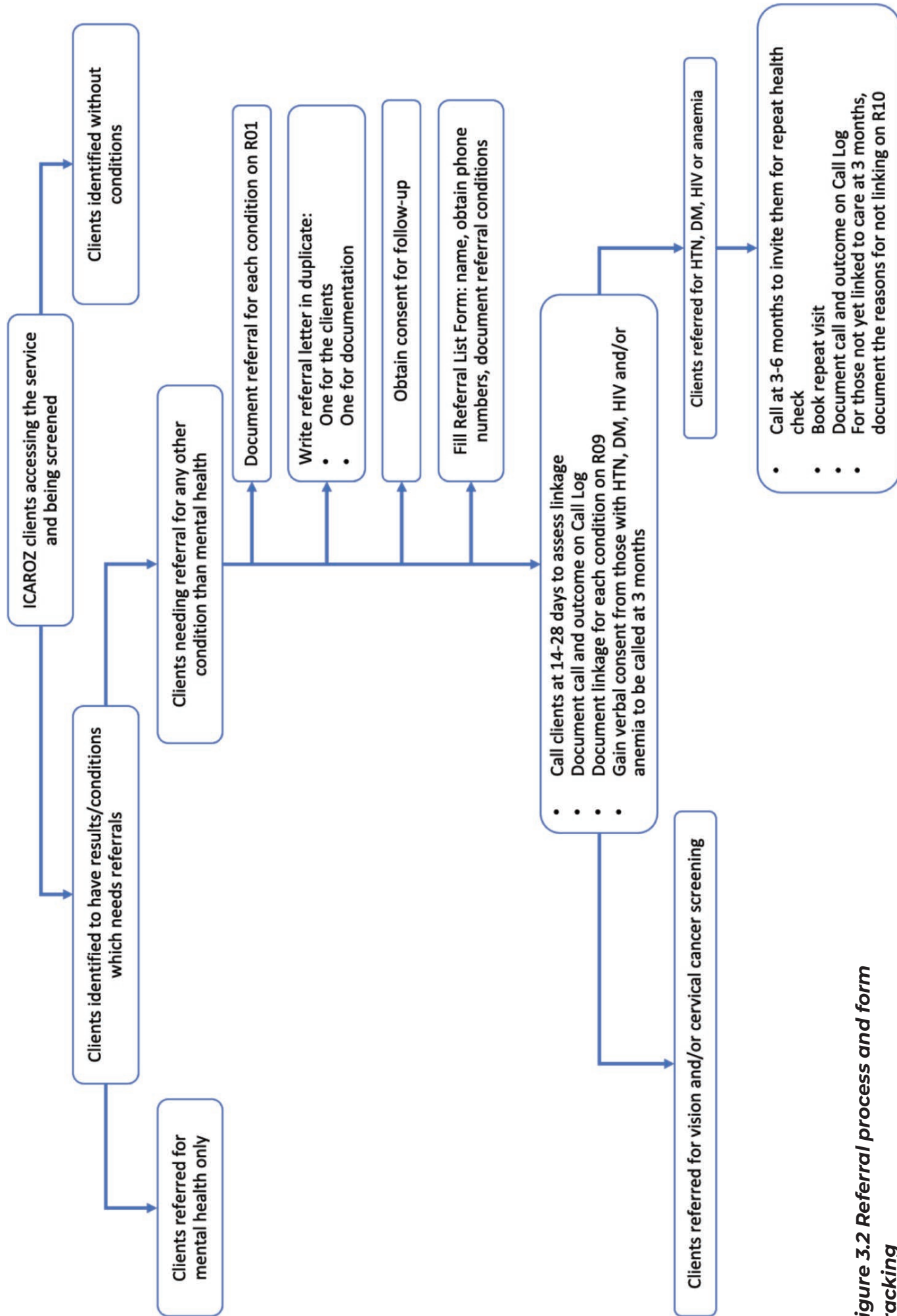


Figure 3.2 Referral process and form tracking

3.2 Data Management

The data management system incorporates consistency checks. The uploaded data is extracted from the SurveyCTO server, and further processed and saved to a Microsoft SQL Server hosted at Biomedical Research and Training Institute (BRTI), before being exported to a statistical software for analysis. All clients enrolled have names and phone numbers recorded on a hard-copy client log, which is kept separately from the data and is kept under lock to ensure identifiable information remains confidential. This information is only used to send back results, for referrals calls, and for follow-up calls.

The clients are identified by a unique identification number or code (IC____). Any other identifiable information is removed from all data files before statistical analysis.

An encrypted email and password protected documents (if any) are used to refer clients for mental health care from BRTI to CSU. To ensure linkage to care, CSU fills out a form with the client's ICAROZ number (IC____) and returns it to BRTI.

Quality control is applied at each stage of data handling in accordance with Good Clinical Data Management Practice requirements. All ICAROZ staff are trained in Good Clinical Practice.



SECTION 2

Services at ICAROZ



4. MENTAL HEALTH

This section describes all procedures and steps taken to assess mental health status of clients accessing the OHS. In this context, mental health refers to the psychological and emotional well-being of HCWs in Zimbabwe during the COVID-19 pandemic. Due to the added stress of operating in an already overstretched healthcare system during a pandemic, it is important to assess HCW's mental health and refer them to appropriate care if needed⁴. Intimate partner violence (IPV) is a major risk factor for mental health and IPV has increased during the COVID-19 pandemic^{4,2}.

4.1 Procedures






Mental health and violence screening are the first services offered to clients. The assistant explains the different questionnaires and asks the client if he/she has any questions and agrees to the screening.

The screening questionnaires are self-administered either using paper-based questionnaires or electronic tablets with recorded questions (audio-assisted). All questionnaires are available in Shona, Ndebele and English. The assistants are available in case the client has any questions or needs assistance. While the client completes the screening questionnaires on their own, the results (scores above or below cut point, red flags) are collected by the assistant. Any results requiring referrals (high scores, red flags) are communicated to the nurse.

4.1.1 Equipment and materials needed

Before beginning assessment, ensure that the following materials are available:

Table 4.1 Equipment and materials for mental health screening

	<p>Tablet and headphones (with auxiliary cord)</p> <ul style="list-style-type: none"> SSQ-14, GAD-7, intimate partner violence (IPV) sections of DHS, workplace violence sections of WHO questionnaire loaded onto the tablet
	<p>Paper based SSQ-14, QAD-7, IPV sections of DHS, workplace violence sections of WHO questionnaire</p>
	<p>Pen</p>
	<p>Data collection paper CRF</p>
	<p>Antibacterial wipes</p>

4.1.2 Mental health screening

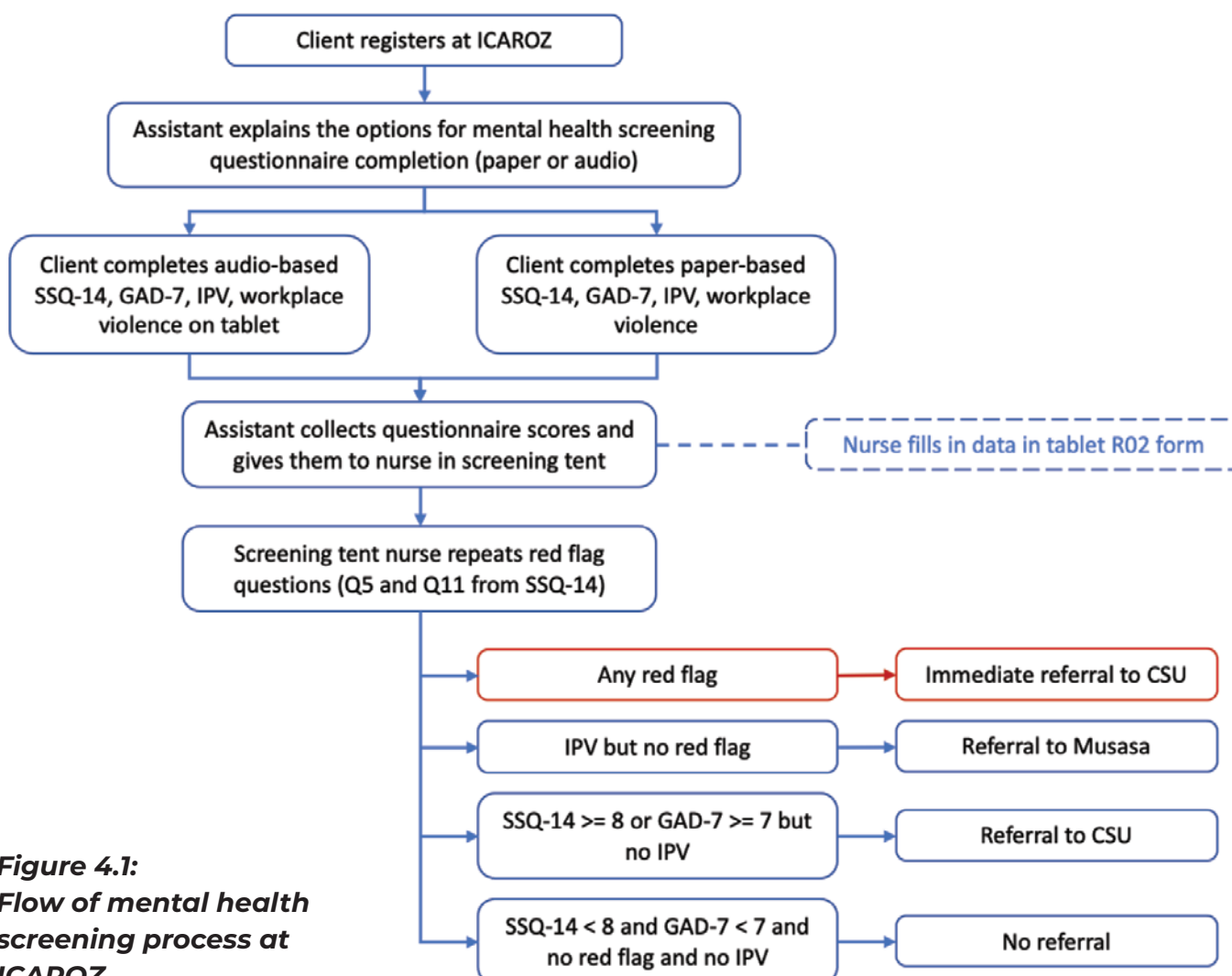


Figure 4.1:
Flow of mental health screening process at ICARoz

4.1.2.1 SSQ-14

The Shona Symptom Questionnaire (SSQ-14) is a 14-item mental health screening tool developed in Zimbabwe and used to measure common mental health disorders which has been validated in English and Shona¹³. The questions cover symptoms of depression and anxiety, with response options “yes” (scored 1) and “no” (scored 0). At ICAROZ, a cut-off score of 8 is used for referrals for mental health issues to counselling services. The nurse repeats questions 5 and 11 from the SSQ-14 to assess presence of red flags (see below for details). In the presence of any red flags, the client is immediately referred by phone or WhatsApp.

4.1.2.2 Red flags

When the client enters the screening tent with a nurse after having completed the SSQ-14, GAQ-7, IPV, and workplace questionnaires on the tablet or on paper form, the completed questionnaire is handed to the nurse who calculates final scores. The nurse repeats questions 5 and 11 from the SSQ-14 to assess presence of red flags before entering those results onto the R01 form.

Q5: Did you sometimes see or hear things others could not see or hear?

Q11: Did you sometimes feel like committing suicide?

A red flag in this context refers to mental conditions that require immediate attention as they may put the client’s life or a person’s life in the client’s entourage at risk.

4.1.2.3 GAD-7

Alongside the SSQ-14, clients also fill the Generalised Anxiety Disorders assessment questionnaire (GAD-7) which provides more information about anxiety specifically (the most common form of mental health disorder; and particularly common among healthcare workers during the COVID-19 pandemic)¹⁴. Response options are “not at all,” “several days,” “more than half the days,” and “nearly every day,” scored as 0, 1, 2, and 3, respectively across a the 7-item questionnaire. The cut-off score at ICAROZ for referral to mental health services is 10.

4.1.2.4 Intimate partner violence

Intimate partner violence (IPV) is assessed at ICAROZ by using the relevant sections from the Demographic Health Survey (DHS) questionnaire¹⁶. Questions address the client’s at-home living situation and include yes/no questions as well as questions with response options “never”, “once or twice”, “a few times”, “many times”. IPV is assessed in women only. A client is referred to CSU immediately if they display any of the below red flags but to Musasa if they display signs of intimate partner violence.

If client answers ‘once or twice/a few times/many times’ to any of the following in the last 12 months, refer to CSU immediately for severe violence.

- Punch you with his fist or with something that could hurt you?
- Kick you, drag you, or beat you up?
- Try to choke you or burn you on purpose?
- Threaten or attack you with a knife, gun, or any other weapon?

If client answers ‘once or twice/a few times/many times’ to any of the following in the last 12 months, refer to CSU immediately for sexual violence.

- Physically force you to have sexual intercourse with him even when you did not want to?
- Physically force you to perform any other sexual acts you did not want to?
- Force you with threats or in any other way to perform any sexual acts you did not want to?

4.1.2.5 Workplace violence

Workplace violence is assessed at ICAROZ by using an adapted version of the WHO Workplace Violence in the Health Sector questionnaire¹⁵. Questions address the client's experience of violence in the workplace and has yes/no questions as well as questions with response options "patient/client", "relative of patient/client", "staff member", "management/supervisor". Clients who report physical assault, verbal abuse, bullying, sexual or racial harassment will be offered counselling and be referred to CSU.

4.1.2.6 Data collection using tablet

When the mental health and violence questionnaires are completed using audio-assisted electronic tablets, the tablet calculates scores and displays the following information:

SSQ-14 score ≥ 8 : yes/no

GAD-7 score ≥ 10 : yes/no

SSQ-14 item 5 (Did you sometimes see or hear things others could not see or hear?): yes/no

SSQ-14 item 11 answer (Did you sometimes feel like committing suicide?): yes/no

Experience of severe intimate partner violence in past 12 months: yes/no

Experience of sexual intimate partner violence in past 12 months: yes/no

Experience of workplace violence in past 12 months: yes/no

The nurse enters this information onto the R01 form when the clients enters the nurse's tent.

4.2 Referrals

The Counselling Services Unit (CSU) is a registered non-governmental health facility established in 2003 and based in Harare. Its mission is to provide non-partisan medical, psychological, and legal rehabilitation services to all victims of organized violence and torture. CSU activities include: tele and in-person counselling (individual, family, group, couple, etc.); medical treatment; call centre facility (linking victims to the appropriate services, internally and externally); research; legal assistance; craft therapy; training; and documentation (compilation of the clients' medico-psychosocial records). CSU places importance on the value of holistic care, considering not only symptom reduction, but other circumstantial influences that may include improving quality of life, community participation, and social and family relationships. To best accomplish this, CSU often partners with other human rights organizations, including the Zimbabwe Human Rights NGO Forum - a coalition of 21 human rights NGOs in Zimbabwe. CSU is a member of the International Rehabilitation Council for Torture Victims (IRTC).

The Musasa Project is a non-governmental organisation that was set up in 1988 to deal with issues of violence against women and girls. It provides relief to survivors of gender-based violence. Its mission is to work towards ending gender-based violence, with particular focus on women and girls targeting groups in society to change retrogressive beliefs, attitudes, behaviours, laws, and policies in order to end gender-based violence. Musasa activities include: a 24-hour toll-free national helpline, counselling, legal aid, medical assistance, shelters, livelihoods and economic empowerment, advocacy for gender equality and women's empowerment, emergency response and conflict prevention.

All clients should be informed about the results of the mental health screening and what it means. Clients with SSQ ≥ 8 , GAD ≥ 10 , a relevant answer to the above mentioned IPV or workplace violence questions within the last 12 months or with red flags should be offered referral for counselling, either to CSU (SSQ ≥ 8 , GAD ≥ 10 , SSQ red flag or workplace violence)

or to Musasa (IPV). Those with red flags should be urgently referred to CSU. Those with IPV and other mental health needs, but not red flag, should be referred to Musasa. Counselling for mental health conditions or workplace violence is provided by CSU) by telephone or WhatsApp/Facetime. If a client agrees to counselling, they should be advised that a CSU counsellor will contact them by phone and that no costs will be incurred by the client (if necessary, data bundles will be made available to the client when CSU contacts them). Because counselling is provided proactively (i.e., the client is contacted by CSU), it is extremely important to check that the telephone number provided by the client is correct and that more than one telephone number is available for each client. Counselling for IPV is provided by Musasa by telephone or WhatsApp/Facetime. Clients will be given a toll-free number to call.

Clients displaying red flags (suicidal thoughts or seeing/hearing things others couldn't) must be referred immediately as they could pose a danger to themselves. This should be done via encrypted email to CSU then immediate notification or follow-up through the CSU WhatsApp group or by calling CSU.

Clients referred to CSU or Musasa without red flags will be contacted within 72h. Multiple contact attempts will be made. Linkage to care is discussed further in Chapter 14. All clients should provide verbal consent to be referred and to be contacted by the ICAROZ team at a later date to assess linkage to care. Clients are specifically asked if they want to be referred and only those who agree are referred. Also when clients are contacted by CSU or Musasa, it is confirmed that they want to receive the service.

4.3 Forms completed

The ICAROZ assistant enters mental health questionnaire results on a paper slip to be given to the nurse in the screening tent if the client has completed the questionnaires on the tablet. Otherwise, the client enters with their completed paper-based mental health screening questionnaire. The nurse will then fill in the results on form R02 and assess if client displays any red flags. Forms to be filled in are:

- Referral form (paper) if applicable
- Screening recording form (R02)
- Paper questionnaire



5. ANTHROPOMETRIC MEASUREMENTS

This section describes the procedures involved in anthropometry (blood pressure, height, and weight). The blood pressure measurements will be used to assess hypertension. Height and weight are then used to assess each client's Body Mass Index (BMI).

Vital signs (pulse rate and rhythm, respiratory rate and peripheral oxygen saturations) are also assessed. Participants with an irregular heart rhythm should be referred.







The responsible individuals for carrying out assessment of blood pressure, pulse rate, height and weight are the assistants. Nurses interpret the results including calculation of BMI to have an informed discussion with the client. Calculation of BMI is additionally done in the database by the data team.

5.1 Procedures

5.1.1 Equipment and materials required

Before beginning assessment, ensure that the following materials are available:

Table 5.1 Equipment and materials for anthropometric measurements

	<p>BP machine (sphygmomanometer) and various sized cuffs</p>
	<p>Relevant data recording tool (tablet form or paper CRF)</p>
	<p>Digital weight scales</p>
	<p>Rigid stadiometer</p>
	<p>Measuring tape</p>
	<p>Antibacterial wipes</p>

5.1.2 General principles

The accuracy of a measurement depends upon whether the instrument is correctly calibrated AND whether the observer measures correctly (i.e., takes, reads, and records the measurement correctly). Staff completing anthropometric assessments should be trained and have refresher training every year. Furthermore, blood pressure measurements must be taken 3 times with the lowest measurement counting for data entry in form R01.

Assistants and nurses must wash or apply alcohol gel to their hands between each client. Where possible, all physical measurements should be conducted in a private area.

5.1.3 Height and weight

5.1.3.1 Measurement of standing height

1. Ensure that the stadiometer is assembled correctly and situated between a level floor and a straight, vertical surface (e.g. wall). The stadiometer should be positioned so that it is touching the wall at the top and bottom end.
2. Explain the procedure to the client.
3. Ask the client to remove their shoes and any hair styling/covering on top of their head (e.g. wig, bun or hat; light fabric head coverings may be left in place).

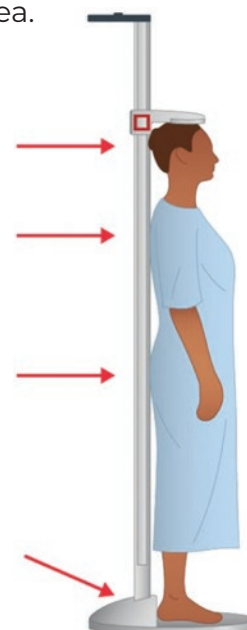


Figure 5.1 Posture for height measurement

4. Ask the client to stand on the stadiometer base with the feet close together on the feet symbols. They should aim to stand upright with the heels, upper and lower back against the stadiometer and look straight ahead (i.e. eyes in line with the ears) (Figure 5.1). Their heels must remain flat on the floor throughout.
5. Ensuring the client is looking straight ahead (it can be helpful to hold their chin between your thumb and forefinger to maintain the correct position), pull down the headboard to rest firmly on top of the head and compress the hair.
6. Read the height to the nearest 0.1 cm.

5.1.3.2 Measurement of weight

1. Ensure that the digital weight measure placed on a hard (not carpeted), level, smooth floor. Check that the scale is reading 0 Kg before each use.
2. Ask the client to remove their shoes and outer layers of clothing (e.g. coats and jumpers) as well as any accessories (such as belts) or items in their pockets (such as mobile phones, keys or money). These items are heavy and may lead to a falsely high reading.
3. Ask the client to stand on the scale looking directly ahead and remain as still as possible. Wait for the scales to stabilise.
4. Read the weight to the nearest 0.1 kg.

5.1.4 Assessment of blood pressure

5.1.4.1 Preparation

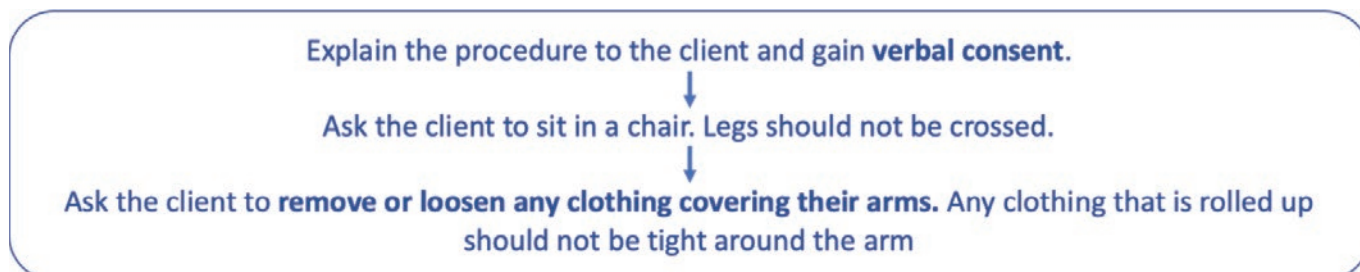




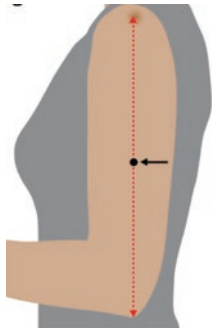
Figure 5.2 Blood pressure measurement preparation

5.1.4.2 Mid-Upper Arm Circumference (MUAC)

MUAC assessment is recommended to determine cuff size for BP measurements 43.

Table 5.2 Procedure to assess MUAC

1	Feel for the acromion (bone at the top of the shoulder) for the left arm	
2	With the client's arm flexed at 90 degrees, palpate for the olecranon (tip of the elbow)	

3	Using a tape measure, measure the distance between the mark at the acromion and the mark at the olecranon. Whilst still holding the tape in place, make a short horizontal line at the mid-point. (i.e. if the tape measure shows that the measured distance between the acromion and olecranon is 32.6cm then the mid-point mark should be drawn at 16.3cm). This line marks the middle of the upper-arm	
Ask the client to relax and to keep their arm hanging by their side or rested in their lap. This is important as a very different reading may be obtained if the arm is not fully relaxed		
Align the measuring tape around the middle of the upper arm as marked previously		
Ensure the tape is horizontal and is not pulled too tight. It should rest on the skin but not indent it		
Record the measurement obtained to the nearest millimetre		
Repeat this process for the right arm		

5.1.4.3 Blood pressure measurement

Blood pressure should be measured three times and after the client has been sitting resting for 5-15 minutes where possible. The lowest measurement shall be used for data entry in form R01 and referral decisions. Ensure clothing covering the upper arm has been removed. If clothing is rolled up to the upper arm, ensure it is not tight.

1. Pick a cuff based on the MUAC measured as above and **Table 5.3**.
2. Align the cuff correctly, with the 'Artery' arrow printed on the cuff aligned with the brachial artery at the front of the elbow joint.
3. Fit the cuff so it fits closely but is not pulled tight on the client's upper arm and secure with Velcro (you should be able to just fit 1-2 fingers between the cuff and the client's upper arm). The bottom edge of the cuff should be 2cm above the front of the elbow joint and the. A well sized cuff should cover 80% of the upper arm.

Table 5.3 Appropriate cuff size selection based on MUAC measurements⁴⁴

Circumference of Upper arm (cm)	Size of cuff
17-22	Small
22-32	Medium
32-42	Large

- Rest the arm (e.g., on the arm of a chair or on the table) so that the cuff is at the level of the heart.
- Ask the client not to move or speak for a minute while the recording is being taken.
- Take three blood pressure readings 5 minutes apart, ideally with at least one reading on each arm. As a minimum, blood pressure should be measured three times on the non-dominant arm. Clients should not be informed of their blood pressure results until the assessment has been completed.

5.1.4.4 Pulse rate and rhythm

The digital sphygmomanometer measures pulse rate (beats per minute) at the same time as the blood pressure is assessed. In addition, if an irregular heart rate is detected (2 or more irregular beats during period of BP measurement), a symbol is displayed on the monitor to indicate this (Figure 5.3).



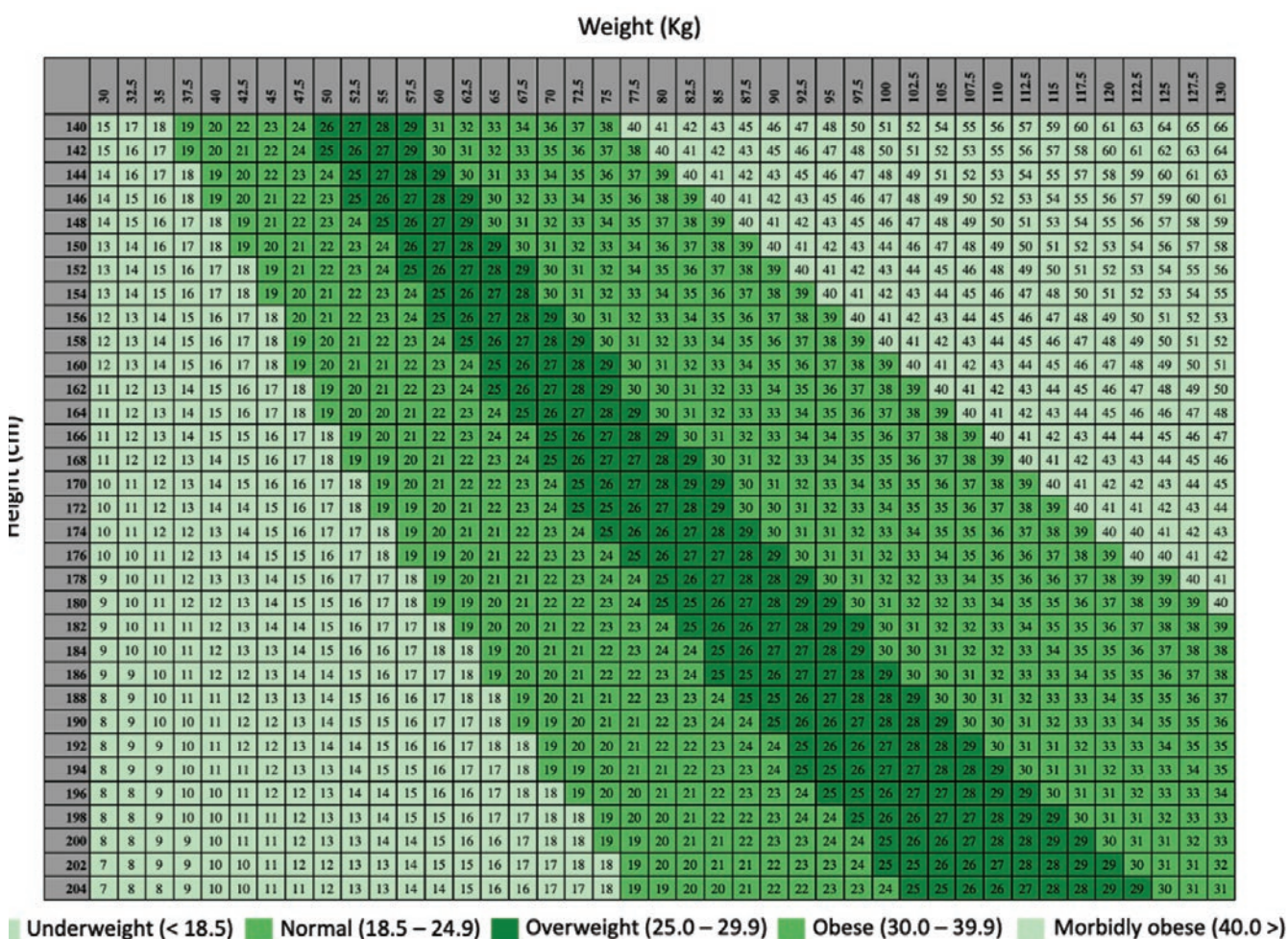
Figure 5.3: Irregular heartbeat symbol

In ICARoz the pulse rate and rhythm are recorded. These should be assessed at the time of measurement of blood pressure rather than via pulse oximeter. Interpretation of vital signs is discussed further below.

5.1.5 Interpretation of results

5.1.5.1 Calculation of BMI

BMI can be calculated from height and weight using the following chart⁴⁵.



Underweight (< 18.5) Normal (18.5 – 24.9) Overweight (25.0 – 29.9) Obese (30.0 – 39.9) Morbidly obese (40.0 >)

Figure 5.3 BMI chart

Clients with BMI <18.5kg/m² are classified as underweight. They should be reviewed by a nurse to assess for any symptoms of infection or other diseases and given nutritional advice⁴⁵.

Clients with BMI ≥25kg/m² are classified as being overweight and those ≥30kg/m² as obese. They should be informed of this finding and IEC provided about regular physical exercise and diet⁴⁵.

5.1.5.2 Interpretation of blood pressure

For interpretation of blood pressure, the lowest reading of the three measurements should be used, and interpreted in accordance with the table below¹⁸.

Table 5.4 Blood pressure categories

Category	Systolic (mmHg)		Diastolic (mmHg)
Optimal	<120	and	<80
Normal	120–129	and/or	80–84
High normal	130–139	and/or	85–89
Grade 1 hypertension	140–159	and/or	90–99
Grade 2 hypertension	160–179	and/or	100–109
Grade 3 hypertension	≥180	and/or	≥110
Isolated systolic hypertension	≥140	and	<90

All clients who have a new finding of high blood pressure (without known hypertension) that falls in the orange box should be referred for hypertension care.

People who are known to be hypertensive should be informed of their result. If they are identified to have blood pressure at Grade 2-3 this suggests their hypertension is not well controlled. They should be advised to contact their treating clinician and/or offered to be newly referred. Clients are screened on their salt intake using examples in **Figure 5.4** as well. Based on their salt intake and physical activity, they receive lifestyle counselling from the ICARoz nurse.

Clients who have systolic BP < 100 and feel unwell should have a discussion with the nurse and may be considered for referral based on their symptoms.



Figure 5.4 Images used during salt intake assessment

5.1.6 Storage

Equipment should be stored securely in a non-humid environment when not in use. Batteries should be removed from scales and sphygmomanometers if these are going to be stored for a period of more than a week. Sphygmomanometers and cuffs should be cleaned after each use with antibacterial wipes and the scales and stadiometer should be cleaned after each day with antibacterial wipes as well.

5.1.7 Maintenance

Weight scales should be calibrated using standardised weights on a periodic basis, where possible. Report worn tape measures and blood pressure cuffs to the field coordinator for replacement as this can affect the accuracy of measurements.

5.2 Vital signs




This section describes the procedures for measurement of vital signs (peripheral oxygen saturation, respiratory rate, and pulse) in ICAROZ. The measurement of vital signs should be accurate and carried out using a consistent method. It is important to obtain as accurate a reading as possible.

The responsible individuals for carrying out assessment of vital signs are the assistants. Study nurses interpret the results.

5.2.1 Procedures

5.2.1.1 Materials needed

Table 5.5 Material and equipment required

	Pulse oximeter (also records pulse rate)
	Relevant data recording tool (tablet form or paper CRF)
	Timer

5.2.1.2 General principles

The accuracy of a measurement depends upon whether the instrument is correctly calibrated AND whether the observer measures correctly (i.e., takes, reads, and records the measurement correctly). Staff completing vital signs assessments should be trained and have refresher training every year.

A pulse oximeter is a non-invasive device for measurement of peripheral oxygen saturations (SpO₂)⁴⁶. The pulse oximeters in use in ICAROZ are designed to be used on a client's finger. They are in common clinical use and are usually very accurate (+/- 2% of the true value). Some factors affect the accuracy of pulse oximeters, these include false nails or nail polish, thick skin (e.g. calluses) and cold weather (leading to vasoconstriction of the blood supply to the fingers)⁴⁷

Assistants and nurses must wash or apply alcohol gel to their hands between each client. Where possible, all physical measurements should be conducted in a private area.

5.2.1.3 Respiratory rate

- Explain the procedure to the participant and gain verbal consent.
- Ask the participant to sit in a chair for at least 5 minutes
- Measure the respiratory rate by counting the number of times the chest rises over exactly over one minute at rest using a stopwatch.

5.2.1.4 Oxygen saturations and pulse

This assessment may be done at the same time as respiratory rate, if both measurements are being taken.

- Explain the procedure to the participant and gain verbal consent.
- Ask the participant to sit in a chair for at least 5 minutes
- Put the pulse oximeter on the client's left index finger and ask the client to rest it in

- their lap with the display visible (to keep the finger still to minimise interference in signal).
- Wait a few seconds until the readings are stable (there may also be an icon demonstrating that the pulse is being measured at every heartbeat. This is a good indicator that the trace is good/stable)
- Record the oxygen saturation, pulse and respiratory rate. If the reading is fluctuating, the highest oxygen saturation measured should be recorded.

If it is cold, it may be necessary to ask the client to warm their hands (e.g. rub their hands together or sit with their hands under their armpits) to improve blood flow to fingertips. If fingers are cold this may underestimate oxygen saturation.

If a client has false nails or is wearing nail varnish, it can be difficult to measure SpO₂ and heart rate using a pulse oximeter. If the client consents, the pulse oximeter can be placed on the second toe and measurement taken (this may be less accurate than measurements from the finger)^{46,47}.

Note that pulse rate is also displayed when measuring oxygen saturations. A flashing symbol or pulse trace may also be displayed which may give an indication of whether the pulse is regular or not. For consistency, the values used for pulse rate and rhythm in ICAROZ should be those assessed together with blood pressure.

5.2.2 Interpretation of results

5.2.2.1. Respiratory rate, oxygen saturations and heart rate

We do not anticipate many concerning findings requiring referral from this assessment – **provided that the client does not have any symptoms (does not feel unwell)**. If a client has abnormal vital signs measurements (outside the ranges in the table below), they should be asked to rest quietly in a chair for 5 minutes, and the vital signs measurements re-taken. If the results are still abnormal, they should have a clinical assessment by one of the ICAROZ nurses who may refer the client at their discretion.

Note that common causes for mild increases in respiratory and heart rate include stress (e.g., from medical assessments such as in ICAROZ), high ambient temperatures or recent exercise. People who are physically fit may have lower respiratory and heart rates than those detailed below; this is normal for them.

Table 5.6 Reference range for vital signs⁴⁸

	Reference range
Respiratory rate	12-18 breaths per minute
SpO ₂	>94%
Heart (pulse) rate	60-100 beats per minute
Heart (pulse) rhythm	Regular

The irregular heartbeat symbol may be an indicator of Atrial Fibrillation (but this is not always the case). If the symbol is displayed the pulse rhythm should be checked again (this may be done using the blood pressure machine; pulse oximeter; or manually if a member of staff has been trained in this procedure). If the finding persists, the participant should be referred.

Atrial fibrillation is a form of irregularity in the heart rhythm which can increase the risk of small blood clots forming in the heart, which in turn can lodge in blood vessels in the brain and lead to stroke.

5.3 Referrals

5.3.1. Blood pressure

All clients should be informed of their blood pressure measurement and vital signs after the measurement has been completed. Refer clients with at least Grade 1 hypertension (blood pressure $\geq 140/90$ mmHg) who were not known to be hypertensive to a local clinic by completing a referral letter, which is handed to the client. The client may have a clinic or physician of preference, which should be indicated on the referral letter to ensure they are referred to the correct location. This should recommend that the BP measurement is repeated and treatment offered if the BP remains high. This referral letter includes other anthropometric measurement results as well as pre-existing medical conditions to aid the referring physician.

People with BP $\geq 140/90$ mmHg who are already known to be hypertensive should be advised to contact their treating physician or offered a new referral if they do not have a regular physician. If there are any concerns with interpretation of results and or information to provide to clients, nurses should contact one of the BRTI doctors associated with ICARoz as shown in Appendix 5.

If a client is unwell and has a systolic BP < 100 , they should be referred.

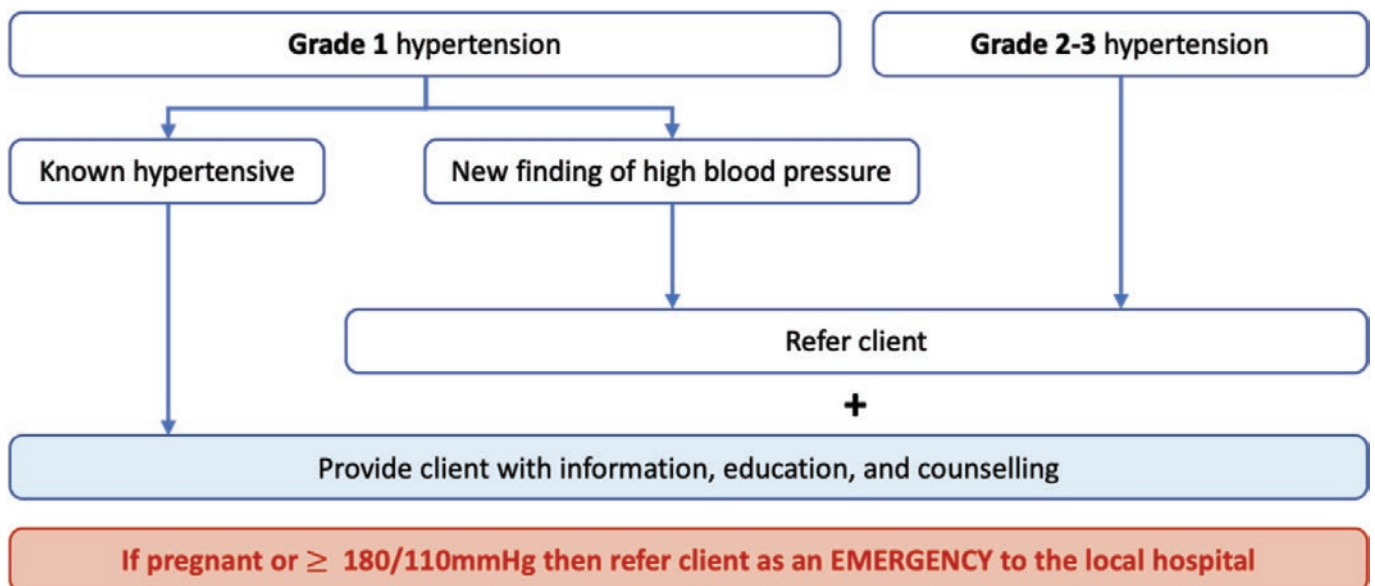


Figure 5.5 Blood pressure referral decision tree

BP $\geq 180/110$ mmHg can be associated with serious complications (malignant hypertension). Clients with this finding should be assessed by the ICARoz nurse and supported to attend the emergency department for assessment and treatment. Common symptoms of malignant hypertension are headache, blurred vision, and dizziness¹⁸.

Clients who are hypertensive and pregnant should also be referred immediately to the emergency department as this can be associated with complications in pregnancy.

5.3.2. Irregular heart rate

Clients with irregular heart rate should be referred to Medical Outpatients for further examination and investigations including a tracing of the heart (ECG)

Linkage to care is discussed further in Chapter 14. All clients should provide verbal consent to be referred and be contacted by the ICAROZ team in due course to assess linkage to care.

5.3 Forms completed

Throughout the hypertension and height/weight measurement process, the nurse or assistant records the data on a sheet of paper which is then entered into the R01 form by nurse in screening tent. The fact that a client has been referred for a certain condition is indicated on the R01 form. All forms to be completed are:

- Referral letter (if applicable) handed to the client and copy retained for records
- Clinical recording form (R01)
- Screening recording form (R02) for salt intake questions



6. EYE HEALTH






This section describes procedures for testing long and short vision using both the PEEK application as well as a near vision chart. The PEEK Acuity app is a free Android and iOS app developed by eye health experts to allow anyone to screen and identify people that require further examination (https://peekvision.org/en_GB/peek-solutions/peek-acuity/)¹⁷.

6.1 Procedures

The nurse and assistants are responsible for ensuring the implementation of this procedure.

6.1.1 Materials and equipment required

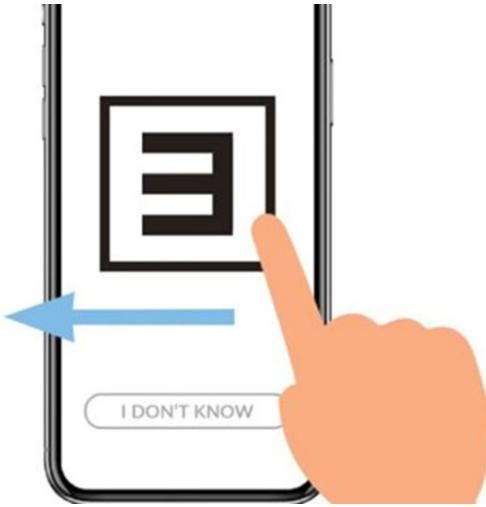
Table 6.1 Equipment and materials for eye health screening

	Tablet or mobile phone
	PEEK app
	Relevant data recording tool (tablet form or paper CRF)
	Near vision chart
	Pre-cut string or measuring tape (> 3m)

6.1.2 PEEK test

This test uses an E shape. It points in different directions and changes size to measure eyesight.

Table 6.2 PEEK Acuity test procedure

Ask the client to sit down comfortably		
1	Measure three meters with tape or use a pre-cut string to ensure assessor is 3m from the client	
2	Hold the device at the level of the eye of the client	
3	Make sure you are not reflecting any light on the screen of the device	
4	Ask the client to cover one eye with the palm of their hand	
5	Ask the client to indicate by pointing with their other hand which direction they think the “E” is pointing	
6	Swipe the screen in the direction that the client points. You don’t need to check if they’re right	
The app will give a result automatically in Snellen metric. Enter this score in the R01 form.		
A good result is 6/6. Refer clients for further care if their visual acuity is 6/12 or more (i.e. if the denominator is ≥ 12). See Section 6.1.4 for more details on Snellen scores and Snellen score cut-offs ⁴⁹ .		
Document the referral clearly in the referral letter and explain to the client that the referral is for further evaluation and appropriate management		
Obtain verbal/written consent for the client to be called at a later date to establish linkage to care.		

6.1.3 Precision vision testing

Table 6.3 Precision vision chart testing procedure

Ask the client to remain seated		
1	Hold near vision chart at 30 cm from the client. Use a tape measure to verify the distance	
2	Maintain chart at client eye level	
3	The card should be illuminated with lighting typical of that used for comfortable reading	

4	Ask the client to go to the smallest block of text they can read without squinting and read it	
5	Then ask him/her to try to read the next smaller block of text	
6	The client should continue reading successively smaller blocks of print until they reach a size that is not legible	
Give a score in Snellen metric corresponding to the value indicated on the level last visible to the client		
Enter the scores in the R01 forms		
A good result is 6/6. Refer clients for further care if their visual acuity is 6/12 or more (i.e. if the denominator is ≥ 12). See Section 6.1.4 for more details on Snellen scores and Snellen score cut-offs ⁴⁹ .		
Document the referral clearly in the referral letter and explain to the client that the referral is for further evaluation and appropriate management		
Obtain written/verbal consent for the client to be called at a later date to establish linkage to care.		

6.1.4 Snellen scores

MAR*	LogMAR	VAR	Snellen (metric)	Snellen (imperial)	Decimal*
0.50	-0.30	115	6/3	20/10	2.0
0.63	-0.20	110	6/3.8	20/12.5	1.60
0.80	-0.10	105	6/4.8	20/16	1.25
1.00	0.00	100	6/6	20/20	1.00
1.25	0.10	95	6/7.5	20/25	0.80
1.60	0.20	90	6/9.5	20/32	0.63
2.0	0.30	85	6/12	20/40	0.50
2.5	0.40	80	6/15	20/50	0.40
3.2	0.50	75	6/19	20/63	0.32
4.0	0.60	70	6/24	20/80	0.25
5.0	0.70	65	6/30	20/100	0.20
6.3	0.80	60	6/38	20/125	0.16
8.0	0.90	55	6/48	20/160	0.125
10.0	1.00	50	6/60	20/200	0.10
20	1.30	35	6/120	20/400	0.05
40	1.60	20	6/240	20/800	0.025
100	2.00	0	6/600	20/2000	0.01

Figure 6.1 Snellen score chart

All scores within the yellow box will be referred. PEEK acuity and the near vision chart results at ICAROZ are recorded in Snellen metric (green box)⁴⁹.

6.2 Referrals

Undiagnosed long- or short-sightedness can unknowingly affect HCWs in their day-to-day activities. It is thus crucial that they are referred to appropriate care to address any eye health issues. A good result is 6/6. Refer clients for further care if their visual acuity/near vision score is 6/12 or more (i.e. the denominator is ≥ 12). See Section 6.1.4 for more details on Snellen scores and Snellen score cut-offs^{17,49}.

In Harare, ICAROZ refers those needing attention to Parirenyatwa Hospital where they receive contact lenses at subsidized prices courtesy of the Council for the blind (CfB). Outside of Harare, ICAROZ buys basic monovision lenses which the team gives for free after abnormal short site screening results. ICAROZ also provides reading glasses for those with near vision issues.

Linkage to care is further discussed in Chapter 14. All clients should provide verbal consent to be referred and written consent to be contacted to assess linkage to care.

6.3 Forms completed

Throughout the eye health screening process, the nurse or assistant will complete the eye health-related questions on paper and then transfer to electronic format in the central database which feature in the following forms:

- Referral letter (if applicable) handed to the client and copy retained for records
- Clinical recording form (R01)
- Referral list form



7. DIABETES





Diabetes mellitus, more commonly known as diabetes, is a metabolic disease that causes high blood glucose and results in damage to blood vessels and nerves⁵⁰. Diabetes screening is one of the services provided by ICAROZ. Diabetes status is assessed by measuring glycated haemoglobin (HbA1c) levels from finger-prick samples from clients⁵¹. The responsible individuals for carrying out HbA1c assessment using the A1c Care System are the nurses. All ICAROZ staff involved in blood sampling must be competent at the procedure and be aware of the risks and hazards involved and how to guard against them.






7.1 Procedures

7.1.1 Equipment and materials required

Before beginning assessment, ensure that the following materials are available:

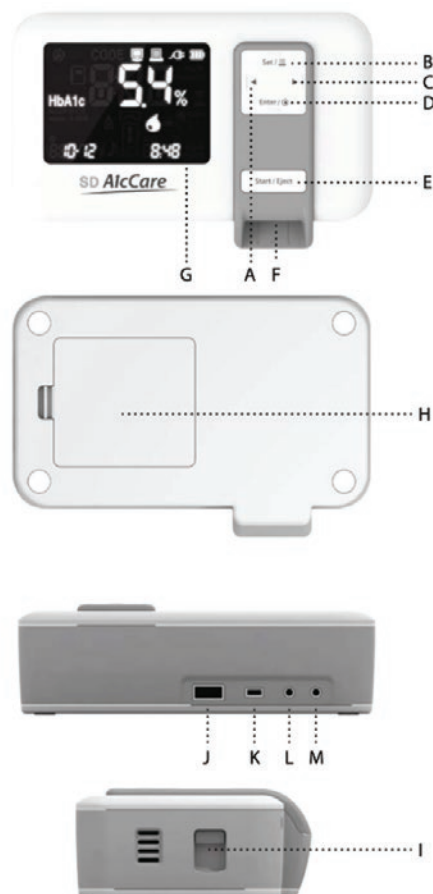
Table 7.1 Equipment and materials for diabetes screening

	SD Biosensor A1c Care Analyzer with AC adaptor and/or batteries
	Relevant data recording tool (tablet form or paper CRF)
	Lancets for finger prick
	SD A1c Care Test Kit Type A

	5uL and 200uL pipette
	Gloves
	Sharps container
	Gauze/cotton wool balls
	Alcohol swab

The SD Biosensor A1c Care Analyzer may be used with the included AC adaptor or four AA batteries (see package insert for further information if required). With a set of fresh batteries, one will normally be able to perform at least 200 measurements. When the battery warning is displayed for the first time, approximately 50 measurements can still be performed. After changing batteries, ensure that the date and time displayed on the analyser are still correct⁵².

A Overview of SD A1cCare™ Analyzer



B SD A1cCare™ Test Kit <Type A>



C

A. Left Button	Used for analyzer's review of memory moving to the left.
B. SET/PRT Button	Press to setting the analyzer or printing the test result.
C. Right Button	Used for analyzer's review of memory moving to the right.
D. Enter Button	Press for power on/off or to go to the next step in set-up mode.
E. Start/Eject Button	Press to start a measurement or to quit a measurement and eject test panel.
F. Test panel Slot	Part for inserting a test panel to analyzer.
G. LCD Display	Shows test results, messages, and test results stored in memory.
H. Battery compartment lid	Provide access to the battery compartment. (4 AA 1.5V alkaline batteries)
I. Code-chip slot	Insert a code chip here.
J. Barcode reader port	Connect to external barcode reader. (If you have SD biosensor barcode reader)
K. Data port	Download test results to a personal computer. (If you have software)
L. Printer port	Print test results to external thermal printer. (If you have SD thermal printer)
M. AC Jack port	Connect power supply adapter 5V/2A.

Figure 7.1: Overview of A1c Care Analyser and test kits

7.1.2 Test principles

The SD A1cCare™ System is based on a reflectometry and immunoassay technology. The test kit contains the test panel, latex-tablet, and buffer solution.

When sample mixture is loaded onto the sample port of the test panel, the mixture fluid migrates along the membrane of test panel by capillary action. HbA1c is immobilized onto the anti-HbA1c antibody coated line. The amount of the blue conjugates on the anti-HbA1c line reflects the amount of HbA1c in the sample. For measuring of total haemoglobin in the sample, the intensity of the haemoglobin colour measured from an area on the membrane of test panel is measured. SD A1cCare™ Analyzer measures both fractions (HbA1c and Hb) and an algorithm converts the result into the percentage HbA1c in the sample⁵².

The A1c Care system is valid for measurement of HbA1c in the range 4-15%. It is only validated for samples where the haemoglobin concentration is 7-23g/dL.

7.1.3 Preparation and setup

Before using the A1c Care Analyser, ensure that the reporting units are correct (shown in step 2 of Table 7.2) and that the code chip has been updated for the current batch of test kits.


Always ensure the kits are “in date”. It should say so on the bottom of the kit. Expired kits may result in inaccurate results.

Table 7.2 Diabetes testing setup instructions


1. Insert a code chip (whenever a new test kit is opened) and “match” the analyser the test kits. To do this:	
1	Locate the code chip for the test kits you are going to use – this should be in the external packaging of the new test kits
2	Make sure the analyser is turned off. From the code chip slot on the left-hand side of the analyser, remove any old code chip
3	Insert a new code ship into the slot, it will click into place
4	Turn the analyser on
5	A three-digit code will flash on the screen – ensure that this matches the information on the test kits. If not, repeat steps 2-4



2. Unit of test result – this should be HbA1c, NGSP, IFCC expressed as a percentage (as shown in image below). If the analyser is displaying different units, this should be corrected in analyser settings. To do this:

1	When the analyser is on, press SET/PRT button to enter the settings menu	
2	Move through settings by pressing “Enter” until you reach setting 9 (HbA1c calibration). “HbA1c” will be displayed on the left-hand side of the screen	
3	Use the left and right arrow buttons to select the correct units	
4	Press “Enter” to save the setting and move to the next setting	


3. eAG unit (estimated average for glucose) – this should be mmol/L (as shown in the image below). If the analyser is displaying other units, this should be corrected in analyser settings. To do this:

1	Enter settings menu and move through settings until you reach setting 10, using step 2.1 – 2.2 above. “eAG” will be displayed on the lower right part of the screen	
2	Use the left and right arrow buttons to select the correct units	
3	Press Enter to save the setting	
4	Once all changes to settings have been made, press SET to exit the settings menu (N.B. if you press SET without pressing Enter first, your changes will not be saved)	

There are more details on changing settings, such as setting the date and time, sounds, etc, in the package insert.

Before obtaining a sample for testing, explain the procedure to the client and gain verbal consent. Explain that this is a safe procedure; the fingerprick may be painful but this will only last a few seconds.

Table 7.3 Blood collection

1. Wash hands according using good hygiene practices	
2. Put on non-sterile gloves (one pair per client)	
3. Prepare the blood collection equipment	
4. Tear open alcohol prep pad and clean the client's finger for 20 seconds	
5. Push in and twist knob of blood lancet	
6. Prick on side of clients' finger	
7. Wipe first drop away with alcohol prep pad	
8. Collect next drops of blood into capillary tube	


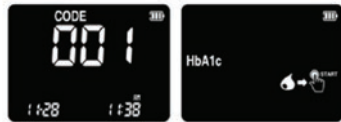
7.1.4 Sample testing

Ensure the A1c Care Analyser is placed horizontally on a stable surface and has batteries charged and ready for use (or is connected via the AC adaptor). Ensure the analyser's air vents are clear. The analyser should be kept in the shade and if the ambient air is too hot (>30°C), then it should be kept in a cooler box.



Operate the analyser only within the acceptable temperature range (15-32°C). If the temperature is out of range the thermometer icon will appear on the display (shown left) and the analyser should not be used. You may need to place a cooling pad under the analyser in hot weather.

Table 7.4 Flow of diabetes sample testing

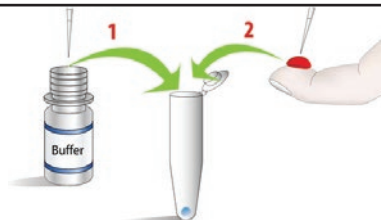
1. Put on non-sterile gloves (one pair per patient)	
2. Prepare the test kit:	
1 Ensure the expiry date has not passed	
2 Ensure the number on the test kit matches the code chip number displayed on the analyser when it is turned on (this number is also displayed when the test kit is inserted into the analyser)	
3 Insert the test panel into the analyser, the display should update	

3. Using the 200uL pipette, collect the buffer solution from the buffer bottle and put this into the latex tube

4. Prick the client's finger as above. Wait until the drop of blood is large enough to fill the micropipette before taking the sample

5. Fill the 5uL pipette from the finger prick directly

6. Place the 5uL blood sample into the latex tube



7. Put the lid on the latex tube and shake by inverting 6-8 times to mix the sample. Be careful to not produce any air bubbles.

8. Using the same 200uL pipette, collect 200uL sample from the latex tube. Avoid getting any bubbles in the pipette



9. Apply 200uL sample to the test panel

10. Push the START button. Results will appear on the display after three minutes. Do not touch or remove the test kit or move the analyser during measurement



11. Record the HbA1c result and eAG (blood glucose) result on the relevant CRF

12. If HbA1c \geq 6.5%, discuss with the client and refer as appropriate

13. Pull the test panel out of the test panel slot. This will shut down the analyser

It is possible to retrieve previous results (up to 1000 are stored in the analyser). See the package insert for details.

7.1.5 Glucose measurements

The HbA1c machine also provides glucose measurements in mmol/L when it takes HbA1c readings. If a client is found to have HbA1c \geq 6.5% and glucose levels $>$ 20 mmol/L, they should be referred urgently¹⁹.

7.1.6 Quality assurance

Quality assurance using control solutions should be performed **on starting each new batch (lot number) of test kits, or if the analyser is dropped or stored for more than two weeks without being used.** It is crucial that the analysis is performed with HbA1c control solutions from SD Biosensor to ensure that the A1c care system is calibrated correctly.

Each packet of HbA1c control contains two tubes of control solution – 10 x level 1 control and 10 x level 2 control.

- 1 Check the expiry date on the control solution container. Record the opening date on the container label. Do not use after expiration or discard date (date opened plus three months), whichever comes first.
- 2 Put the A1c Care analyser into Control test mode: with the analyser in standby state, press the left button for two seconds. The control icon will be displayed (**Figure 7.2**). To move back to regular mode, press the left button again.

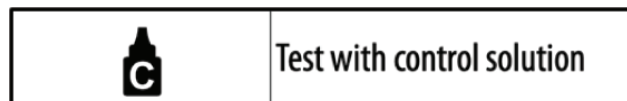


Figure 7.2 Control icon

3. Shake the container, discard the first drop of control solution, and wipe off the tip to ensure a proper sample and an accurate result.
- 4. When using the control solution do not fill the pipette directly from the vial.** Place a drop of control material onto a microscope slide and then draw up into a 5uL pipette. Recap the vial tightly after use.
5. The control test can then be performed using the same process as for blood samples, replacing the blood with control solution.
6. Results of control tests should be recorded in the log.

Table 7.5: Example of SD Biosensor A1c Care analyser controls log.

Date today	Result	Result Results in range (Y/N)? If N, describe action taken

If the control doesn't perform as expected:

- Review the instructions for use to see if the test was performed correctly.
- Check the expiry date, storage conditions and use by dates (**see storage and stability below**) for the control and cuvette.
- Repeat the test.
- If the control still doesn't work as expected, contact the supervisor

7.1.7 Storage

Table 7.6 Storage method for A1c care methods

Storage of analyser	<ul style="list-style-type: none"> • Keep the test panel slots free of dust. • Protect the analyser from humidity. • The carrying case is designed to let you store a variety of supplies you may need and helps to protect your analyser. • If storing the analyser for more than one week without being used, remove the batteries before storage. Make sure you keep a stock of AA batteries available. • If using the analyser the next day, plug in the analyser at the end of the day to recharge.
Storage of test kits	<ul style="list-style-type: none"> • Store at room temperature of 15 – 30°C. Keep away from heat and direct sunlight. • Store the code chip in the test kit package. Make sure to match the code chip and test kit lot numbers. Never use a code chip from a different lot of the test kit. • Use test kit as soon as you have removed it from the packet.

7.1.8 Maintenance

The A1c Care analyser should be cleaned with a water-dampened lint-free cloth or 70% alcohol swab. Ensure the cloth is wrung-out before use to avoid excess water entering the analyser.

7.2 Referrals

Diabetes can be a potentially life threatening condition and identified as potentially having diabetes through ICAROZ must be referred to a local health facility, whether it is newly diagnosed or a known condition. If a client's test results read HbA1c \geq 6.5%, complete a referral slip to refer the client. If a client is found to have HbA1c \geq 6.5% and glucose levels $>$ 20 mmol/L, they should be referred urgently to the local emergency department for assessment¹⁹. If there are any concerns with interpretation of results and or information to provide to clients, nurses should contact one of the BRTI doctors associated with ICAROZ as shown in Appendix 5.

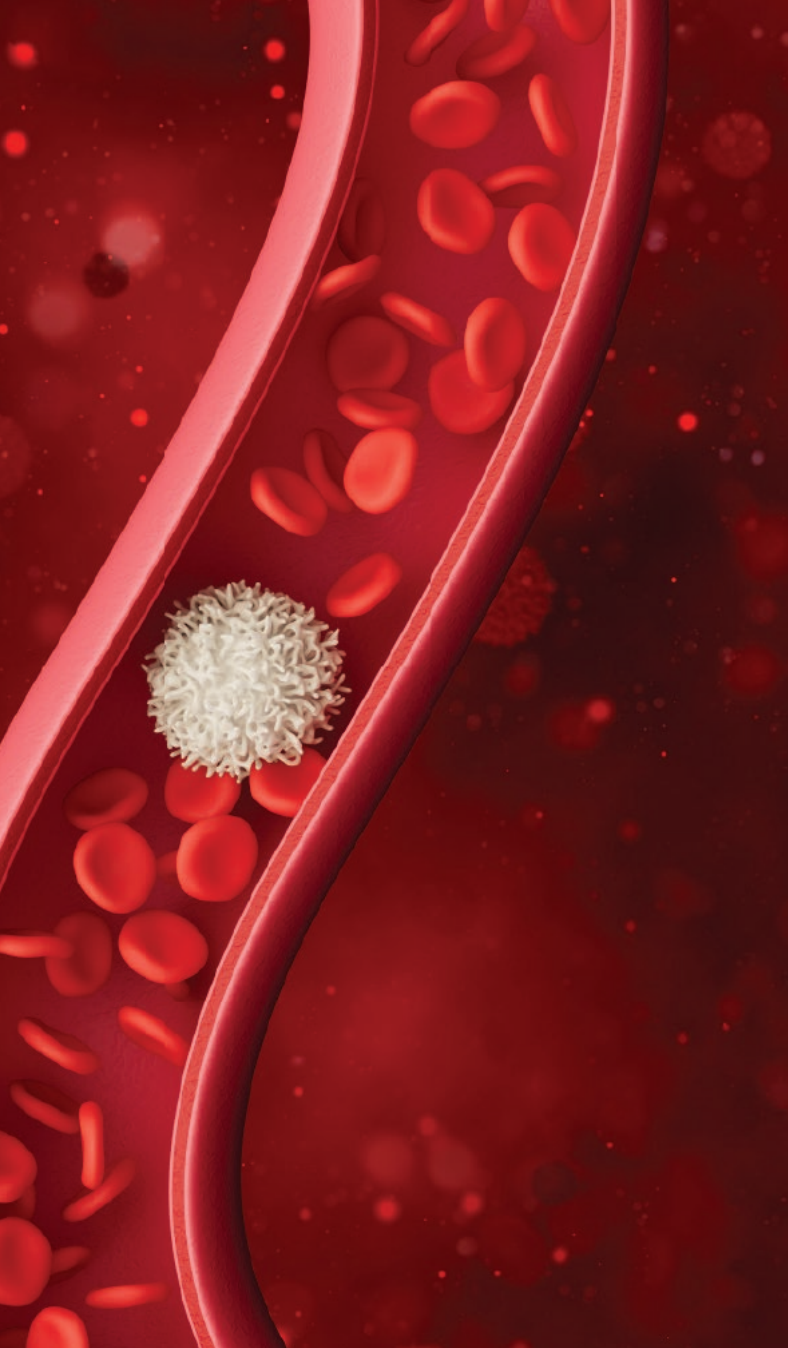
Additionally, those with **known and new hypertension or diabetes** should be referred for renal function testing²⁴. A serum sample should be taken and sent to Interpath who will inform the clients of their results within 48-72 hours. More detail on renal function testing is provided in Chapter 13.

Linkage to care is further discussed in Chapter 14. All clients should provide verbal consent to be referred and contacted to assess linkage to care.

7.3 Forms completed

Throughout the diabetes testing process at the ICARoz site, the clinical nurse or assistant will complete the diabetes testing-related questions in the main intake form (R01) as well as applicable items in:

- Referral form (paper) if applicable
- Clinical recording form (R01)
- Referral list form



8. ANAEMIA

This section describes the methods and procedures involved with determining anaemia in clients accessing ICAROZ. Anaemia is defined as a deficiency in the quality and/or number of red blood cells in one's body. It means that either the red blood cell count or the haemoglobin levels are lower than normal²⁰.









ICAROZ assesses an individual's haemoglobin levels using the HemoCue Hb 301 testing system. The HemoCue 301 System is designed for point-of-care quantitative assessment of haemoglobin concentration. The nurses on site are responsible for carrying out haemoglobin level assessment⁵³. All ICAROZ staff involved in blood sampling must be competent at the procedure and be aware of the risks and hazards involved and how to guard against them.

8.1 Procedures

8.1.1 Equipment and materials needed

Before beginning assessment, ensure that the following materials are available:

Table 8.1 Equipment and materials for anaemia testing

	HemoCue Hb 301 Analyzer (and AC adaptor and/or batteries). The HemoCue Hb301 analyser may be used with the included AC adaptor or four AA batteries.
	Relevant data recording tool (tablet form or paper CRF)
	Lancets for finger prick
	Microcuvette for Hb 301 analyser
	Gauze/Cotton wool balls
	Gloves
	Sharps container
	Control solution vials (stored in the fridge) *

* Required for weekly Quality Assurance (see Section 8.1.3).

8.1.2 Flow

Before performing haemoglobin testing explain the procedure to the client, including explaining that the fingerprick can result in pain for a few seconds, and gain verbal consent.



Figure 8.1 Hb testing procedures

8.1.3 Quality assurance

Quality assurance with control solutions should be performed **weekly** to ensure that the Hb 301 system is calibrated correctly.



Figure 8.2 HemoCue controls

1. **Controls must be stored at 2-8°C** (i.e., in the fridge at BRTI).
2. Allow the control vials to stand for 15 minutes at room temperature before use.
3. Press and hold the button of HemoCue Hb 301 analyzer until the display is activated. The analyzer performs a self-test, and after approximately 10 seconds the display will show three flashing dashes and the HemoCue symbol. This indicates that the analyzer is ready for use.
4. Put on non-sterile gloves.
5. Gently mix the vial 8-10 times before sampling.
6. Fill the microcuvette with drops of blood in one continuous process by holding the tip of the cuvette to the surface of the drop of control liquid. Do not refill.
7. Look for air bubbles in the filled microcuvette. If air bubbles are present, discard it and fill a new microcuvette from a new control sample. Small bubbles around the edge can be ignored.
8. Place microcuvette on HemoCue Hb 301 analyzer as shown in the flow diagram in Section 8.1.2.
9. The result is shown on the monitor of the analyzer in 10 seconds.
10. Remove the microcuvette from the analyzer and discard the used device immediately into a sharps container.
11. Repeat steps 6-11 for each level of control.

Complete the results of the control testing in the **HemoCue Controls Log** (example shown in **Table 8.2**).

Table 8.2: Example of HemoCue Hb 301 analyser controls log.

					<i>Expected range (g/dL)</i>				
					Level 1	Level 2	Level 3		
					6.7 – 7.3	12.7 – 13.3	16.7 – 17.3		
Date today	Result				Results in range (Y/N)? <i>If N, describe action taken</i>				

If the control doesn't perform as expected:

- Review the instructions for use to see if the test was performed correctly.
- Check the expiry date, storage conditions and use by dates (see Section 8.1.4 below) for the control and cuvette.
- Repeat the test.
- If the control still doesn't work as expected, contact the study co-ordinator

8.1.4 Storage

Storage of Eurotol Hb 301 Controls	<ul style="list-style-type: none">• Store unopened controls in the refrigerator at 2-8°C.• Unopened, controls have an expiration date specified by the manufacturer.• Write the date of first opening onto each control vial solution.• After opening the vial, it is stable for 30 days when properly recapped and stored in the refrigerator.
Microcuvettes	<ul style="list-style-type: none">• Storage: at room temperature.• Unopened microcuvette tubes have an expiration date specified by the manufacture.• Write the date of first opening onto the cuvette container.• After opening, the microcuvettes are stable for a minimum of three months.

8.1.5 Maintenance

The cuvette holder should be cleaned after each day of use.

1. Before cleaning, make sure that the analyzer is turned off and display is blank.
2. Pull the cuvette holder out to its loading position.
3. Carefully press the small catch on the cuvette holder using a small pointed object (**Figure 8.3**, indicated by arrow).
4. While pressing the catch, carefully pull out the cuvette holder.
5. Clean the cuvette holder with an alcohol swab (20-70%).

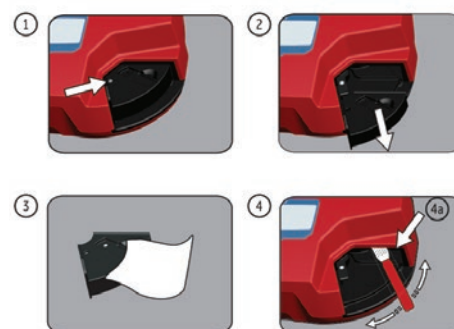


Figure 8.3 HemoCue cuvette holder

If the optronic unit becomes dirty, an error code will be displayed. To clean the optronic unit, push a HemoCue Cleaner swab into the opening of the cuvette holder (image 4). Move from side to side 5 - 10 times, thereafter push in and pull out the Cleaner 5 - 10 times, cleaning the cover glasses. If the Cleaner is stained, repeat with a new Cleaner. Do not open the cover of the analyser (this will void any warranty)⁵³.

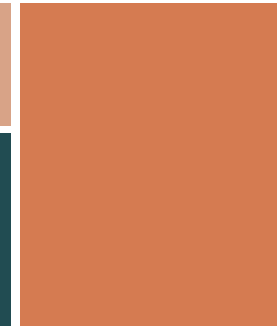
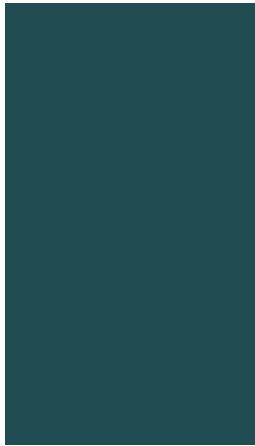
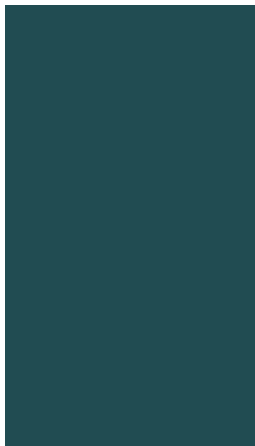
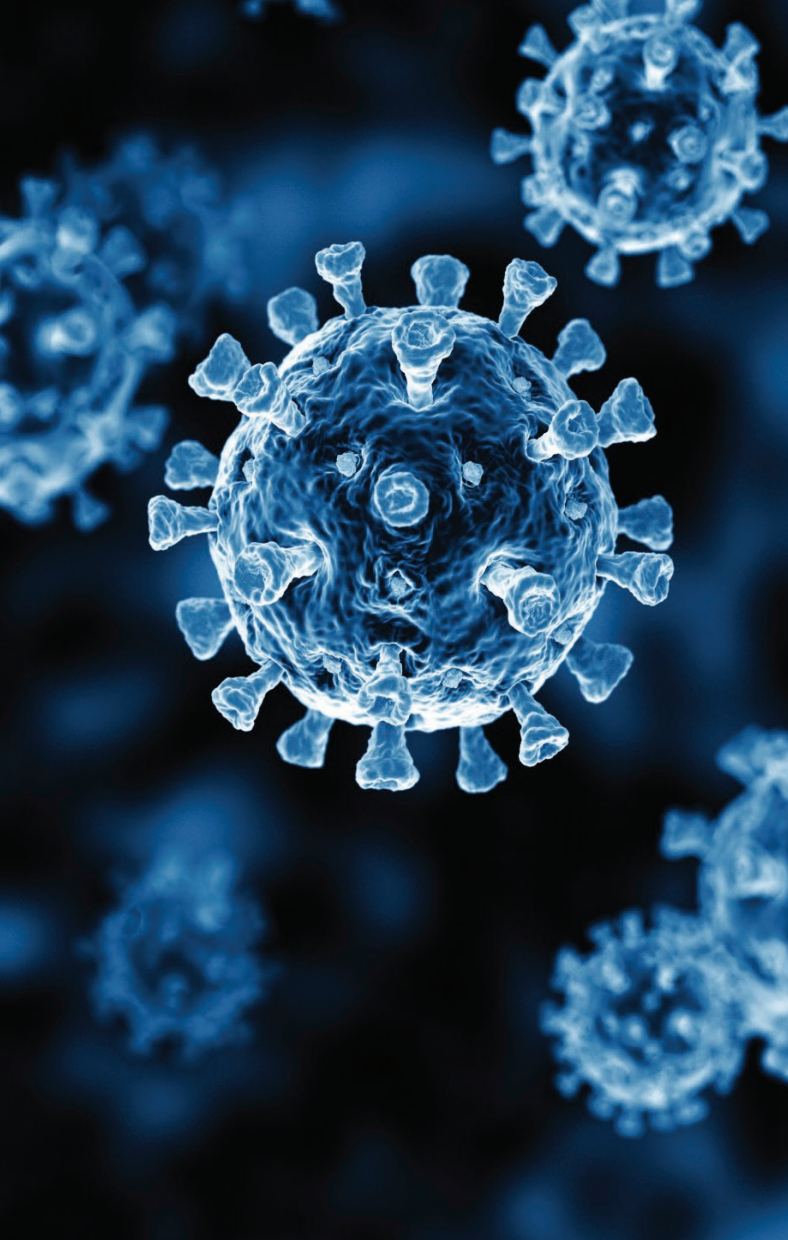
8.2 Referrals

The client should be informed about the results. A result of Hb < 8.0g/dL indicates severe anaemia. In such a case, the client should be given a referral letter to a local clinic. Clients with mild-moderate anaemia (Hb <12 g/dL for women and <13 g/dL for men) should be asked about any symptoms of blood loss and provided with information about anaemia²⁰. If there are any concerns with interpretation of results and or information to provide to clients, nurses should contact one of the BRTI doctors associated with ICAROZ as shown in Appendix 5.

There are multiple causes of anaemia, including poor nutrition (e.g., low dietary intake of iron), malaria and blood loss (most commonly due to heavy menstruation among women). Referral for anaemic clients is crucial to understand the underlying cause, halt the negative long-term health effects, including on the heart, and improve symptoms associated with low haemoglobin²⁰.

8.3 Forms to be completed

- Clinical recording form (R01)
- Referral form (paper) if applicable
- Referral list form



9. SARS-CoV-2

This section describes the procedures associated with sample collection for SARS-CoV-2 testing. Nasopharyngeal swabs (NPS) are used for the molecular detection of respiratory viruses such as RSV, influenza virus A & B, or SARS-CoV-2^{54,55}. NPS sampling is an aerosol generating procedure and requires appropriate PPE.

For SARS-CoV-2 antigen testing anterior nasal swabs can be used. Anterior nasal swabs are less prone to aerosol generation and are thus safer from an IPC point of view. The responsible individuals for carrying out NPS and sputum sample collection are nurses.

9.1 Testing prerequisites

A client qualifies for SARS-CoV-2 testing if they have any of the symptoms listed below or if the client has had a high risk contact (more than 15 minutes, face to face) without appropriate PPE (i.e. without a surgical mask) within the last 14 days²². The following questions are asked in the screening tent before the client proceeds to the testing tent to determine risk factors and are recorded in form R01.

Table 9.1 Respiratory symptoms

Do you have any of the following symptoms?		
Fever	Cough (dry)	Fatigue
Weight loss	Cough (productive)	Sneezing
Night sweats	Cough > 2 weeks	Runny nose
Loss of taste	Shortness of breath	Headache
Loss of smell	Contact of TB case	Painful joints/muscles
Sore throat	Diarrhoea	Mouth ulcers
Swelling of lymph glands		
Have you to your knowledge treated a patient with COVID-19 or come into contact with somebody who may have COVID-19 in the past 2 weeks?		
If yes, did you use PPE?		





If a client says “yes” to any of the above questions, then they are offered for SARS-CoV-2 testing. A PCR test is preferentially conducted if the results can be returned within 24 hours otherwise an antigen test is conducted as shown below. For those clients who are tested with a PCR, the nurse should take written informed consent for storage of the samples. Whether the client consented to sample storage needs to be indicated on the sample referral form.


9.2 PCR: Nasopharyngeal Swabs

9.2.1 Materials and equipment required

Before beginning assessment, ensure that the following materials are available:

Table 9.2 Equipment and materials for SARS-CoV-2 test sample collection

	Relevant data recording tool (paper laboratory form)
	Sterile swabs individually wrapped in peel-pack, wood + cotton (Deltalab, Spain)
	2.0 mL sample collection tubes with screw caps (Sarstedt™, Germany) containing RNAlater™ Stabilization Solution (Invitrogen™, US)
	Sample container

	Gloves
	N95 mask
	Disposable plastic apron
	Eye protection (goggles or visor)
	Hand sanitizer
	Rubbish bin for disposal of used equipment

If the client has nasal discharge:

- Ask the client to attempt to clear the discharge by “blowing” his/her nose into non- scented tissue paper (allow one attempt).
- Do not try to clear the discharge with swabs, as this might be excessively traumatic.

Before performing NPS inform the client about the procedure including that taking the swab may be uncomfortable but should not be painful and gain verbal consent. They should try and keep still during the procedure to ensure an adequate sample is obtained.

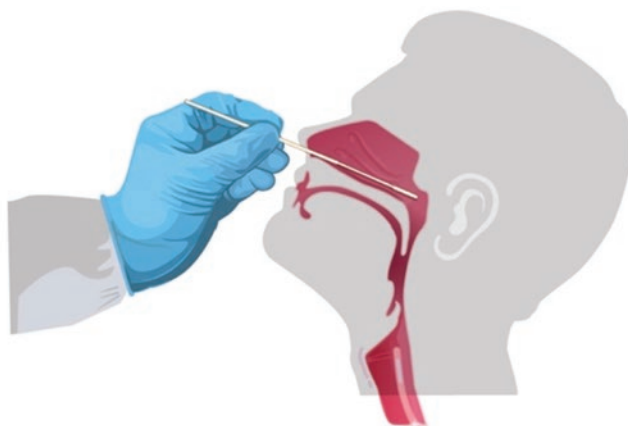
Table 9.3 NPS collection procedure

1. After performing appropriate hand hygiene, put on clean examination gloves
2. Use prelabelled sample collection tube containing RNAlater™ Stabilization Solution according to client code
3. Open the sterile packaging and remove the swab without touching the cotton applicator at the end of the stick
4. Enter a flexible swab several centimetres with a slow, steady motion along the floor of the nose (straight back, not up the nose) until the posterior nasopharynx has been reached (this is approximately equivalent to the distance from nostrils to external opening of ear)

5. Once resistance is met (the swab should pass into the nasopharynx relatively easily), rotate the swab gently several times and withdraw the swab. Place the swab in the sample collection tube containing RNAlater™ Stabilization Solution and break the stick so that the swab fits completely into the sample collection tube

6. Secure the sample collection tube cap

7. Store the sample in accordance with the below conditions



9.2.2 Storage

If possible, **store the sample in a cooler box before sending it to the laboratory. This is particularly important when the outside temperature is >25°C.**

Most samples can be stored at 25°C in RNAlater® Solution for up to 1 week without significant loss of RNA quality. After 2 weeks at 25°C, RNA generally appears slightly degraded (marginally acceptable for Northern blot analysis, but still of sufficient quality for nuclease protection assays or RT-PCR analysis).










At the laboratory samples should be stored in the fridge (at 4°C) while waiting for processing. Once testing is completed store the sample at -20 °C or -80 °C (if the forms indicate that the client consented for sample storage).

9.3 SARS-CoV-2 antigen testing

9.3.1 Materials and equipment required

Before beginning assessment, ensure that the following materials are available:

Table 9.4 Equipment and materials for SARS-CoV-2 Antigen test

	Relevant data recording tool (ODK tablet or paper CRF)
	Standard Q – COVID-19 Antigen test kit
	Gloves
	N95 mask
	Disposable plastic apron
	Eye protection (goggles or visor)
	Hand sanitizer
	Chair or bench for person being tested
	Rubbish bin for disposal of used equipment

9.3.2 Sample testing

The SARS-CoV-2 antigen test ('Standard Q – COVID-19 Ag test') may be used for people who have COVID-19 symptoms [57]. The is designed to identify people with the SARS-CoV-2 virus (COVID-19 positive) who are contagious. It is a point of care test that gives results within 15-30 minutes.



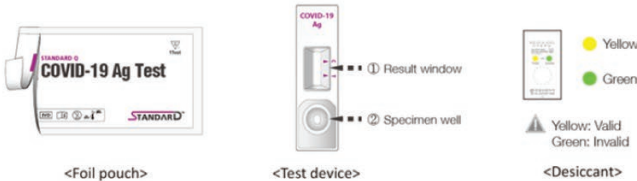

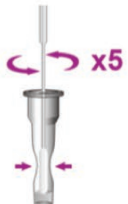


NOTE: a negative test does not 100% rule out being positive for the SARS-CoV2 virus

The responsible individuals for carrying out the SARS-CoV-2 rapid antigen tests are the trained nurses or doctors working with BRTI. The person being tested will receive the results within 15-30 minutes.

Note: SARS-CoV-2 antigen tests may also be used for BRTI staff who have been referred for testing by their line manager or BRTI doctors. In this instance, the test result may be shared with the staff member's line manager (once the staff member's consent has been obtained) to ensure procedures for isolation are followed and to allow for adequate cover. One of the medical doctors at BRTI may be informed of the results to facilitate treatment if necessary.

Before performing NPS inform the client about the procedure including that taking the swab may be uncomfortable but should not be painful and gain verbal consent. They should try and keep still during the procedure to ensure an adequate sample is obtained.

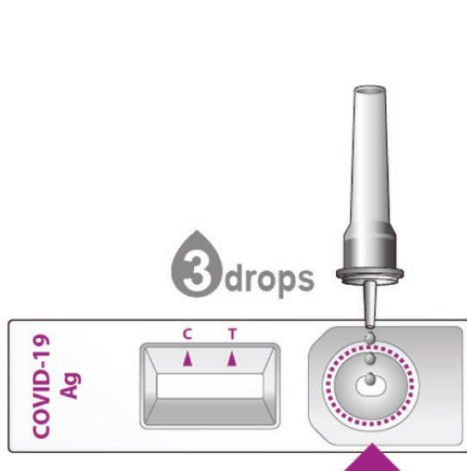
Table 9.5 Sample testing procedure

1. Find an appropriate setting for testing a. Ideally outside, in a well ventilated location			
2. Ensure appropriate hand hygiene has been completed			
3. Ensure you are wearing adequate PPE a. N95 mask b. Latex gloves c. Plastic apron			
4. Ensure client is seated and comfortable			
5. Prepare testing kit and area a. Check expiry date of the testing kit b. Open foil pouch and check kit inside c. If desiccant is yellow, proceed d. Place test device on stable, horizontal surface			
<p>1 Carefully read instructions for using the STANDARD Q COVID-19 Ag Test.</p> 	<p>2 Check the expiry date at the back of the foil pouch. Do not use the kit, if expiry date has passed.</p> 	<p>3 Check the test device and the desiccant pack in the foil pouch.</p> 	
6. Ask client to sit with back straight and look up towards sky/ceiling for better access to nostrils			
7. Ask client to remove mask from nose (keep mask covering mouth)			
8. Remove sterile swab from packaging			
9. Collection of specimen a. Follow NPS collection SOP as outline in section 9.2			
<p>1 Insert a sterile swab into the nostril of the patient, swab over the surface of the posterior nasopharynx. Withdraw the sterile swab from the nasal cavity.</p> 	<p>2 Insert the swab into an extraction buffer tube. While squeezing the buffer tube, stir the swab more than 5 times.</p> 	<p>3 Remove the swab while squeezing the sides of the tube to extract the liquid from the swab.</p> 	<p>4 Press the nozzle cap tightly</p> 
10. Ask client to place mask back over their nose			

9.3.3 Analysis of specimen

1 Apply 3 drops of extracted specimen to the specimen well of the test device.

2 Read the test result in 15-30 minutes.



Read
in 15-30 mins.
Do not read
after 30 mins.

15-30 mins



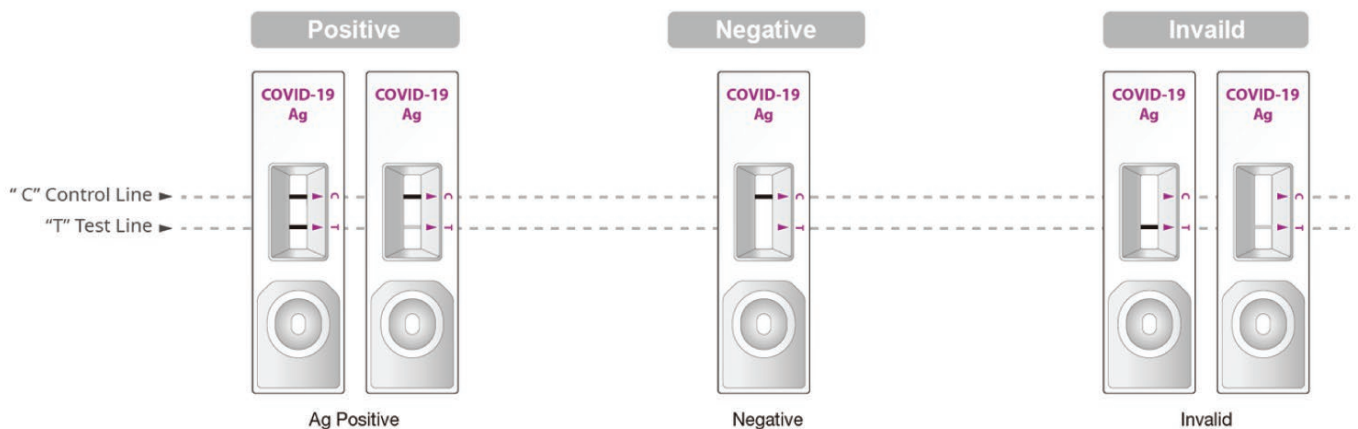
• Do not read test results after 30 minutes.
It may give false results.

Figure 9.2 Analysis of SARS-CoV-2 Antigen test specimen [58]

9.3.4 Interpretation of test results

Table 9.6 Interpretation of SARS-CoV-2 Antigen test results

1. A coloured band will appear in the top section of the results window to show that the test is working properly. This band is Control Line (C)
2. A coloured band will appear in the lower section of the results window. This band is the Test Line for SARS-CoV-2 antigen (T)
3. If the Test Line is present (even if it is faint, or the test line isn't uniform), the test should be considered to be performed properly and the test should be interpreted as a positive result. If there is a Control Line but no Test Line visible, the test should be interpreted as negative [58].



4. Dispose of all contaminated equipment in clinical waste bins (including all test kits once result has been documented)

9.3.5 Storage

Storage of all kits should be between 2-30°C and out of direct sunlight. Kits are valid until stated expiry date. Do not freeze the kits. All equipment used should be new for each test.

9.4 Specimen transportation

- Once a NPS sample is collected, the screw top must be well screwed on to ensure there is no leakage. Each sample needs to be accompanied by a laboratory referral form and the nurse needs to check that the labelling of the sample is the same as the one on the laboratory referral form (on this form is also indicated whether or not the client has consented to storage of the samples). All forms and sample are inserted in a plastic sheet. The sample should be at the BRTI or Lancet laboratory before the laboratory closes (16:00hrs).
- Samples should arrive at the BRTI laboratory between 0800hrs and 1630hrs every day of ICAROZ operation (Monday to Friday). The BRTI laboratory phone number is +263 (0) 71 822 4067. All specimens (together with the request forms) should be placed into clear specimen bags before placing into the dispatch box.
- The specimen tracking log must be filled in and handed over with the specimens and forms to the driver who will deliver them with expedience to the laboratory. The samples should get to the laboratory on the same day as sample collection. Samples can be transported at room temperature.
- When samples are received in the lab, the laboratory must acknowledge receipt by also signing the specimen tracking log.

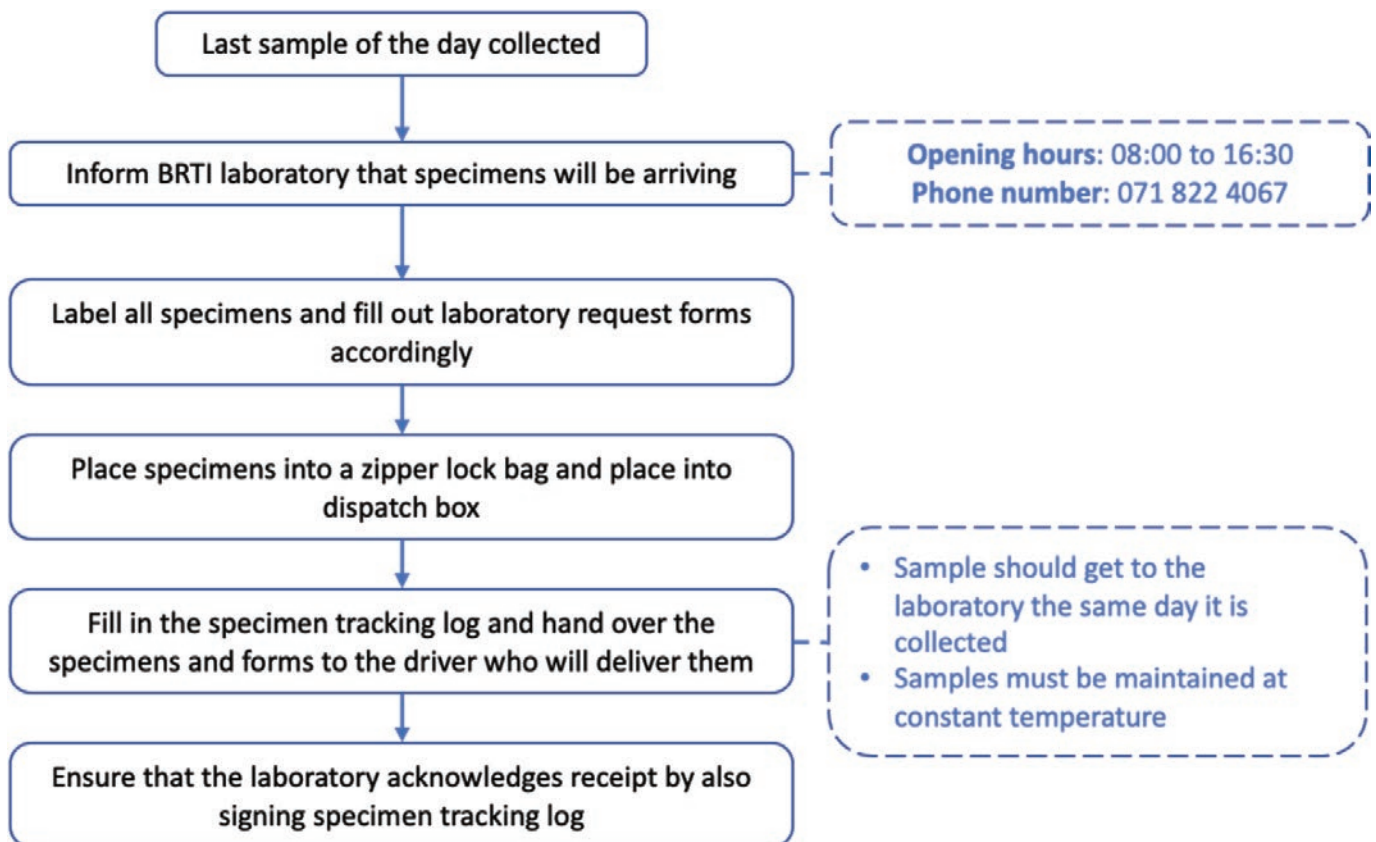


Figure 9.3 Specimen transportation

9.5 Return of results - PCR

Because the sample is analysed in the laboratory and not at the ICAROZ site, it is important to record accurate contact information (ideally more than one method of contact) for every person that undergoes NPS sampling for SARS-CoV-2 PCR testing in order to contact them with their results. The nurse is the responsible person to contact clients if their results are positive (within 24-36 hours of taking the test). If there is any delay, this should be communicated accordingly. Negative results are communicated by SMS. Clients can pick up print-outs of their results at their clinic from ICAROZ staff >2-3 days after the test and the actual laboratory referral form is sent back to the data office to be entered in the database. If ICAROZ is no longer at their clinic, print-outs are left with the nurse in charge.

In the case of a positive result, a nurse goes through a telephone questionnaire to assess symptom severity and vulnerability of household members (form R10). Advice on IPC is provided as well and the clients are asked if they wish to be called on day 3, 7 and day 10 to review their ongoing symptoms. Additionally, the client is asked for consent to communicate their results with their matron/line manager. To prevent nosocomial transmission the client should be advised not to come to work for 10 days. The matron/line manager and/or IPC lead at the health facility will follow-up with the client and conduct any contact tracing if necessary.

9.5 Forms completed

- Referral form (paper) if applicable
- Clinical recording form (R01)
- Respiratory symptoms in screening form (R02)
- SARS-CoV-2 follow-up form (R05)
- Referral follow-up form (R10) if applicable



10. TUBERCULOSIS

This section describes the procedures associated with sample collection for tuberculosis testing. Sputum samples are used for the detection of tuberculosis bacilli. Sputum sampling is an aerosol generating procedures and requires appropriate PPE.

10.1 Testing prerequisites

A client qualifies for tuberculosis testing if they screen positive on the WHO symptom screen. Any of the following symptoms would trigger a tuberculosis investigations²¹.

- Cough > 2 weeks (HIV negative) or cough of any duration (HIV positive)
- Night sweats
- Fever
- Haemoptysis (coughing of blood)
- Weight loss

These symptoms are specifically asked about as part of the symptom screening questionnaire in form R01 and shown in **Table 9.1** below^{21,22}.

Table 10.1 Respiratory symptoms









Do you have any of the following symptoms?		
Fever	Cough (dry)	Fatigue
Weight loss	Cough (productive)	Sneezing
Night sweats	Cough > 2 weeks	Runny nose
Loss of taste	Shortness of breath	Headache
Loss of smell	Contact of TB case	Painful joints/muscles
Sore throat	Diarrhoea	Mouth ulcers
Swelling of lymph glands		

10.2 Spontaneous sputum sampling

10.2.1 Materials and equipment required

Before beginning assessment, ensure that the following materials are available:

Table 10.2 Equipment and materials for sputum sample collection

	Relevant data recording tool (paper laboratory form)
	Sample container
	Gloves
	N95 mask
	Disposable plastic apron
	Eye protection (goggles or visor)
	Hand sanitizer
	Rubbish bin for disposal of used equipment

10.2.2 Spontaneous sputum sample collection

This procedure needs to be conducted in an area with appropriate ventilation to ensure good IPC, or in the open air.

1. Label the sample container with the client's ICAROZ ID before collecting the sample.
2. Ask the client to first rinse mouth with fresh water thoroughly.
3. Ask the client to breathe in and out deeply three times.
4. Then ask the client to cough deeply from the chest and spit any secretions into the sample container. They may repeat steps 2-3 several times to get a good sample. Nasal secretions, saliva or vomit should be avoided.

10.3 Specimen transportation

- Once the sample is collected, the screw top must be well screwed on to ensure there is no leakage. Each sample needs to be accompanied by a laboratory referral form and the nurse needs to check that the labelling of the sample is the same as the one on the laboratory referral form (on this form is also indicated whether or not the client has consented to storage of the samples). All forms and sample are inserted in a plastic sheet. The sample should be at the BRTI or Lancet laboratory before the laboratory closes (16:00hrs).
- Inform the BRTI laboratory that specimens are coming. Samples should arrive at the laboratory between **0800hrs** and **1630hrs** every day of ICAROZ operation (Monday to Friday). The BRTI Laboratory phone number is **071 822 4067**. All specimens and accompanying laboratory request forms obtained from Interpath must be completely labelled with relevant information (e.g. date of collection, sample number). All specimens (together with the request forms) should be placed into clear specimen bags before placing into the dispatch box.
- The specimen tracking log must be filled in and handed over with the specimens and forms to the driver who will deliver them with expedience to the laboratory. The samples should get to the laboratory on the same day as sample collection. Samples can be transported at room temperature.
- When samples are received in the lab, the laboratory must acknowledge receipt by also signing the specimen tracking log.

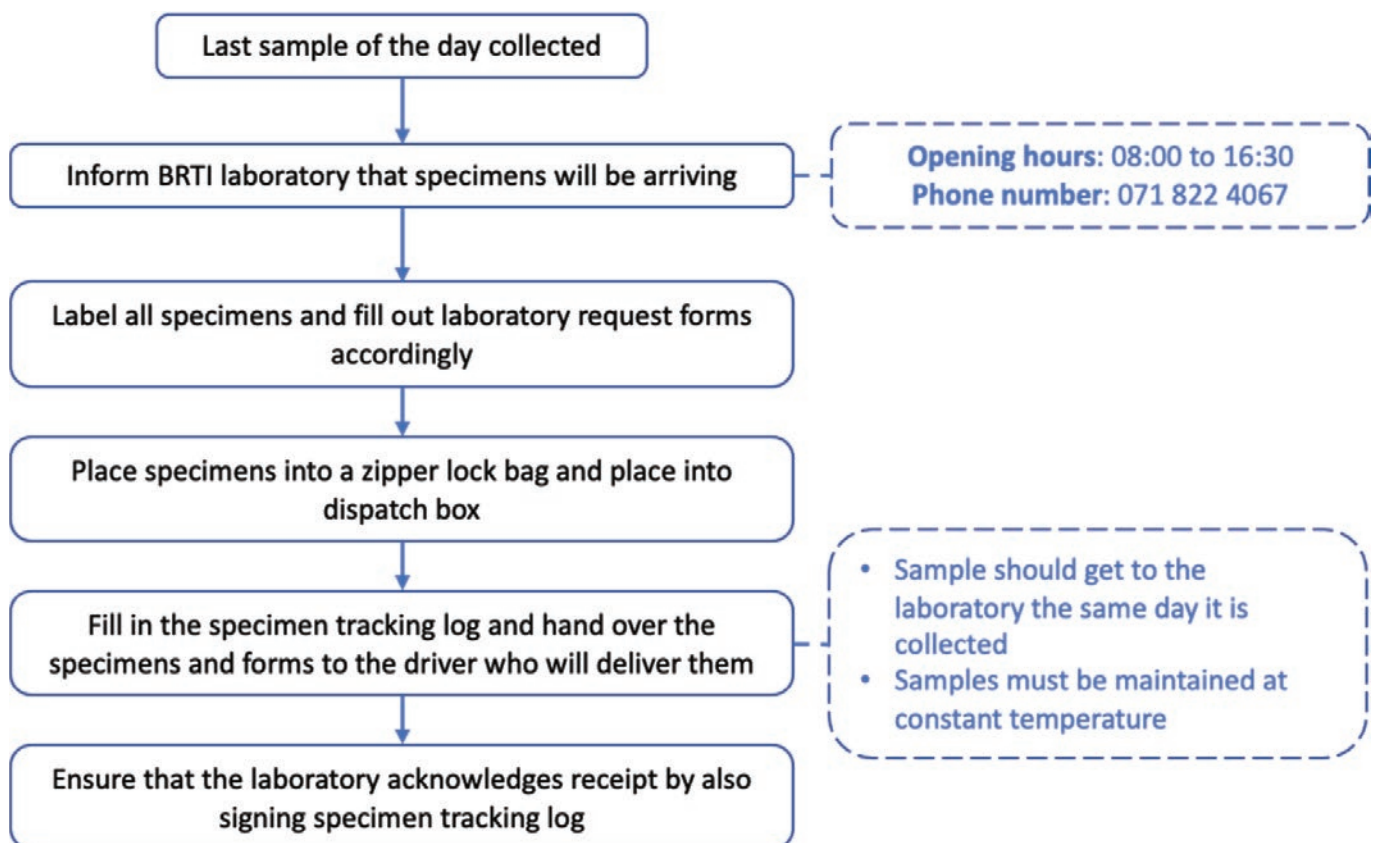


Figure 10.1 Specimen transportation

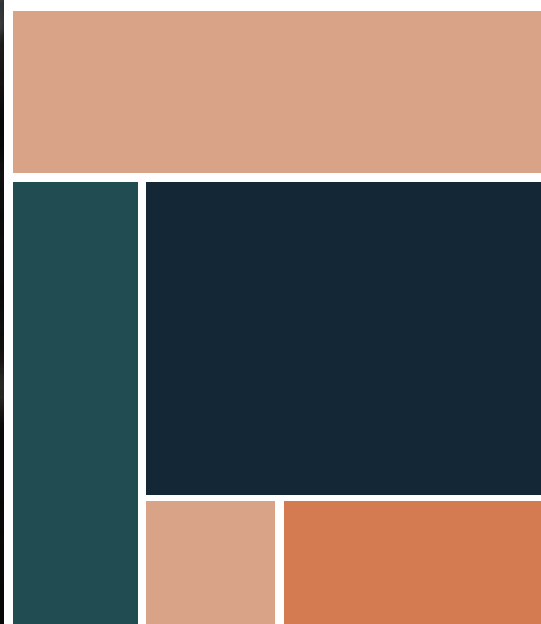
10.4 Return of results

Sputum samples are analysed for the presence of *Mycobacterium tuberculosis* (the organism that causes TB) using the Xpert MTB/RIF. Results should be available within 24h.

Because the sample is analysed in the laboratory and not at the ICAROZ site, it is important to record accurate contact information (ideally more than one method of contact) for every person that underwent a sputum sample in order to be able to contact them with their results. The nurse is the responsible person to contact clients if their results are positive (within 24-36 hours). If there is any delay, this should be communicated accordingly. Negative results are communicated by SMS. Clients can pick up print-outs of their results at their clinic from ICAROZ staff >2-3 days after the test and the actual laboratory referral form is sent back to the data office to be entered in the database. If ICAROZ is no longer at their clinic, print-outs are left with the nurse in charge. Clients with Xpert MTB/Rif results indicating *Mycobacterium tuberculosis* DNA should be called by the nurses and referred for TB treatment.

10.4 Forms completed

- Referral form (paper) if applicable
- Clinical recording form (R01)
- Respiratory symptoms in screening form (R02)
- Referral follow-up form (R10) if applicable



11. HIV

This section describes the HIV testing component of ICAROZ, both in evaluating knowledge of HIV status and history of HIV testing as well as offering different HIV testing methods for clients.

All forms of HIV testing will be voluntary and adhere to the “5Cs” guiding principles (Consent, Confidentiality, Counselling, Correct and accurate HIV test results, and Connections to HIV prevention care and support services)⁵⁶. This includes the options for both provider-based testing and self-testing (either on site or at home).

11.1 HIV testing procedures

11.1.1 Flow

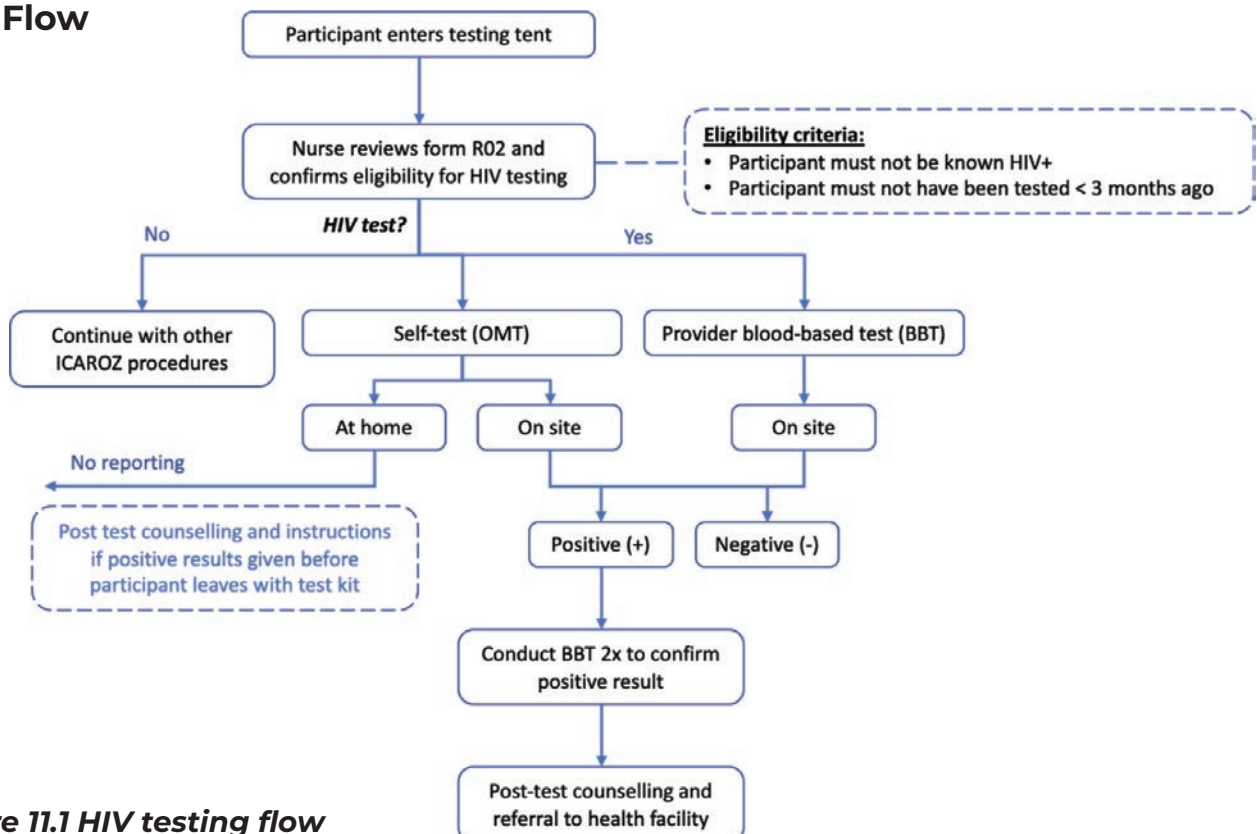


Figure 11.1 HIV testing flow

11.1.2 Provider testing









Clients can choose to receive a blood-based test (BBT) administered by the nurse on site with verbal consent. This test consists of a finger prick using a lancet to collect blood droplets for the Alere Determine® HIV-1/2 test⁵⁷. Clients who opt to undergo an HIVST on-site will receive confirmatory BBT if the OMT test returns a reactive result.

If a BBT using Determine® shows a positive result, a 2nd confirmatory blood-based test is conducted using Chembio® using the same procedure as for Determine®⁵⁸. If both of these tests are incongruous, a “tie-breaker” test needs to be conducted using venous blood in the laboratory.

11.1.2.1 Equipment and materials required

Before beginning assessment, ensure that the following materials are available:

Table 11.1 Equipment and materials for BBT HIV testing

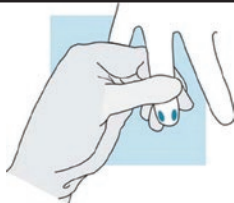
	Alere Determine® HIV-1/2 Test Kit
	Relevant data recording tool (tablet form or paper CRF)
	Timer (with capacity of at least 20 minutes)
	Gloves
	Alcohol prep pads
	Blood lancets
	Sharps container
	Capillary tubes

11.1.2.2 How to perform an HIV BBT

Blood collection:

Before performing HIV BBT briefly explain the procedure to the client, including that they may feel pain for a few seconds at the fingerprick site, and gain verbal consent.


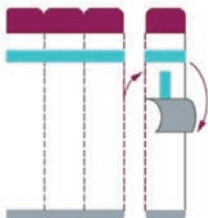
Table 11.2 Blood collection procedures

Prepare test	
1. Bend along the perforation then tear one strip from the right and remove the cover	
Perform fingerprick blood sampling	
1. Wash hands according to good hygiene practices	
2. Put on non-sterile gloves (one pair per client)	
3. Prepare the blood collection equipment	
4. Tear open alcohol prep pad and clean the client's finger	
5. Push in and twist knob of blood lancet	
6. Prick on side of clients' finger	
7. Wipe first drop away with alcohol prep pad	
8. Collect next drops of blood with capillary tube	
Run test	

Test instructions

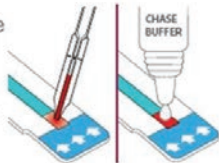
1 Prepare Test

Bend along the perforation, then tear one strip from the right and remove cover.

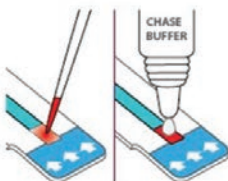



2 Add Sample


Fingerstick Whole Blood
Apply 50 µL of sample by touching the tip of the capillary tube to the Sample Pad, wait 1 minute, then add Chase Buffer.



Venous Whole Blood
Apply 50 µL of sample by touching the tip of the precision pipette to the Sample Pad, wait 1 minute, then add Chase Buffer.



Serum or Plasma
Apply 50 µL of sample by touching the tip of the precision pipette to the Sample Pad.



3 Read Results

Read the results — for both the free HIV-1 p24 antigen (Ag) and HIV-1/2 antibodies (Ab)—in just 20 minutes.

Line	Reactive	Nonreactive	Invalid
Control	—	—	—
Ag	—	—	—
Ab	—	—	—

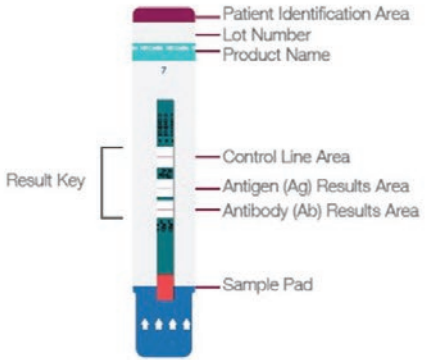


Figure 11.2 BBT instructions

11.1.3 Self-testing

HIV self-testing (HIVST) is a process in which an individual who wants to know their HIV status collects their own specimen, performs the test, and interprets the result themselves, often in private. HIVST may increase uptake of HIV testing as it is done at the convenience of the client, at their chosen time and in their chosen location, and without having to have anyone present⁵⁹. HIVST will be possible through two methods:

1. A client is able to opt to self-test in a private tent on site using an HIV OMT kit given to them by the nurse or assistant (and report back and/or discuss the result)
2. A client is able to opt to take the OMT kit home for self-testing at their convenience



In addition, all clients (who may have opted for BBT, on or off site OMT or no testing) are able to take an OMT kit home for their partner to test for HIV at their convenience.

If the client has opted for HIVST, they must be aware of how to conduct the test and interpret the results, regardless of whether the test is taken on site or at home. The OraQuick® test detects HIV infection if used 3 months after the risk event/exposure as the test detects for HIV antibodies, which can take up to 3 months to be produced at a detectable level^{60,61}.

Clients are not asked to report back the results of their HIVST if performed at home. If performed on site, they are given the option to disclose their results to the ICARoz nurse. Clients are given post-test counselling pre-emptively (before the test has been performed) so they are aware what they should do in case of a reactive/non-reactive result. Clients must be advised that any “reactive” result needs to be confirmed by blood based HIV testing at a clinic or by the ICARoz team.

11.1.3.1 Equipment and materials required

Table 11.3 Equipment and materials for OMT HIV self-testing

	OraQuick® HIV-1/2 Test Kit
	Timer (with capacity of at least 20 minutes) or mobile phone

11.1.3.2 How to perform an OMT test

The client must not have had anything to eat or drink or chewed gum for at least 15 minutes, or used any oral care products (mouthwash or toothpaste) for at least 30 minutes prior to testing. Dental products that cover the gums such as dentures must be removed. For accuracy, it is helpful to have a timer, watch, or something else to keep the time for the 20-40 minutes it takes to get a result⁶⁰.


The directions in the package insert of the HIV test kit as shown below will help the client administer and read the results properly. Clients are given an ICARoz-specific card with their unique ID and contact information for the ICARoz team if they need advice or support with the OMT test. If tests are performed on-site clients can ask for assistance from the nurses.

Taking the OraQuick® HIV-1/2 Test ■ Directions for Use

You must follow the test directions carefully to get an accurate result.

Do not eat, drink or use oral care products (mouthwash, toothpaste) 15 minutes before you start the test.

This Kit Contains:



Performing the Test






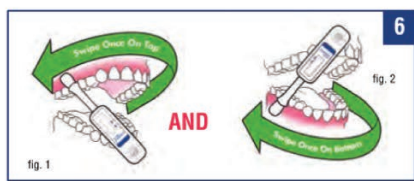
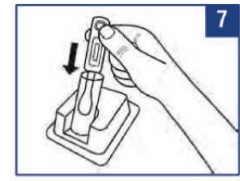
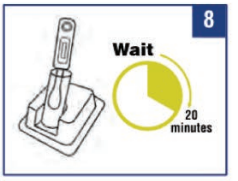
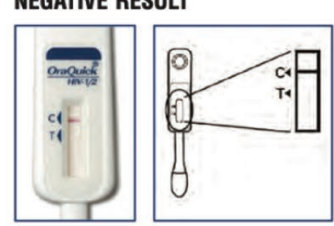
- 1  Tear open the packet.
- 2  Locate and remove the test tube.
- 3  Remove the cap.
- 4  Place tube in the tube holder.
- 5  Locate and remove the test stick. Do not touch the pad with your fingers.
- 6  Swipe the pad along your upper gum once (fig. 1) and your lower gum once (fig. 2).
- 7  Place test stick into tube.
- 8  Wait 20 minutes. Do not read the result before 20 minutes or for more than 40 minutes or you could get the wrong results.

Figure 11.3 Instructions for OMT test⁶⁰

11.1.3.3 How to interpret an OMT test

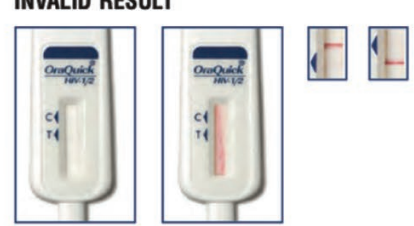
Reading the Results

NEGATIVE RESULT



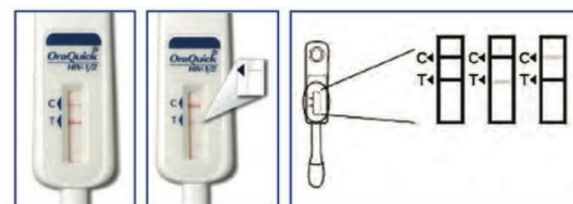
If there is ONE LINE next to the "C" and NO line next to the "T", your result is negative.

INVALID RESULT



If there is no line next to the "C" or a red background makes it impossible to read the test, or the line on the test is neither next to the "C" nor next to the "T" the test is not working and should be repeated.

POSITIVE RESULT



If there are TWO LINES, one next to the "C" and one next to the "T" – EVEN A VERY FAINT ONE, you may have HIV. For counselling on a positive result you should contact your healthcare provider.

Dispose

Remove the test stick, put the cap on the test tube and throw away all contents in the normal trash.




Figure 11.4 OMT test interpretation⁶⁰

11.1.4 Invalid tests

An invalid test is one which has not worked either because of an error in performing the test or some problem with the test kit. If a test is invalid, the test must be repeated using another kit. If an OMT was invalid, repeat using a different OMT. If a BBT is invalid, repeat using another kit of the same BBT that was invalid.

11.2 Referrals

Linkage to care occurs when there is a first clinical visit after an HIV diagnosis. It is critical to the HIV care continuum as it sets the pace for ART initiation, retention in care and viral suppression. If a client tests positive for HIV following a BBT at ICARAZ, it is the team's responsibility to ensure all necessary steps are taken to facilitate linkage to HIV care. If a client performs an HIVST on site and it comes back reactive, this will be confirmed by BBT (either at ICARAZ or another clinic at the client's preference) before being referred for ART. People who are known to have HIV can request to be referred to a facility based on conversation with the ICARAZ nurse (e.g. if having problems with their treatment). If there are any concerns with interpretation of blood results and or information to provide to clients, nurses should contact one of the BRTI doctors associated with ICARAZ as shown in Appendix 5.

The referral letter must include the information about the facility the client is being referred to but also information about the results and other medical conditions the client may have.

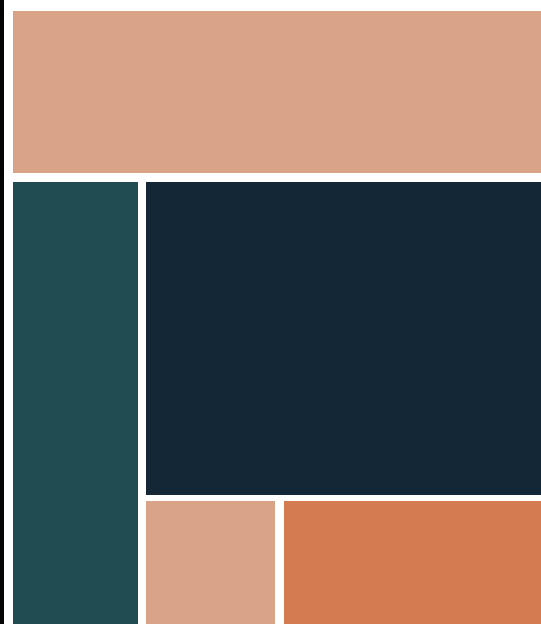
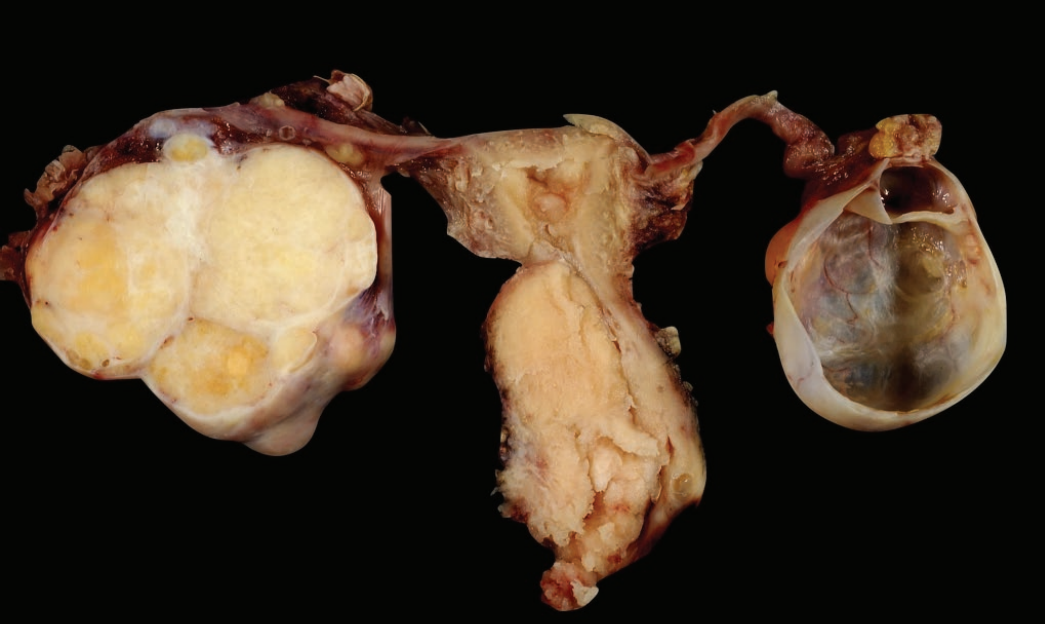
Since those who take home their OMT HIVST kit don't report their results back to ICARAZ, linkage to care is the sole responsibility of the clients.

11.3 Forms completed

Throughout the HIV testing process at ICARAZ, the clinical nurse or assistant will complete the HIV testing-related questions in the main intake form (R01).

Forms that are required are:

- Referral letter (paper) if applicable
- Clinical recording form (R01)
- Referral list form



12. CERVICAL CANCER

Whilst cervical cancer screening is not feasible within ICARoz, the service assesses eligibility for cervical cancer screening (as per Zimbabwean national guidelines) and facilitates referral for those meeting criteria⁶². It is important for women to be screened to detect pre-cancerous cells and facilitate earlier management to prevent progression.

This section describes the correct procedure for assessing eligibility for cervical cancer screening in female clients accessing ICARoz and onward referral. The nurse will be in charge of assessing eligibility.

12.1 Procedure

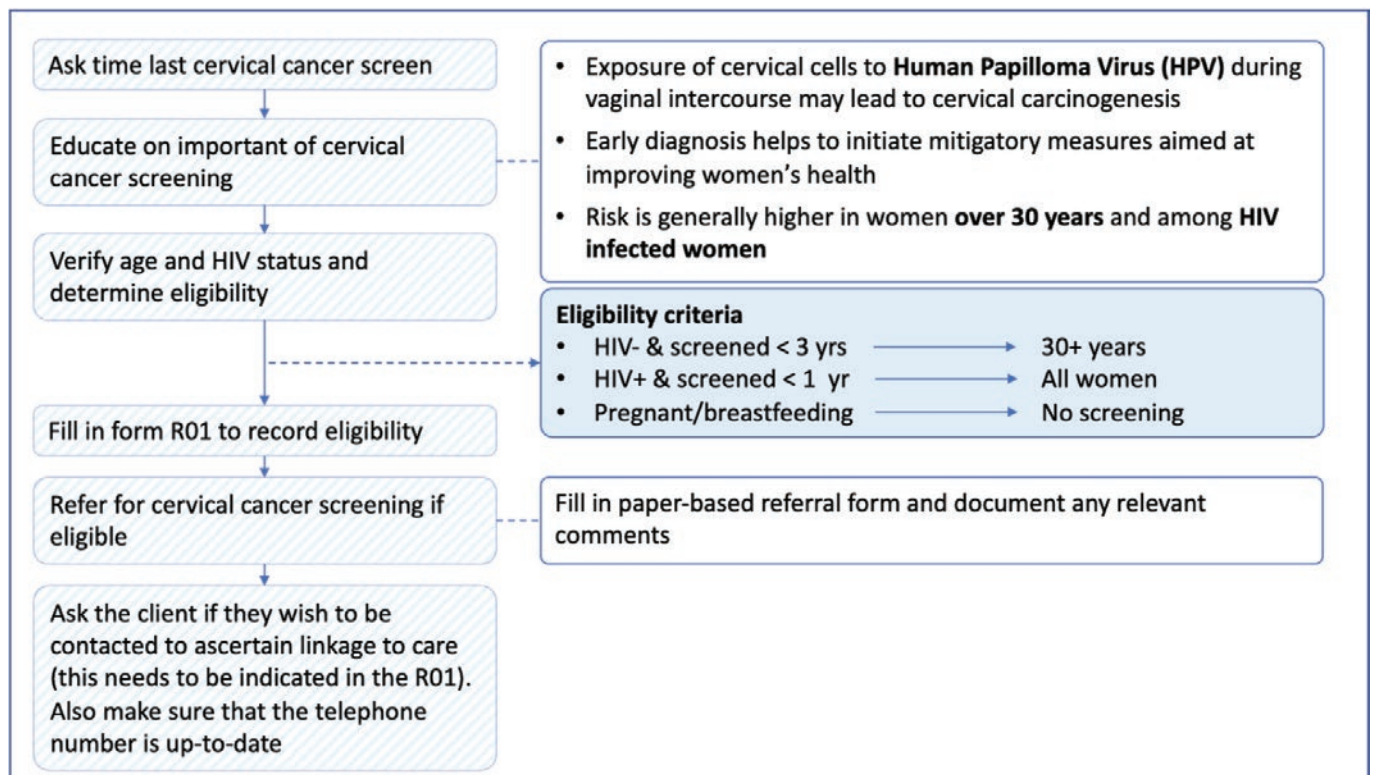


Figure 12.1 Cervical cancer eligibility screening procedure

Table 12.1 Cervical cancer screening eligibility requirements^{23,62}

Population	Recommendations
HIV - women 30+	To be screened once every 3 years
HIV+ sexually active women (All ages)	To be screened once every 1 year
Pregnant and breast-feeding women	Should not be screened for cervical cancer at that time

12.2 Referrals

All women eligible for cervical cancer screening will be referred to their clinic or hospital of preference where they can undergo a VIAC at a special department.

12.3 Forms to be completed

- Recording form (R01)
- Referral form (paper) if applicable



13. CHRONIC KIDNEY DISEASE

This section describes the correct procedure for collecting samples to test renal function for chronic kidney disease (CKD). Clients with known and new hypertension or diabetes should be referred for renal function testing⁶³. A serum sample needs to be taken and sent to Interpath who will inform the clients of their results within 48-72 hours. Individuals responsible for sample collection are ICAROS nurses.










All blood must be considered potentially contaminated by blood-borne infections. All ICAROS staff involved in blood sampling must be competent at the procedure and be aware of the risks and hazards involved and how to guard against them. ICAROS staff should be vaccinated against Hepatitis B and any wounds should be covered with a plaster. Gloves must be worn to ensure a barrier is maintained between the staff member and blood they are working with. Work carefully to prevent needle stick or sharps injuries. If a sharps injury does occur follow Needle stick Injury and PEP Policy. More detail provided in Chapter 14.

13.1 Procedures

13.1.1 Equipment and materials required

Before beginning assessment, ensure that the following materials are available:

Table 13.1 Equipment and materials for renal function sample collection

	Relevant data recording tool (tablet form or paper CRF)
	Laboratory request form (paper CRF)
	Gloves
	Alcohol prep pads
	Gauze
	Sharps container
	Red topped vacutainer blood tube (plain tubes)
	Vacutainer
	Plasters

13.1.2 Sample collection

Table 13.2 Flow of renal blood sample collection

1 Assess if client is eligible
<ul style="list-style-type: none"> • Client who is known diabetic or hypertensive and poorly controlled • (HbA1c \geq 6.5% and sBP > 160mmHg) • Newly diagnosed diabetes (HbA1c \geq 6.5%)
Individuals identified to be eligible for screening for chronic kidney disease will be offered the test

<p>2. Explain the procedure of blood sampling to assess for kidney disease including relevant risks:</p> <ul style="list-style-type: none"> a. Mild pain during blood sampling b. Minor bruising at site afterwards c. Very rarely, skin infections afterwards <p>Gain verbal consent to proceed to collect blood sample.</p>
<p>3. Lay out all materials required</p> <ul style="list-style-type: none"> • Sharps bin • Labels • Test request forms with client’s identifying details • Specimen tubes labelled with participants ICARoz ID
<p>4. Perform phlebotomy of a peripheral arm vein (ideally from the ante-cubital fossa) whilst the client is seated using sterile procedures as outlined in section 13.1.3.</p>
<p>5. Place a sterile swab over the phlebotomy site after the blood draw and ask the client to apply pressure and elevate the arm to stop the bleeding. Once bleeding has stopped, apply a plaster.</p>
<p>6. Observe client for any light-headedness during and for 5 minutes after the procedure. If the client is lightheaded help them to lie down and raise their legs if possible. Monitor until symptoms resolve.</p>
<p>7. If blood sampling is unsuccessful, offer one further attempt at a different site and proceed if client consents.</p>

13.1.3 Phlebotomies







All blood must be considered and treated as potentially harmful. All staff involved in the implementation of this procedure should be competent and must be aware of the risks and hazards involved and how to guard against them. The table below shows some of the hazards that may be encountered in the implementation of this procedure. Persons responsible for performing phlebotomies at ICARoz are the nurses.







Table 13.3 Hazards associated with collecting blood samples

Hazard	Procedure	Precaution
Occupationally acquired Hepatitis B, HIV and other Blood borne infection.	generating hazard Any procedure resulting in contact with contaminated blood, transport or testing of samples	<ul style="list-style-type: none"> • Treat all blood and blood products as potentially harmful • Ensure all staff are familiar with procedures, risks, how to protect themselves, and are competent when performing relevant procedures • Staff should ensure a barrier is always maintained between themselves and blood they are working with, by using gloves.

		<ul style="list-style-type: none"> • Ensure staff collecting samples are vaccinated with Hepatitis B vaccine and any wounds should be covered with Elastoplast. • Work carefully to prevent needle stick or sharps injury • Never resheath a needle and always dispose of sharps into sharps containers. • Ensure sharps containers are not overfilled. • Dispose of sharps containers appropriately. • Ensure sample is always in appropriate, labelled container/packaging during transport, and processing e.g. DBS in envelopes • Adhere to and observe good lab practice and ensure regular reading of Safety manual and that staff are aware of risks associated with procedure they are performing and how to protect themselves. • Ensure no unauthorized staff has access to sample collection or storage areas, ensure these areas are clearly defined and marked. • Ensure samples are appropriately labelled as “hazardous substances” and packaged to prevent unintentional in-transit exposure.
Sharps injuries	Can occur when collecting sample with lancet or needle stick.	Ensure staff are competent in procedures: if sharps injury does occur, follow Needlestick Injury and PEP Policy. Sharps containers must not be overfilled.

Table 13.4 Equipment and materials for blood sample collection

	Laboratory request form (paper CRF) and bar code stickers with ICARoz number
	Tourniquet
	Gloves
	Alcohol prep pads
	Gauze
	Sharps container

	Purple topped vacutainer blood tube (EDTA)
	Yellow topped vacutainer serum tubes
	Green topped vacutainer heparin tubes
	Vacutainer
	Plasters
	Cooler box with tube rack and no ice (for EDTA specimen)

13.1.3.1 Procedure

Explain to the client the reason for taking different blood tubes, ensuring that client has assented and consented to blood storage in the consent form.

Table 13.5 Flow of blood sample collection

1. Ensure correct labelling of ICAROZ ID on laboratory forms and blood tubes
2. Apply tourniquet <ul style="list-style-type: none"> a. Allow puncture site to dry after cleaning with antiseptic swab and before collecting specimen b. The largest palpable vein should be used. If there is difficulty in drawing blood and the flow is too slow, it is likely the sample will haemolyse. Therefore, every possible effort should be made to draw a sample with a smooth blood flow c. Ensure adequate volume of blood is collected as specified in the bleed schedule, to allow sufficient blood for all downstream testing and investigations
3. Remove tourniquet
4. Place a sterile swab over the phlebotomy site after the blood draw and ask the client to apply pressure and elevate the arm to stop the bleeding. Once bleeding has stopped, apply a plaster.

5. Observe client for any light-headedness during and for 5 minutes after the procedure. If the client is lightheaded help them to lie down and raise their legs if possible. Monitor until symptoms resolve.
6. If blood sampling is unsuccessful, offer one further attempt at a different site and proceed if client consents.

13.1.4 Specimen packaging and transportation

- When the last client of the day has been bled, inform the Interpath Laboratory that specimens are coming. Samples should arrive at the laboratory between **0800hrs** and **1630hrs** every day of ICAROZ operation (Monday to Friday). The Interpath Laboratory phone number is **0773 432 406**. All specimens and accompanying laboratory request forms obtained from Interpath must be completely labelled with relevant information (e.g. date of collection, sample number). All specimens (together with the request forms) should be placed into clear specimen bags before placing into the dispatch box.
- The specimen tracking log must be filled in and handed over with the specimens and forms to the driver who will deliver them with expedience to the laboratory. The samples should get to the laboratory on the same day as sample collection. Samples can be transported at room temperature.
- When samples are received in the lab, the laboratory must acknowledge receipt by also signing the specimen tracking log.

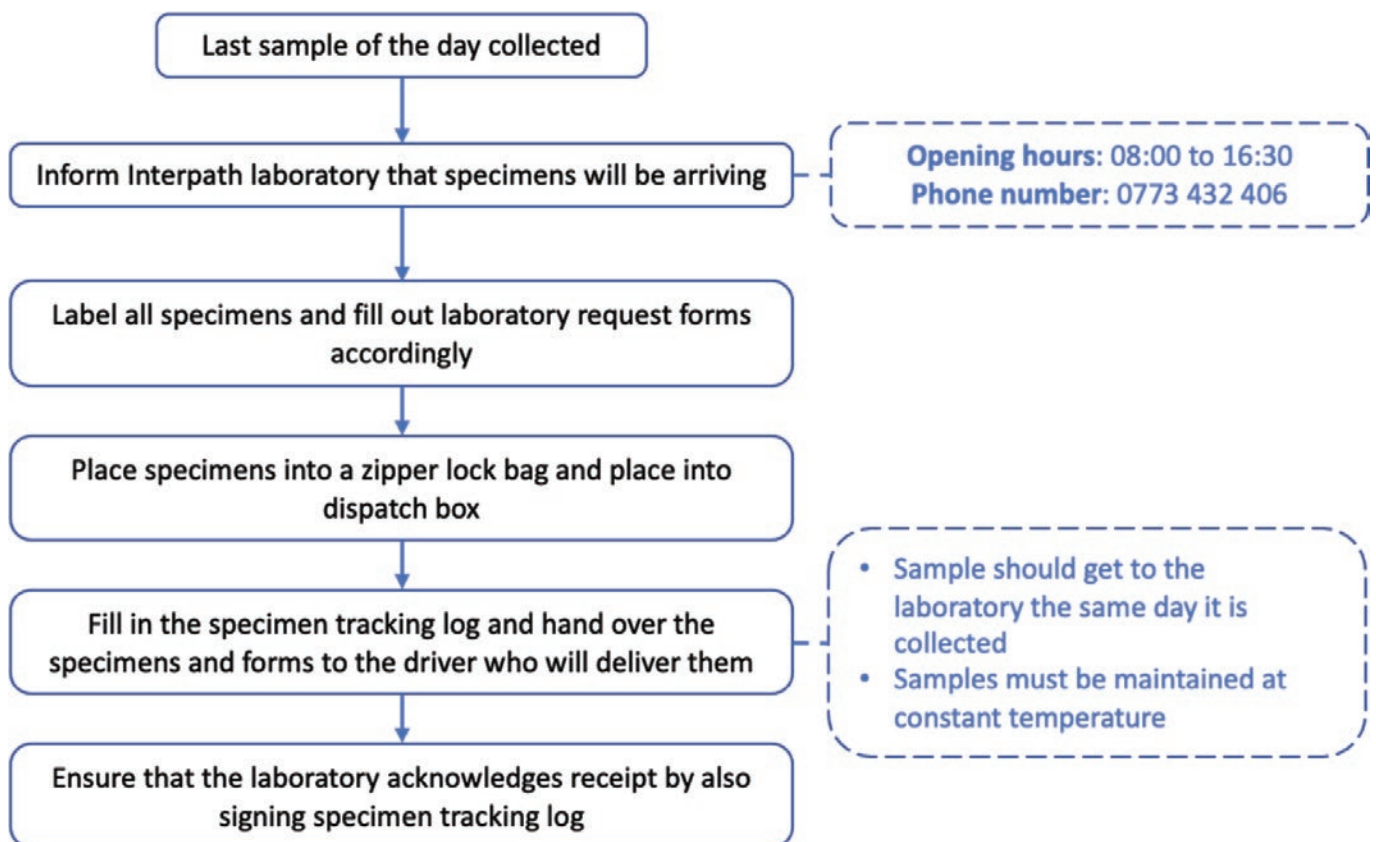


Figure 13.1 Flow of procedure for renal function testing sample collection

13.2 Results

Creatinine results are available within 24-28 hours. Hard copies are collected from the ICAROZ site after 2-3 days. The study co-ordinator receives results from the laboratory and then makes copies and sends them to the field team and the data team respectively. Because the sample is analysed in the laboratory and not at the ICAROZ site, it is important to record accurate contact information (ideally more than one method of contact) for every person that undergoes testing in order to be able to contact them with their results. The nurse is the responsible person to contact clients with their results (within 24-36 hours after receiving the results).

The results provided from Interpath are sodium, potassium, chloride, urea, creatinine and eGFR. The participant's result and reference ranges are provided on the results form. The nurses are responsible for calling clients to inform them of their results. They will report to the client whether their results are all within the reference range (as provided by Interpath) in which case they are "Normal". If any of the results are outside the reference range, they will inform the client of this result and refer them as appropriate. The primary result for interpretation is eGFR.

Diagnosis of CKD is based on the eGFR, with stages shown in **Table 13.3⁶³**.

Table 13.6 CKD diagnosis stages

Stage	eGFR range
Normal	≥90
Mild decrease	60-89
Moderate decrease	30-59
Severe decrease	15-29
End stage renal disease	<15

Note: eGFR is calculated based on the measured creatinine and can be affected by age, sex, body weight, pregnancy and ethnicity.

All participants with eGFR <90 should be referred.

Mild abnormalities in electrolytes (sodium and potassium) are not uncommon and may be a result of suboptimal sample collection and transport. Therefore if the eGFR is normal, routine referral for all participants with sodium in the range 130-150 mmol/L and potassium in the range 3.0-5.5 mmol/L inclusive is not recommended. Participants with results outside this range should be urgently referred for review and a repeat blood test to recheck the levels. All participants with a potassium result of 6.0 mmol/L or higher must be immediately referred to the local emergency department as this can be a life threatening condition [66].

If there are any concerns with interpretation of blood results and or information to provide to clients, nurses should contact one of the BRTI doctors associated with ICAROZ as shown in Appendix 5.

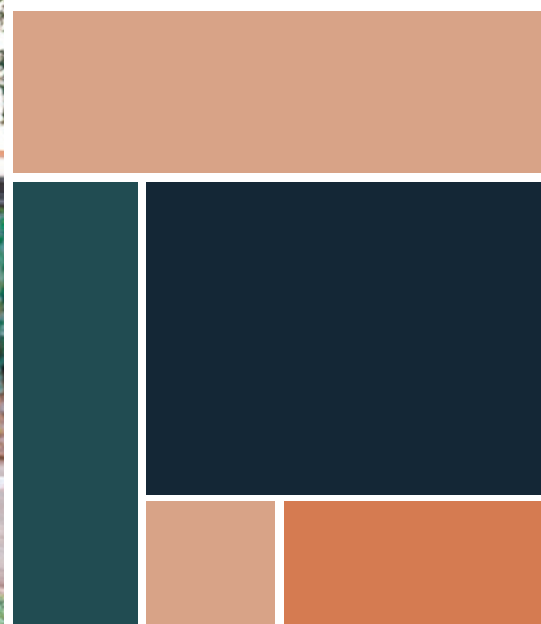
Results that are within the normal range will be communicated via SMS. Results that are outside the normal range are communicated via phone, informing the clients that they should come and collect the results slip with a referral form. If there is a problem with the sample or any delay in obtaining results, ICAROZ staff will use the client's phone number to contact them.

Linkage to care is further discussed in Chapter 14. All clients should provide verbal consent to be referred and to be contacted to assess linkage to care.

13.3 Forms completed

Throughout the renal function testing process at the ICAROZ site, the clinical nurse or assistant will complete relevant applicable items in:

- Referral form (paper) if applicable
- Clinical recording form (R01)
- Referral list form



14. REFERRALS AND LINKAGE TO CARE

This section describes the correct procedure for referring clients to appropriate care and contacting them to facilitate and assess linkage to care for those who have been referred for further investigations and treatment. The reason for contacting clients is two-fold:

- To provide support for linkage and encourage linkage
- To determine linkage as a measure of effectiveness of the OHS.

It is important to complete the follow-up forms (R09, R10 and referral list form) to document linkage to care, ICARoz coordinators, ICARoz nurses and/or assistants are responsible for establishing correct referrals and contacting clients to assess linkage to care.

14.1 Referrals

The image shows a patient held screening card for ICARoz. On the left, it features the ICARoz logo and a 'HOTLINE' section with the number +263 779 620 788. The right side of the card contains a screening checklist with the instruction 'Kindly tick appropriate box'. The checklist includes categories like Diabetes, Hypertension, HIV, TB, SARS-CoV-2, Anaemia, Mental Health, Eye Sight, and Counselling Given, each with 'YES' and 'NO' checkboxes. To the right of the checklist is a section titled 'REFERRED TO' with several horizontal lines for handwritten notes.

Figure 14.1 ICARoz patient held screening card with ICARoz hotline

Once the client is identified as requiring a referral for any of the conditions mentioned above, the nurse explains the client's positive screening results and explains the need for further care. ICARoz clients include clinical and non-clinical HCWs, so adequate consultation with the client is required.

Referrals procedure

1. Explain the positive result and the need for further examination to establish a diagnosis or to screen for cervical cancer (for cervical cancer referrals)
2. Explain the autonomy granted to the client when deciding which health facility they can access for further care
3. Ask the client if they would like to be referred to a primary healthcare facility of their choosing for further care
4. If the client agrees, complete the referral letter (Appendix 4) with their unique ICAROZ ID, and inform the client to take this letter with them when they visit the referral healthcare facility. A duplicate referral letter must be completed and stored for records
5. Obtain written informed consent (using Linkage to Care ICF) from the client granting permission for them to be contacted within 30 days of their visit to the ICAROZ services to establish whether they have linked to care and encourage linkage to care for those that have not yet linked to care
6. If the client refuses referral, record this in the logbook and inform the ICAROZ coordinators
7. For all clients, ensure that their ICAROZ card (Figure 14.1) is completed accordingly and their ICAROZ ID sticker is attached. Inform the client that if they wish to return to the ICAROZ services, they must bring their ICAROZ card

14.2 Linkage to care

14.2.1 Initial follow-up (Within 30 days)

1. Referred clients who provided written consent should be followed up by telephone to confirm linkage to care within 30 days of their initial visit to the ICAROZ services
2. The ICAROZ coordinator or nurse assigned to do the referral tracking will collect the list of people (IC number, date of referral, reason for referral) who were referred for further care within the past 30 days from the data team
3. The individual making follow up calls should extract the copy of the referral letter from the file and the client's telephone numbers from the enrolment log and complete the referral list form
4. If the client is not reachable through the given contact numbers, up to 3 attempts should be made to reach the client using all available contact numbers. If the client is still not reachable, indicate it as lost to follow-up on the referral call log and referral tracking form (R09)
5. If the client is reached, ask them to confirm their name and the conditions they were referred for (to confirm you are speaking to the correct person)
6. Establish a non-judgemental relationship with the client
7. Ensure you accurately complete the applicable sections of the follow-up call log and referral tracking form (R09)

Linkage to care is assessed for each of the services the client has been referred.

NB: The referral linkage form (R09) will only be completed when the final outcome of the tracking process is known, either successfully linked to care or not linked to care or lost to follow-up

- If the client is successful tracked, the outcome is documented on the tracking log, and all sections of the referral tracking form (R09) are also accurately completed
- From RT 08 to RT 26 on the referral linkage form (R09), only the relevant section should be completed, depending on what the client had been referred for
- If client is not linked to care, outcome will be documented as 'not linked', and staff should also capture the reason why the client has not been linked to care and the possibility of calling again later to check linkage

14.2.2 Second follow-up (Within 3-6 months after initial visit)

- Clients who were referred for further care during their ICAROZ visit and had not successfully linked to care within 30 days after their ICAROZ visit, are called 3-6 months later to establish linkage to care except for cervical cancer screening and eye health. If they have not linked, the ICAROZ team establishes need for care and offers follow-up visits if possible based on location of operation
- The ICAROZ coordinator or nurse assigned to conduct the 2nd follow-up call, will collect the list of people (IC number, date of referral, reason for referral) who had not linked to care within 30 days, from the data team
- If the client is not reachable through the given contact numbers, up to 3 attempts should be made to reach the client using all available contact numbers. If the client is still not reachable, indicate it as lost to follow-up on the referral call log and second follow-up form (R10)
- If the client is reached, ask them to confirm their name and the conditions they were referred for (to ensure you are speaking to the correct person)
- Establish a non-judgemental relationship with the client
- Ensure you accurately complete the applicable sections of the follow-up call log and second follow-up form (R10) based on whether they have since linked to care or not

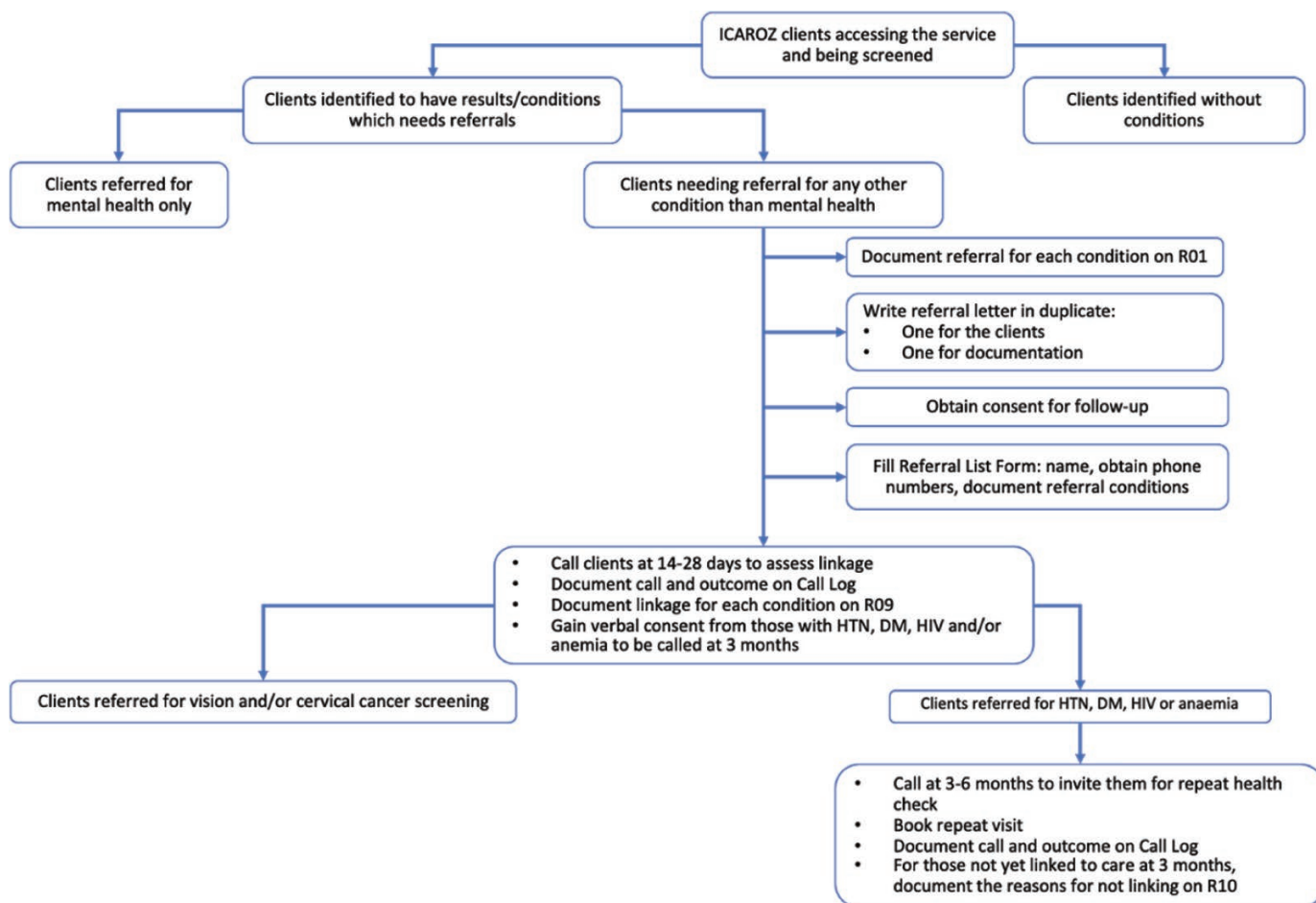


Figure 14.2 Flow of referral and linkage to care process

14.2 Forms to be completed

- Referral letter
- Referral tracking form (R09)
- Second follow-up form (R10)
- Follow-up call log
- Referral list form



SECTION 3

Safety and training



15. SAFETY CONSIDERATIONS

Field staff are responsible for ensuring their safety and for drawing attention to their team co-ordinator any concerns arising from their work that they believe impact on their safety, health, and well-being.

Below is a guide to some of anticipated risks or problems that may arise during ICAROZ. It is by no means comprehensive. Any anticipated or frequently encountered problems not listed in this chapter should be raised at the weekly team meetings and may be added to this chapter. The ICAROZ study co-ordinators are responsible for keeping a problem log to record any issues (foreseen or unforeseen) that arise during operations.

15.1 Sharps and splash injuries

Sharps injuries are defined as injuries from sharp clinical equipment include needlestick injuries and injuries from other medical supplies such as syringes, scalpels, lancets, and glass from broken equipment.

Splash injuries are when bodily fluids have splashed onto an open wound or mucus membrane (e.g. eyes, mouth).

The most important risk associated with sharps and splash injuries is potential transmission of blood-borne viruses such as HIV, Hepatitis B, and Hepatitis C.

The occupational risk of transmission following a significant sharps injury has been shown to be approximately:

- 1 in 3 when the source is infected with Hepatitis B virus and is HBe antigen positive, and the injured person is unvaccinated
- 1 in 30 when the source is infected with HCV
- 1 in 300 when the source is HIV-positive.

The risk of transmission is higher if the injury is deep, the needle is bigger, and the source is not on treatment for the relevant condition.

All staff likely to be exposed to blood should be vaccinated against Hepatitis B

15.1.1 Prevention of sharps injuries

- Regard blood and body fluid from any individual as potentially hazardous.
- Ensure that any cuts or lesions that may occur outside and during operational hours are covered with a waterproof dressing whilst on duty.
- Wear disposable gloves if exposure to blood or body fluids is anticipated, including whilst mopping up spillages.
- Ensure always that a sharps bin is available to dispose of any sharp immediately at the point of use. Never start a procedure without having a sharps container available to dispose of sharps.
- Never re-sheath needles. Do not leave a used needle or blade unattended. Always dispose of sharps safely before undertaking another task.
 - If you find a sharp/needle in an inappropriate place, do not pick up with your hands. Pick up the sharp with forceps, or gently scoop into a dustpan using a brush and place into the nearest sharps box.
- Do not allow sharps boxes to become more than two thirds full. It is the responsibility of the ICARoz team to ensure that sharps boxes are checked and changed when two thirds full.
- Do not shake the sharps box to attempt to compress the contents. Sharps can fly out of the box causing injury.
- Always place sharps boxes well away from public access areas at a suitable height.

15.1.2 Dealing with a sharps or splash injury

In the event of a sharps injury, immediately:

1. Encourage the **wound** to bleed by squeezing it and ideally holding it under running water. **Do not** suck the wound.
2. Wash the **wound** using running water and plenty of soap. Do not use antiseptics or skin washes. **Do not scrub the wound** while you're washing it

In the event of a splash injury, immediately wash exposed mucus membranes (e.g., eyes) with lots of water.

Contact your field coordinator immediately. If your field co-ordinator is unavailable seek medical help at the visiting health facility for accessing PEP. Staff members must **NEVER** act as their own clinician.

It is the responsibility of the field coordinator to ensure that the team can access advice and PEP within two hours of exposure

15.1.3 PEP

The risk of someone being HIV-infected after a needlestick injury from an HIV-infected source person has been estimated at 3 per 1,000 but is lower if the source person is on antiretroviral therapy (ART). The risk after exposure to splashes or contact with other tissues is lower than this. With post exposure prophylaxis (PEP), the risk of infection can be reduced by 50-95%.

PEP will be offered to staff who are exposed to HIV while carrying out duties that are directly related to the work they have been assigned. PEP will NOT be offered to staff for sexual exposures, with the exception of rape while in the field, or exposures while carrying out private duties or duties that have been assigned by another institution.

The field coordinator should ensure that a staff member who experiences a needlestick injury is referred to an appropriate practitioner for PEP, appropriate testing of samples is performed, and the staff member is followed up.

15.1.3.1 Indications for PEP

Any of the following are indications for PEP:

1. Needlestick injury

2. Mucosal contact (e.g., mouth or eyes): if contact is with blood or constituents of blood (e.g., serum/plasma/semen), or with untreated tissue (e.g., fresh vaginal swab material). PEP is not indicated if the contact is with other body fluids (e.g., urine, vomit, saliva, faeces).

3. Skin contact: if there is an obvious portal of entry (e.g., a wound or ulcer) on the skin of the exposed person, or if there is extreme contact with blood or other untreated tissue (e.g., a major splash with blood). PEP is not indicated if there is no obvious portal of entry, and the exposure is brief.

4. Rape: If a staff member is raped while on field assignment and there has been penetrative vaginal and/or anal intercourse, or if there is oral mucosal contact with semen.

PEP must be started within 72 hours of exposure. **PEP** has little or no effect in preventing HIV infection if it is started **later** than **72 hours** after HIV exposure. The sooner that PEP is started after exposure, the more effective it is.

The full course of PEP is 4 weeks. Treatment and follow-up will be according to the Zimbabwe National Guidelines

15.1.3.2 Testing of samples

Blood from both the source person and the exposed person should be tested for HIV as soon as possible after the incident. The source person should receive full pre-test counselling and has the right to refuse to be tested. Both the source person and exposed person should be tested for HIV using a serological sample sent to a laboratory wherever possible (not using a rapid blood-based test or with oral mucosal sample). **The importance of maintaining confidentiality for the exposed person is paramount.**

The team coordinator is responsible for ensuring that the serological testing is done and reported promptly, and that the confidentiality of both the exposed person and the source person is maintained. This should be done by assigning a code to each person.

The decision to continue or stop prophylaxis should be based on the Table 15.1.

Table 15.1: Decision to continue or stop prophylaxis

STOP PEP
<ul style="list-style-type: none"> Exposed person HIV-positive
<ul style="list-style-type: none"> Exposed person and source person are HIV-negative, where source person is from a low-risk group
COMPLETE FULL PEP course
<ul style="list-style-type: none"> Exposed person and source person are HIV-negative, but source person is from high HIV incidence risk group where early HIV infection cannot be excluded
<ul style="list-style-type: none"> Exposed person is HIV-negative and source person is either HIV-positive or has not or cannot be tested

15.1.3.3 Follow-up

The exposed person should be encouraged to have further counselling and HIV testing at 4 weeks, 3 months, and 6 months after the incident to document any sero-conversion. The exposed person should be assessed clinically at 2 and at 4 weeks if they are receiving PEP to assess their clinical and mental state, with particular assessment of potential drug-related side effects. The exposed person should abstain from being a blood donor and from sex (or should use a condom consistently) during the first six months after exposure. Condoms will be provided by the team coordinator.

15.2 Personal Safety

Personal Safety refers to the freedom from physical harm and threat of physical harm, and freedom from hostility, aggression, harassment, and devaluation at the workplace.

Safety includes worry about being victimized as well as actual incidents.

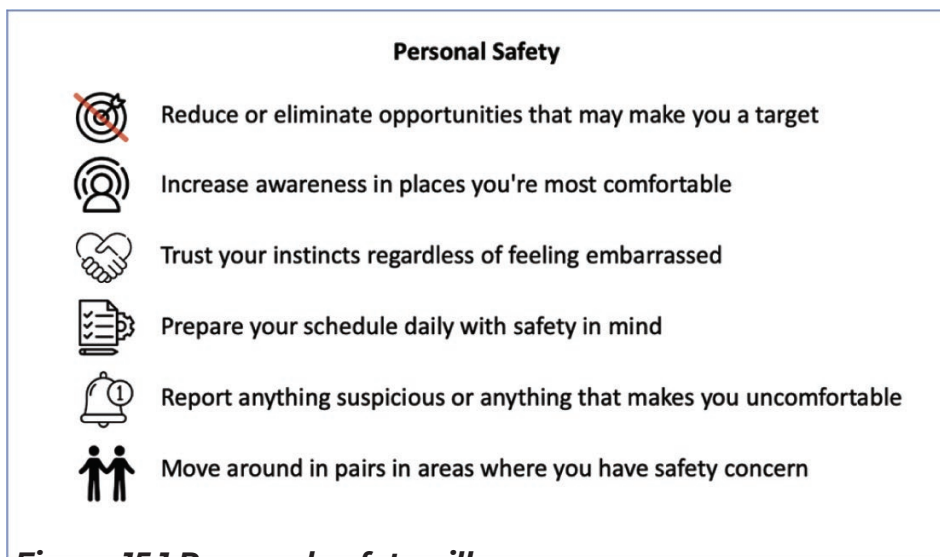


Figure 15.1 Personal safety pillars

Each staff member should recognise and avoid possible harmful situations or persons in their work surroundings. Any concern, however small, must be reported to the study team coordinator, so that appropriate action can be taken to maintain the safety of the study team. The team vehicle should be parked in a designated parking area within the health facilities and locked. During service provision, the vehicle should be parked in designated areas only. No valuables should be left in the study vehicle.

—————▶ **Ensure that you take a 30-minute lunch or tea-break during your shift.**

15.3 Manual handling

Manual handling covers a wide variety of activities including lifting, lowering, pushing, pulling, and carrying. There is a risk of injury if any of these tasks are not carried out appropriately. Whenever possible try to lift or move heavy loads in pairs. Do not lift heavy loads if you are pregnant.

15.3.1 Good handling technique for lifting

Avoid lifting from floor level or above shoulder height, especially heavy loads

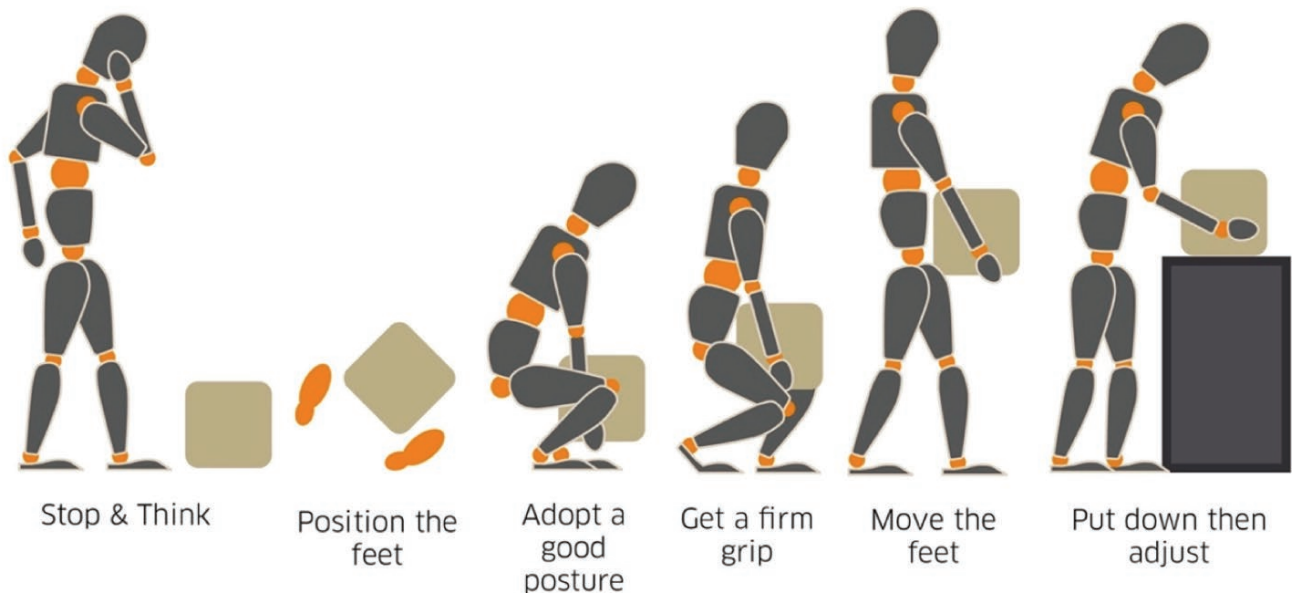


Figure 15.2: Good handling technique

Steps:

- 1. Adopt a stable position:** The feet should be apart with one leg slightly forward to maintain balance (alongside the load if it is on the ground). Be prepared to move your feet during the lift to maintain your stability. Avoid tight clothing or unsuitable footwear, which may make this difficult.
- 2. Get a good hold:** Where possible, the load should be hugged as close as possible to the body. This may be better than gripping it tightly with hands only
- 3. Start in a good posture:** At the start of the lift, slight bending of the back, hips and knees is preferable to fully flexing the back (stooping) or fully flexing the hips and knees (squatting).
- 4. Don't flex the back any further while lifting:** This can happen if the legs begin to straighten before starting to raise the load.

5. Keep the load close to the waist: Keep the load close to the body for as long as possible while lifting. Keep the heaviest side of the load next to the body. If a close approach to the load is not possible, try to slide it towards the body before attempting to lift it.

6. Avoid twisting the back or leaning sideways, especially while the back is bent. Shoulders should be kept level and facing in the same direction as the hips. Turning by moving the feet is better than twisting and lifting at the same time.

7. Keep the head up when handling: Look ahead, not down at the load once it has been held securely.

8. Move smoothly: The load should not be jerked or snatched as this can make it harder to keep control and can increase the risk of injury.

9. Don't lift or handle more than can be easily managed: There is a difference between what people can lift and what they can safely lift. If in doubt, seek advice or get help.

10. Put down, then adjust: If precise positioning of the load is necessary, put it down first, then slide it into the desired position.



16. TRAINING

This section describes the types and levels of training to be provided to best prepare and equip the service provision team to deliver occupational health services. There are signed training logs for every training conducted by the team.

16.1 Initial training

The entire ICAROZ team undergoes theory and practical training before the start of service provision which includes training on protocol and all applicable SOPs. The Manual of Operations is used as a guide for coordinators to train all staff. All involved staff must be trained thoroughly in all the service-related procedures, even if they aren't part of their direct role.

For any new staff member joining the team, the coordination team will take one full day to take them through the protocol and SOPs for all service provision procedures. After that, the new member will shadow experienced team members and have on-the-job training in the field.

16.2 New services and refresher trainings

With each amendment to the protocol and/or SOPs, the team conducts an amendment protocol training. Each member of the team is required to attend and sign the staff training log at the end of training. Refresher trainings are conducted on a need basis.

Depending on the course of the COVID-19 pandemic, ongoing training and monitoring throughout the service provision will take place per requirement, either on-site at BRTI or virtually.



APPENDICES

Appendix 1. ICAROZ service setup

Presentation

Impact of the COVID-19 pandemic on health care workers and the health care system in Zimbabwe (ICAROZ)



Study Objectives

- Implement comprehensive OHS including SARS-CoV-2 testing integrated with screening for major causes of morbidity and mortality to frontline HCWs with rapid feedback of results to reduce nosocomial spread
- Establish a SARS-CoV-2 surveillance system tracking new infections in HCWs and their household contacts
- Determine the proportion of HCWs reporting anxiety symptoms using the 7-item Generalised Anxiety Disorder (GAD-7) questionnaire
- Evaluate the success of linkage to care for diabetes, hypertension, HIV, eye health, anemia, chronic renal disease, and cervical cancer screening, and assess factors associated with the success or failure of linkage to care

Referral & follow-up

Referrals

- **New diagnosis** (DM, HTN, HIV) and/or suboptimal controlled DM/HTN - staff clinics and/or primary health care clinics
- **Eye-sight** - ophthalmology clinic at PGH
- **Cervical cancer screening** - primary health clinics
- **Mental health** - counselling service unit (WhatsApp and telephone counselling)

Results notification

- **Negative SARS-CoV-2 and TB results** sent by SMS (within 24-36h)
- **Positive SARS-CoV-2 results** - telephone consultation (need for clinical care, IPC and isolation advise, symptomatic HiC, mental health referral, follow-up day 3, 7 and 10)

Follow-up

- **All referrals (except for mental health)** are called at 10-20 days to establish and encourage linkage to care

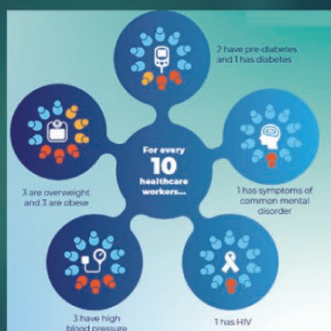


Proposed Dates

- 4 October 2021
- For 1 week or potentially two depending on size of workforce



Screening results



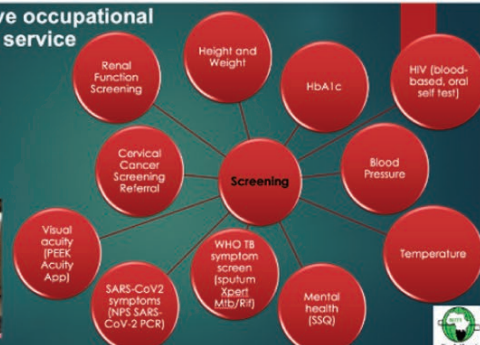
Justification

- Frontline HCWs are pivotal to the SARS-CoV2 response and establishing rapid SARS-CoV-2 testing and communication of results for HCWs will help to prevent nosocomial transmission, reduce transmission in the community and lay the foundation for an effective and robust surveillance system.
- HCWs, just like the general population are at risk of morbidity and mortality from non-communicable Diseases (NCDs) but are rarely screened for these.



Comprehensive occupational health service

- Service provision outside (tents)
- Mon-Thur (started 27th July 2020)



Uptake of services & client characteristics

- 3782 clients - total of 3879 visits 3059 (81%) female
- 21 sites including Parirenyatwa General Hospital, Harare Central Hospital, Harare City Health Hospitals and Polyclinics, Chitungwiza Central Hospital, Karanda Mission Hospital, Howard Mission Hospital, Concession District Hospital
- Recently, Mashonaland Central, East and West approval



Team and Screening

- ICAROZ team consists of 4 team members
- 2 research nurses and 2 research assistants
- Develop an appointment system with matron
- Screening all staff employed by Newlands Clinic (Clinical and Non-clinical)



Linkage to care

Diabetes	Hypertension	Eye health	Cervical cancer screening
93% linked to care	66% linked to care	51% linked to care	12% linked to care





Instructions for use:

FOR GENERAL USE

This mask is not a substitute for a medical / surgical mask or a respirator. It is not suitable for use in a clinical setting where infection risk through inhalation is high. Always observe comprehensive hygiene measures.

ATTENTION

1. Wash before first use (see wash instructions) 2. Washable 30 times 3. Each pack contains two masks to facilitate use on alternate days 4. For personal use only; do not share one mask 5. Do not use if: (i) the mask is damaged, soiled or has odor; (ii) you have any allergic reactions / breathing difficulties; (iii) you are under poor ventilation conditions 6. Not suitable for children under 3 years of age

USE INSTRUCTIONS

1. Clean your hands before and after putting on or removing the mask; avoid touching the surfaces of the mask 2. Ensure the side with the QR code label faces outwards 3. Adjust the stoppers to secure the loops 4. Mold the wire over nose bridge 5. Extend the mask to fully cover nose, mouth and chin 6. Wash after each day of use; allow to dry completely

WASH INSTRUCTIONS

1. Machine wash with gentle detergent on delicate cycle (up to 60°C) 2. Alternatively, gentle hand wash; Soak in lukewarm water with gentle detergent or soap for 2 minutes and rinse 3. Drip dry, or tumble dry on delicate cycle 4. Do not use antiseptic detergents or bleach 5. Do not dry clean 6. Do not rub, brush or wring

Appendix 3. Forms

Form number	CRF type
R01	Clinical
R02	Self-knowledge and PPE
R03	GeneXpert TB screening
R04	SARS-CoV-2 laboratory results
R05	Follow up form (SARS-CoV-2, Influenza, RSV)
R06	Household contact if index case shows infection
R07	SSQ-14 paper questionnaire questions
R08	STI screening and laboratory referral
R09	Referral tracking form
R10	Referral follow-up form

Form number	Log type
L01	Form transportation
L02	Specimen tracking for SARS-CoV-2 and TB
L03	Enrolment
L04	eCRF dispatch
L05	Form dispatch
Call log	Referral call log

Appendix 4. ICAROZ Referral Letter

Impact of the COVID-19 pandemic on health care workers and the health care system in Zimbabwe (ICAROZ)



ICAROZ Referral Form

Referring Organization: Biomedical Research and Training Institute (BRTI)

Contact Details: + 263 779 620 788

Please receive (Client First name and surname): _____

Age: ____

Referred: Yes No Refused Date referred: __/__/202__ (dd/mm/yyyy)

Referred for: DM HNT HIV Anaemia CKD TB Mental health Eye health Cervical cancer screening

Referred to: Staff clinic CSU Friendship bench Clinic Private Practitioner Eye service PGH Hospital Other: _____

Dear esteemed colleague,

_____ has attended the occupational health service (ICAROZ) delivered by BRTI Staff.
[Please note the client is known HIV+: Yes / No diabetic: Yes / No hypertensive: Yes / No]

The following screening results have been obtained:

HbA1C	_____ %	Not done	
BP	_____ mmHg	Not done	
Haemoglobin	_____ g/dl	Not done	
Creatinine	_____ μ mol/L	Not done	
Visual acuity	_____ /6	Not done	
Near Vision	N	Not done	
Mental Health	SSQ/14	Not done	Hallucinations; Yes/No Suicidal Ideation; Yes/No
	GAD-7/21	Not done	

Last cervical cancer screening	<1 year	1-2 years	>2 years	Never
HIV test	Negative	Positive	No done	
TB (MTB/Rif)	TB NOT detected	TB detected	Pending	Not done
SARS-CoV-2 RNA (PCR)	NOT detected	Detected	Pending	Not done

Comment:

Yours sincerely

Appendix 5. Record of Changes

Version history

Version	Date	Author	Key Changes	Reviewed by:	Approved by:
V1.0		Leyla Larsson			

Useful contacts

Name	Role	Email
Arun Fryatt	Clinician	arun.fryatt@gmail.com
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Edson Marambire	Coordinator	edsonmarambire@gmail.com
Leyla Larsson	Manual author	llarsson3@outlook.com

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Appendix 7. Partner Organisations

Operational:



Biomedical Research
and Training Institute



Referrals:



Impact of the
COVID-19 pAndemic on
health ca**Re** wo**R**kers
and the health care system
in **Z**imbabwe

(ICAROZ)

MANUAL OF OPERATIONS

LONDON
SCHOOL of
HYGIENE
& TROPICAL
MEDICINE

