GUIDELINES FOR TELEAUDIOLOGY SERVICES

MINISTRY OF HEALTH MALAYSIA

AUDIOLOGI
KEMENTERIAN KESIHATAN MALAYSIA

AUDIOLOGY TECHNICAL COMMITTEE(MOH)
2019/2021

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FOREWORD BY THE DIRECTOR-GENERAL
MINISTRY OF HEALTH MALAYSIA

Telehealth is a blanket term that covers all components and activities of healthcare and health care systems that are conducted via remote services. It is a fast-growing technology that is transforming the health care field. Telehealth is used crosses most health service disciplines and expanded beyond traditional diagnostic and monitoring activities to include consumer and professional education.

The implementation of telehealth in Malaysia shows that the government is on the right track. Therefore, the Ministry of Health needs to take healthcare to the next level, one that embraces the need for changes and uses ICT as an enabler. In Feb 2021, Malaysia Digital Economy Blueprint was published by The Economic Planning Unit of the Prime Minister's Department. The blueprint sets out the Malaysian Government's MyDIGITAL initiative, to drive digitalisation across Malaysia in many sectors, including the healthcare services sector.

Today, there is a growing need for telehealth in all sectors of healthcare, including audiology. The implementation of audiological services via telehealth technologies provides supplemental care in the absence of face-to-face encounters, and can be readily employed in the way an audiologist thinks is best for his/her patients and practice. With the COVID-19 pandemic, we must not neglect other important aspects of our health, including hearing. Digital health is imperative in this new normal and is increasingly being adopted on a large scale. Teleaudiology involves connecting audiologists and patients on a secured online platform for remote health-related services such as monitoring, advice and education.

This guideline develops to support audiologists in delivering optimal audiological care using telecommunications technologies. This is an ideal time for the profession of audiology to provide dynamic service that reflects a spectrum of national issues and trends. With standards in place, it is hoped that this guideline sheds light on the implementation of digital health services in MOH facilities.

I would like to congratulate the Medical Development Division and members of the audiology technical committee who have contributed towards this guideline.

Thank you.

TAN SRI DATO' SERI DR NOOR HISHAM BIN ABDULLAH
Director-General of Health Malaysia
Ministry of Health Malaysia

FOREWORD BY THE DEPUTY DIRECTOR-GENERAL MINISTRY OF HEALTH MALAYSIA (MEDICAL)

In the early 60s, health professionals used telephones to provide advice and guidance to patients. Over time, new telehealth terminology has developed based on the field of health care or the purpose of the intervention. Teleaudiology is an appropriate model of service delivery for the audiology profession to overcome barriers, enhance current practices and provide equitable access to hearing health care services and interventions.

The concept of teleaudiology is still new in Malaysia. However, it has been applied by many agencies and practices in developing countries to help the unserved and underserved populations and to overcome the shortage of audiologists. The COVID -19 pandemic has severely disrupted the provision of many essential health services including hearing healthcare. Realizing the need for continuation of the audiological services in this situation has urged us to move forward to teleaudiology as a medium in delivering utmost supervision to those patients that need continuous care. These services can be a safer option for audiologists and patients by reducing potential infectious exposures.

This guideline provides an in-depth overview of the current teleaudiology landscape approach options, what and how to implement each method in practice to enhance health care delivery and education. Ideally, a service delivered via telehealth and service delivered in person should be held to the same quality and practice standards. Teleaudiology is going to be an essential piece of hearing healthcare for the foreseeable future and can be applied to bridge the gap to quality hearing health services.

The application of information and communication technology (ICTs) in the area of health delivery has been high on the agenda of the MOH for a long time. Advancements in audiology services through the use of electronic information and telecommunications technologies have provided an opportunity to revolutionize hearing health services in communities across the states.

I applaud the tireless and well-thought efforts of all those dedicated Audiologists involved in the development of this guideline. It is fervently hoped that this guideline will serve as a stepping stone for audiological services in Malaysiâ to improve further and benefit the community.
Congratulations once again.

Thank You.

DATO' DR NORHIZAN BIN ISMAIL
Deputy Director-General of Health (Medical)
Ministry of Health Malaysia

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1.0 INTRODUCTION

The COVID-19 crisis has ushered in a new era in hearing health care that requires a radical rethinking of service delivery in audiology. According to Centers for Disease Control and Prevention (CDC) guidelines, audiology services pose a medium to high risk for COVID-19 infection according to the following criteria:

i. Proximity with patients, i.e. high-touch service with face-to-face appointments,
ii. Test setup, i.e. most audiological procedures are conducted in a confined sound-treated space, and
iii. Duration in each appointment, including initial assessment, history taking, hearing aid fitting, follow-up troubleshooting, and counseling require at least 45 minutes contact with patients.

At this time, low and no-touch services are deemed necessary for audiology patients who are typically at the highest risk for COVID-19 morbidity and mortality due to age and other cofounding factors. It is an advantage for the profession as audiology is mostly technology-driven profession when providing assessment and intervention, allowing unique opportunities to leverage remote and telehealth hearing care solutions. Exploring alternative patient-clinician contact is crucial to audiology service during this COVID- 19 pandemic and perhaps this would be the beginning of audiology tele-service in the future.

In the era of pandemic, where low or even no-touch services are necessary, audiological care needs to be responsive with alternative modes of service delivery. There are services which can be delivered remotely if staffing and local prioritization allows.

Remote support includes the use of telephone, online meeting platforms, website resources, supplier online programming and testing platforms, online videos, and hard copy materials.

NOTE:

- Throughout this document telehealth/ tele-practice/remote practice for audiological services will be referred as **teleaudiology.**
- This document is intended for use only by **audiologists** in all MOH facilities during the Covid-19 pandemic. However, the guidance can be used for remote care not limited to the pandemic.
- This document has been adapted from several guidelines, including Garis Panduan Pelaksanaan Klinik Virtual (Ministry of Health Malaysia, 2020), Guideline for Teleaudiology Services in Unit Audiology Hospital Rehabilitasi Cheras (2020), A Guide to Remote Working in Audiology (British Academy of Audiology, 2020) and A Practical Guide to the Use of Teleaudiology (National Center for Hearing Assessment and Management (NCHAM), 2019).
- This document shall be reviewed at least every 5 years, or when necessary.

2.0 DEFINITION OF TELEAUDIOLOGY SERVICES

Teleaudiology service refers to the audiological services provided via ICT applications to patients. The services include screening, diagnostic and intervention services (Jacob and Saunders (2014); Swanepoel and Hall (2010). However, in the scope of this document, these are the only services covered in teleaudiology:

- Aural rehabilitation
- Hearing aid services
- Tinnitus and hyperacusis service
- Cochlear Implant Service – counseling and outcome measure questionnaires

2.1 Goals for Teleaudiology

The goals of conducting teleaudiology are to:

1. Reduce congestion in the hospital by patient visits, and from patient's relatives or companion during the audiological session.
2. Reduce exposure of healthcare worker to Covid-19 (by reducing direct contact with patient)
3. Reduce exposure of other patients to Covid-19 during their visit to hospital for treatment or rehabilitation service.
4. Shorten patient waiting time; virtual clinic has specified slot period provided for a dedicated service.
5. Encourage use of technology in line with the current situation.
6. Facilitate patients to gain access to audiology services.

The decision to bring patients into clinic for audiology procedure during COVID-19 requires consideration of the following factors:

1. Current health condition of the patient and/or their close family members.
2. Benefits of the audiological procedure.
3. Accessibility of remote care for the patient.
4. Any risk associated with care of delivery as a result of delaying or adjusting the procedure or work process.

The delivery of audiological services via teleaudiology will only be initiated once a mutual decision has been made between audiologists and patients and after taking into consideration of all of the factors above.

3.0 METHOD OF DELIVERY

According to American Speech-Language Hearing Association (ASHA, 2017), there are three approaches for the implementation of the teleaudiology:

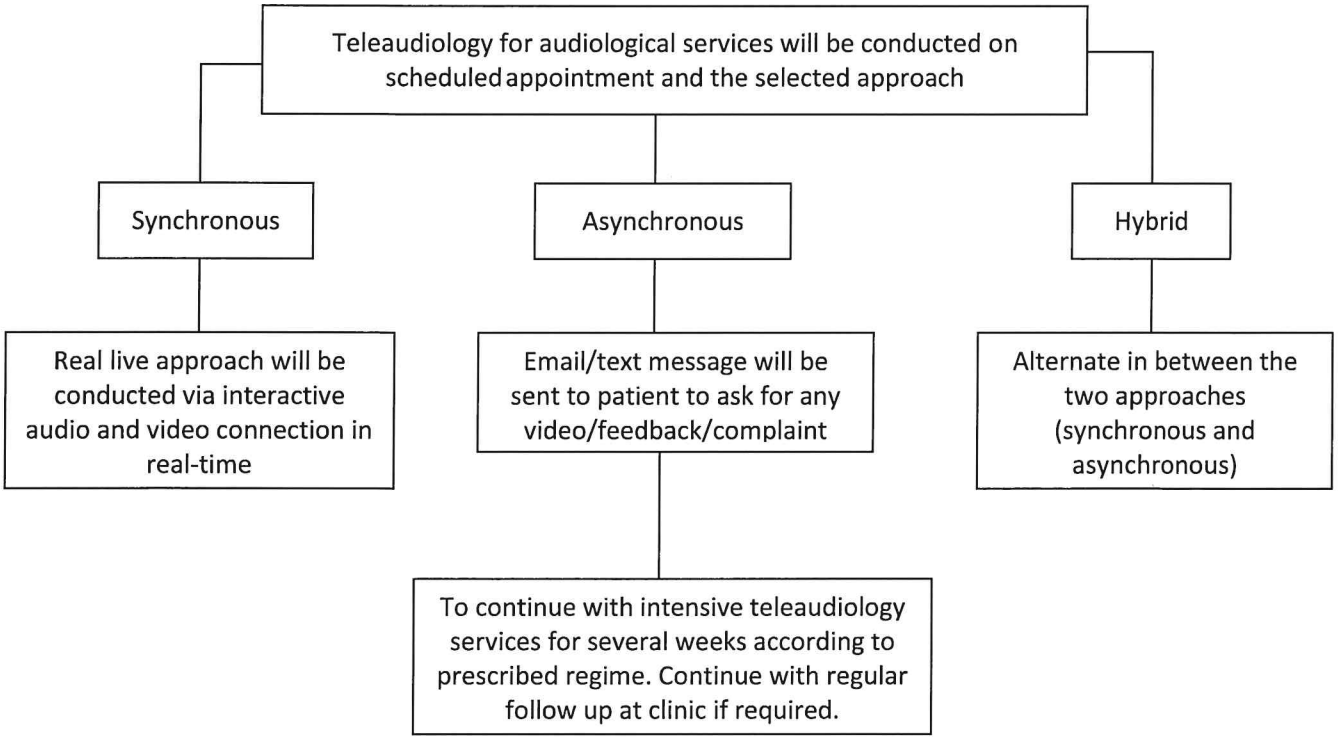
1. Synchronous, i.e real time;
2. Asynchronous, i.e feedback received via email, and
3. Hybrid approach which is a mixed of synchronous and asynchronous.

- For synchronous approach (live interactive/real time), services are conducted with interactive audio and video connection in real time to create an in-person experience similar to that achieved in a traditional encounter.

- Asynchronous approach (store and forward) is a method for patient that has no feasibility or accessibility to join connection in real time (e.g no network connection, unable to dedicate specific time for real-time session and patient with little knowledge/skill on ICT). For this approach, audiologist will receive related data or images for interpretation and consultation will be given via text message or email without the presence of patient.
- Hybrid approach is the combination of both approaches discussed earlier.

The type of approach for teleaudiology is different from each patient, depending on availability of facilities in the Audiology Unit, patients' home setting and accessibility to teleaudiology service. Any approach selected should fulfill the target outcome of each service and should be beneficial to both patients and audiologists. Patients and care takers need to be informed that all conversation through this mechanism is strictly for selected audiology services and only conducted during working hours. Patients and care takers also need to be notified that the teleaudiology service is still in its pilot stage and is susceptible to drawbacks; therefore, feedbacks are welcomed to continuously improve this service.

3.1 FLOWCHART ON SELECTION OF TELEAUDIOLOGY APPROACH



4.0 GENERAL GUIDELINES FOR TELEAUDIOLOGY

4.1 Assessing Risk and Patient Eligibility

As clinical services are based on the unique needs of each patient, teleaudiology may not be appropriate in all circumstances or for all patients. Consider patient's culture, education level, age, other relevant characteristics, as well as the benefits and challenges of other service delivery models before initiating teleaudiology services. In order to determine patient eligibility and suitability to engage in the teleaudiology services, assessment of risk and screening of patient's candidacy will be conducted prior to first session.

Audiologists need to consider the potential impact of the following factors on patient's ability to benefit from teleaudiology:

1) Physical and sensory characteristics, including:
   a) hearing ability;
   b) visual ability (e.g., ability to see material on a device monitor);
   c) manual dexterity (e.g., ability to operate a keyboard if needed); and
   d) physical endurance (e.g., sitting tolerance).

2) Cognitive, behavioral, and/or motivational characteristics, including:
   a) cultural and language requirements
   b) level of cognitive function;
   c) ability to maintain attention (e.g., to a video monitor);
   d) ability to sit in front of a camera and minimize extraneous movements to avoid compromising the image resolution; and
   e) readiness of patient and family/caregiver (as appropriate) to receive teleaudiology services.

3) Communication characteristics, including:
   a) auditory comprehension;
   b) literacy;
   c) speech intelligibility;
   d) cultural/linguistic variables; and
   e) availability of an interpreter (if necessary)

4) Patient's support resources, including availability of technology (e.g., device, internet access, facilitator);

6) Appropriate environment for teleaudiology (e.g., quiet room with minimal distractions for example front door access, external lighting); and

7) Ability of the patient, caregiver, and/or facilitator to follow directions to operate and troubleshoot teleaudiology technology and transmission.

- Refer to Appendix 1 for sample of Determination of Candidacy Form

In summary, this document recommends that teleaudiology referrals be reviewed by the audiologists (or equivalent) if some of the following **'red-flag'** conditions exist;

1) Mobile coverage is not available in the patient's accommodation.
2) A current active landline or mobile phone number has not been confirmed.
3) Mobile phone, laptop or devices are not available.
4) Environment, room or house is not conducive for teleaudiology to be conducted.
5) The patient demonstrates risky behaviors e.g. disinhibition, poor judgement, poor impulse control.
6) The patient has a significant cognitive impairment and family members are not able to support patients or not available during the session.
7) Any visual, manual dexterity or physical ability that might hinder patient from using teleaudiology and family members are not able to support patients or not available during the session.

***Red flag** conditions do not, singly or collectively, disqualify patients from teleaudiology as there should be some immediate actions made to permit the service. The risk mitigation process and negotiation would need to be carried out by a credible senior audiologist.

4.2 Competency

In keeping with the development and application of any new service delivery method, it is important that audiologists who intend to implement teleaudiology services be provided with training and support.

4.2.1 Skills of audiologists in providing teleaudiology

1) Audiologist need to obtain relevant professional training to develop their necessary knowledge and skills.
2) Well-informed on the technologies (e.g. security, confidentiality), conduct research on the pros and cons of all available platforms and its suitability for teleaudiology. Audiologist need to have a basic knowledge of devices and other equipment used.
3) Examine the suitability of the technology for a patient. Ensure that patient understands the technology and is able to use the technology
4) Discuss the possible implications of using the technology beforehand.
5) Ensure that patients are aware of the limitations with the use of each technology.
6) Prepare for emergency situations. Know the emergency resources at patient's location (eg. primary healthcare facility, hospital admission, and support person for the patient). Explain to patient about the emergency plan and provide clear written instruction on what to do during an emergency.
7) Organize materials for activities before the teleaudiology session
8) Conduct activities that involve materials and actions that are easily depicted over video/audio.
9) Demonstrate use of coaching techniques when working with family members/caregivers.

4.2.2 Skills of patients receiving teleaudiology

Patients and family members also need a set of skill for participating in teleaudiology.

1) Familiar with devices and willing to learn new technologies.
2) Identify activities, strategies, learning opportunities, and practices that will enhance own learning and communication development.
3) Know how to prepare home environment for an optimal teleaudiology session.
4) Demonstrate strategies that are modeled and discussed during the session.
5) Make decision regarding which strategies and activities work best on own capacity and limitations.
6) Able to make a reflection on teleaudiology sessions.
7) Implement strategies that work and revise the strategy when it does not have the desired outcome.

4.3 Standard of Care

1) Audiologists must meet the same ethical and professional standard as in-person services.
2) Audiologists shall be guided by existing discipline and national clinical practice guidelines when practicing via teleaudiology. Where guidelines, position statements, or standards for teleaudiology exists from a professional organization or society (e.g. Malaysian National Society of Audiologists (MANSA), American Speech- Language Hearing Association (ASHA), British Society of Audiology (BSA) etc.), these shall be reviewed by the service care provider and profession and appropriately incorporated into practice.
3) Given the variability of patients, candidacy for teleaudiology should be determined on a case- by–case basis with selections firmly based on clinical decision and findings, patient's informed choice, and professional standards of care.
4) Management of patients should be based on Existing Policies, Circulars and Standard Operating Procedure of Audiology.
5) As in all settings, audiologists shall have the appropriate education, training/orientation, and ongoing continuing education/professional development to ensure they possess the necessary competencies for the safe provision of quality health services.
6) Delivery of services via teleaudiology, whether interactive or store-and-forward, may require modifications to treatment material, techniques, equipment, and setting. Regardless of any modifications made, audiologists shall deliver services in accordance with professional standards of care and the principles of evidence-based practice (i.e., current best evidence, clinical expertise, and patient values and goals.
7) Audiologists must ensure that identity of each individual attending teleaudiology session is disclosed to both audiologists and patients before initiation of the session.
8) Audiologists must continuously assess whether the service is suitable and beneficial for the patients.
9) If the service is no longer beneficial to patient, discuss with patient the concern and consider termination and/or referral to other appropriate service(s).

4.4 Technical & Equipment Requirements

4.4.1 Platform

Teleaudiology platform needs to be HIPAA-compliant. The following are the resources but not limited to for audiologist to consider:

i. Skype for Business/Microsoft
ii. Zoom for Healthcare
iii. Doxy.me
iv. Google Hangouts Meet
v. Cisco Webex Meetings/Webex
vi. Microsoft Teams
vii. GoToMeeting

4.4.2 Setting and equipment

For patients

- A good internet connection
- An email address
- Smartphone, tablet or computer equipped with camera, speaker and microphone
- Proper lighting to include additional indoor lighting or closed blinds
- Environments that reduce background distractions or interruptions (e.g., not too many pictures, books, or windows on walls behind participants)
- Limit distracting noises (e.g., ringing phones or doorbells, TV or radio, outdoor noises, running water, etc.)

For audiologists

- A good internet connection
- Headphones to cancel echo effects and reduce environmental noise.
- Tablet, laptop or computer equipped with camera, speaker and microphone
- Proper lighting to include additional indoor lighting or closed blinds
- Environments that reduce background distractions or interruptions (e.g., not too many pictures, books, or windows on walls behind audiologist)
- Limit distracting noises
- Large materials and toys which images can be captured on cameras and adequately viewed on device screens.

4.4.3 Recording of the session

Recording of teleaudiology sessions is allowed for educational purposes only, with measures to safeguard the privacy and security if all parties involved. A legal action can be made if there is any leak or misuse of the recording by any party - patient and/or audiologist.

4.4.4 Ease of Use

It is important that families find teleaudiology technologies easy to use. For that reason, families may be more comfortable using a home device and programs such as Skype, as they might have previous experience with these programs. Likewise, many Audiologists may feel more comfortable using some systems over others. As technology can be overwhelming, it is recommended to use a checklist prior to each session to ensure both audiologist and patient are comfortable with the system, ensure the system is working well and to have another alternative system if necessary.

4.4.5 Internet Broadband Reliability

Audiologists have to keep in mind that none of the Internet broadband guarantee a smooth teleaudiology session. One way to optimize a good broadband during teleaudiology sessions is to make sure that other devices in home are not using similar bandwidth. This includes any telecommunication devices (mobile devices, iPods, MP3 players, blue-ray devices, video-game systems) or other similar devices.

4.4.6 Technology Maintenance & Support

Technology support personnel or consultants, who can help maintain equipment and trouble-shoot problems with connectivity, are valuable yet not always available. Some families may have to find technology system specialists to set up technologies and internet connection at home and to guide families to use all these technologies. While in audiologists' setting, support personnel from ICT Department can be helpful before and during the teleaudiology session.

4.5 Medico-legal

4.5.1 Legislation implication in implementing teleaudiology is paramount and should be addressed carefully to protect both clinician and patient. There are a few precautions that need to be implemented to avoid any medico-legal issues that may arise and risk clinicians specifically and the Ministry of Health generally:

i. Obtaining written consent and agreement from the patient
ii. Documenting and record-keeping of patients' personal and clinical information.
iii. Abide by Clinical Practice Guideline, Standard Operating Procedure, policy and circular while managing patient.
iv. The clinician shall terminate the consultation session if the patient violates the rules and ethics during the session

4.5.2 Audiologists are subjected to adhere to *Peraturan-Peraturan Pegawai Awam (Kelakuan dan Tatatertib) 1993 [PU(A)395]* including *Peraturan 4(2)[P.U.(A)395]* and *Peraturan 6[P.U.(A)396]* in which one needs to maintain conduct and discipline during Teleaudiology session with the patient.

4.6 Consent

Prior to providing teleaudiology services, audiologists must document a written informed consent from patients that is relevant to the service that will be offered. When developing such informed consent, audiologists must use language that can be understood by patients and/or family members, in addition to evaluate the need to address cultural, linguistic and other issues that may impact patient's understanding.

Refer to Appendix 2 for sample of Consent Form

4.7 Security & Confidentiality

- Safeguard confidentiality of patient information.
- Inform patient the potential risks of security breach in the use of telecommunication technologies.
- Audiologists who use social networking sites should review potential risk to privacy and confidentiality and consider utilizing all available privacy settings to reduce these risks.

- Use security measures (e.g. use of passwords, end-to-end encryptions) to protect data and information.
- Dispose of data and technology properly (e.g. Wiping storage devices as per recommended to minimize residual information storage).
- Implement VLAN with stand-alone workstation to reduce system vulnerabilities to viruses, worms.

- Audiologists who use teleaudiology software applications for video conferencing need to be educated and trained on all aspects of privacy and security issues related to video conferencing and exchange of other Protected Health Information (PHI).
- Incident report is necessary and should include documentation regarding the incident, response to the incident, effects of the incident as well as policies and procedures that were followed in response to the incident.
- Use HIPAA compliance checklist to check the privacy and security of any software used for teleaudiology.

4.7.1 Boundaries

- Both patients and audiologists should utilize a space that will have minimal interruptions from other household members.
- Both patients and audiologist should be mindful of content being shared during the teleaudiology.

4.7.2 Disposal of data & information

- Audiologists should dispose data, information and the technologies used to protect from unauthorized access.
- Audiologists are encouraged to document the methods and procedures used to dispose the data and information and the technologies used to create, store, or transmit the data and information, as well as any other technology utilized in the disposal of data and hardware.
- Audiologists should also be aware of any malware or cookies, and to clear them on regular basis.

4.8 Quality & clinical outcome

As with any type of intervention, evaluating teleaudiology is critical to ensure that it will yield the desired outcomes:

- Increase in patient knowledge, skills/competency in the specified area or intervention.
- Benefit and satisfaction with teleaudiology services,
- Increased patient's developmental/communication outcomes
- Improved parent-child/ patient-family interaction
- Audiologist skills/competence in coaching

5.0 GENERAL WORK PROCESS FOR TELEAUDIOLOGY

5.1 Enrollment of Patient for Teleaudiology

1) Teleaudiology is implemented in an appointment system where each patient who consented for the service must be registered in a special appointment system.
2) Patient needs to be given complete information related to the implementation of tele-audiology and a written consent to join teleaudiology must first be obtained.
3) Patient must have a valid email account and download the Video Conference application set up to receive the teleaudiology services
4) Consultation can be carried out by using any telecommunication device.
5) The frequency, date and time of teleaudiology are depending on the suitability of the clinic and based on workload as well as the number of existing audiologists. The number of patients selected per session depends on the available number of slots.

5.1.1 Steps in patient enrollment

1) Patient is identified by audiologist based on the Determination of Candidacy Form (Appendix 1)
2) Patient will be given a choice for teleaudiology services
3) Patient is required to sign Consent Form to join teleaudiology (Appendix 2), witnessed by an Allied Health Officer / Assistant Medical Officer / Nurse
4) Ensure patient understands and agrees to the terms of the teleaudiology as stated in the consent form.
5) Fix a specific appointment date and time which are agreeable by both audiologist and patient.
6) Inform patient to make adequate preparations on the appointment day
7) Ensure that patient has downloaded the prescribed video conferencing application if necessary.

5.2 Audiology Consultation

5.2.1 Pre-Audiology Consultation

1) Provide a special room / space in the hospital for the purpose of audiology consultation to maintain the confidentiality and privacy of patients
2) Before conducting the consultation, the audiologist must first: -
   a. review list of patient names in the appointment system;
   b. review previous audiology report as well as audiology test results; and
   c. prepare a draft intervention plan according to the target group category
3) Cancellation of the teleaudiology session must be notified to the patient at least 24 hours before the session.

5.2.2 During Audiology Consultation

1) Inform the video conference link to the patient
2) Verify patient information before starting the consultation session;
   a. name;
   b. identification card number;
   c. target group categories; and
   d. date of last visit to audiology clinic
3) Start a consultation or therapy session.
4) The appropriate appointment slot duration is determined by the audiologist based on needs and goals.

5) The date of follow-up appointment either through teleaudiology or attending hospital is given after the completion of the consultation session, depending on the test results, the patient's needs and goals of the session.
6) Teleaudiology sessions will be terminated if:
    a. internet line is unstable during teleaudiology sessions;
    b. types of conversations that are not related to the purpose of the consultation (on both sides); and / or
    c. there are technical problems such as downtime in hospitals
    d. patient or caregiver conducts teleaudiology in a way that can cause injury.
7) If any of the above happens, the patient will be contacted to reschedule appointment either on a virtual session or at the clinic.
8) Patient reserves the right not to proceed with the teleaudiology at own discretion and must inform the audiologist in charge beforehand.
9) Audiologist and patient are encouraged to fill in the outcome measurement form (Appendix 3) for feedback and improvement of the next teleaudiology session.

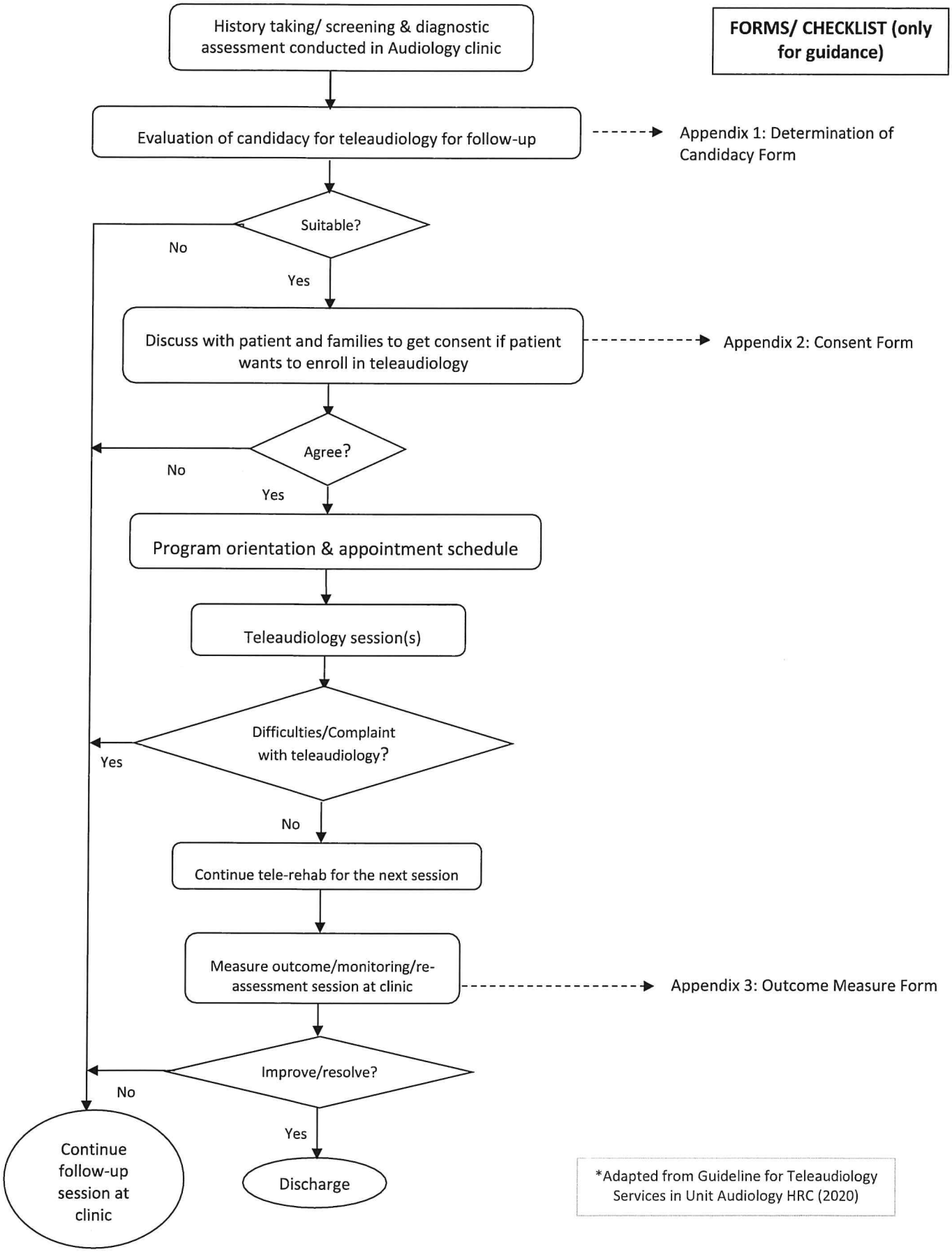
5.2.3 Post-Consultation

1) After the completion of the teleaudiology session, the patient's care plan should be documented in the patient's medical records.
2) Update all records and date of next appointment in the appointment system used.

NOTE:

Number of sessions for teleaudiology is based on patient care plan and needs. Audiologists are encouraged to set the maximum number of teleaudiology session accordingly.

5.3 General Flowchart of Process for Teleaudiology Services



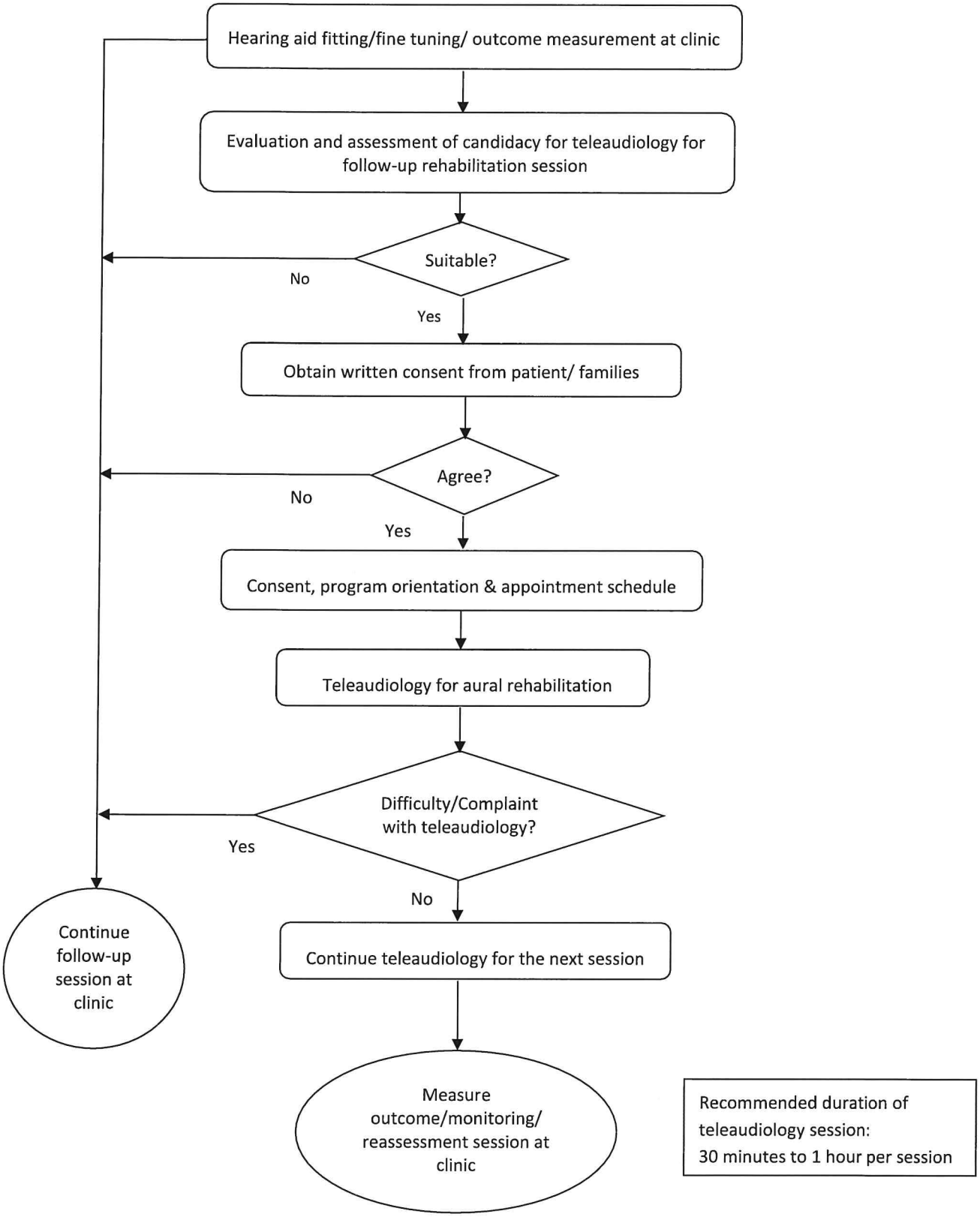
6.0 TELEAUDIOLOGY AURAL REHABILITATION

6.1 Scope of services

Scope of services for aural rehabilitation delivered via teleaudiology are as below but not limited to;

1) Analytic training
2) Synthetic training
3) Communication strategies training
4) Auditory - cognitive training
5) Device based Auditory Training
6) Sound awareness
7) 6 ling's sound training
8) Detection training
9) Discrimination training
10) Identification training
11) Comprehension training
12) Auditory memory training
13) Auditory verbal strategies training
14) Other auditory training
15) Consultation on device usage and maintenance

6.2 Flowchart of process for teleaudiology aural rehabilitation

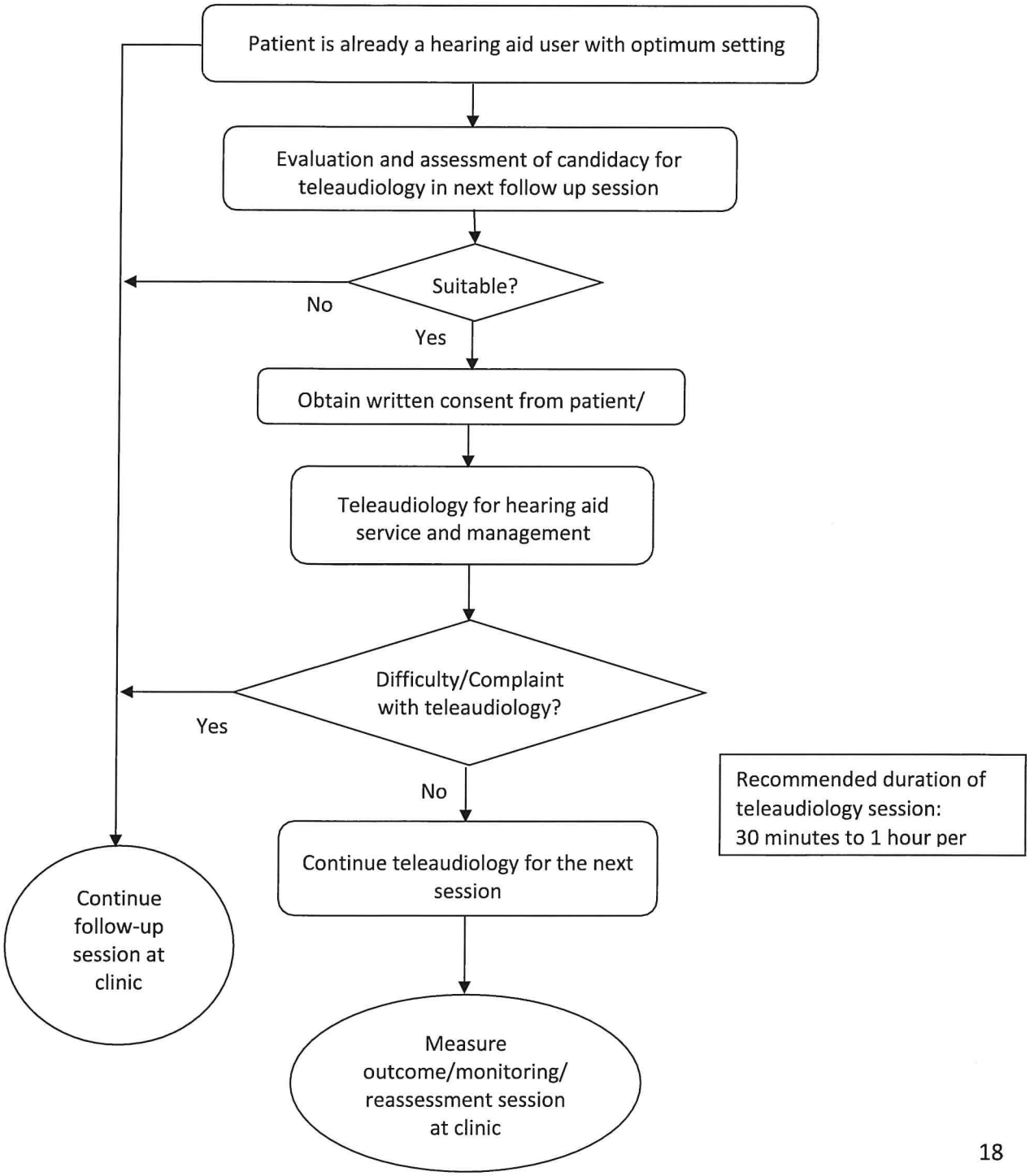


7.0 TELEAUDIOLOGY HEARING AID SERVICE

7.1 Scope of teleaudiology for hearing aid service:

1) Physical management (hearing aid fitting and ear mould comfort)
2) Sensory management (hearing aid fine tuning, adjustment or verification)
3) Orientation training and demonstration device use, device management and troubleshooting
4) Counselling (including communication strategies)
5) Validation (Questionnaire applied for aided condition and 6-Ling sound test)

7.2 Flowchart/ Mechanism of operating teleaudiology for hearing aid service



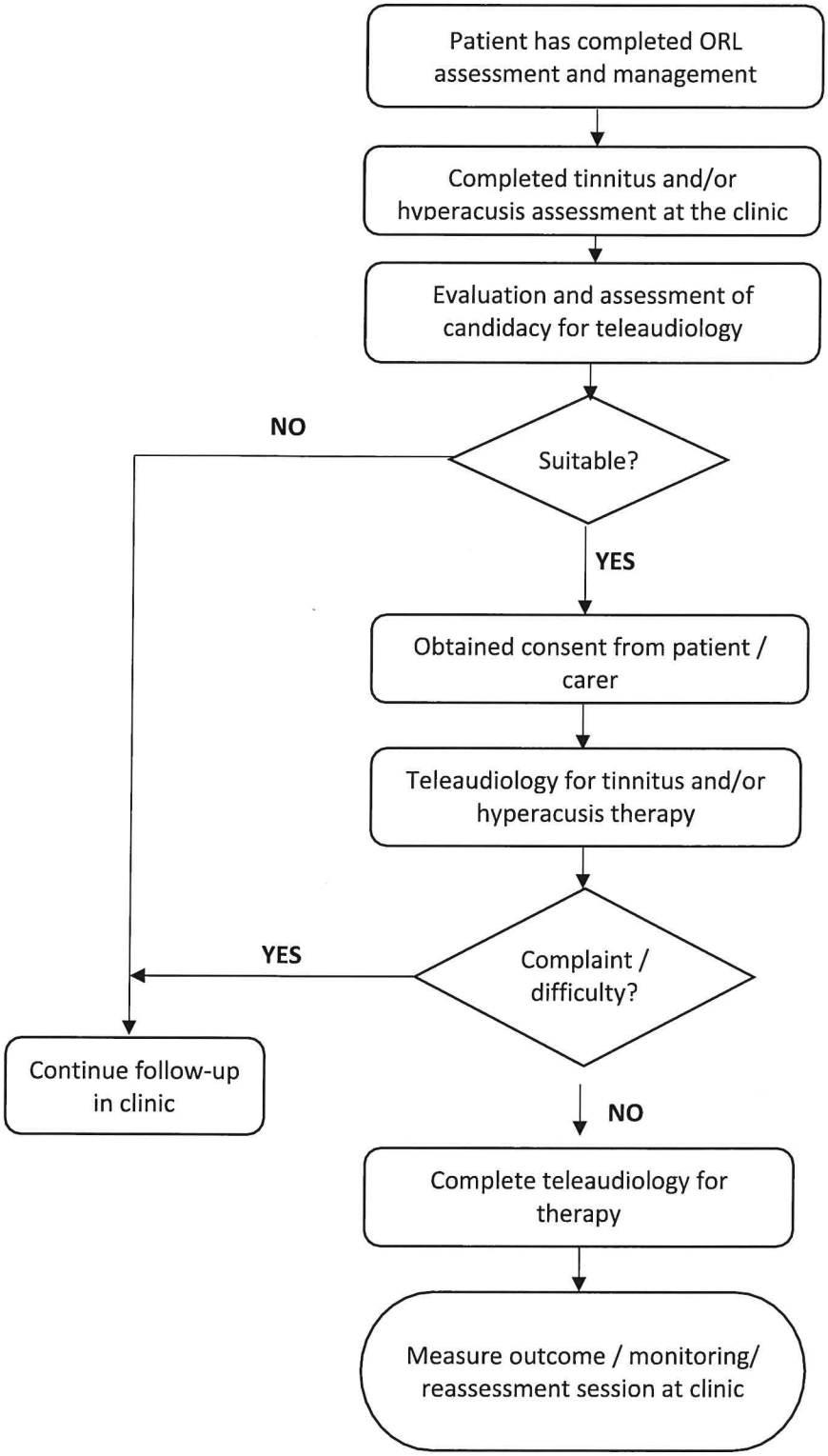
8.0 TELEAUDIOLOGY TINNITUS AND HYPERACUSIS SERVICE

Teleaudiology for tinnitus and hyperacusis services will be conducted by a Credentialed or Privileged Audiologist in tinnitus and hyperacusis management certified by KKM or hospital privileging committee. The services will be conducted in a hybrid approach (synchronous and asynchronous alternately) based on patient needs. It is a must that in this service, a patient is seen by the same audiologist throughout all sessions. Audiologist should properly identify patient that suitable for teleaudiology and should have obtained patient's consent before commencing the service.

8.1 Scope of tinnitus and/or hyperacusis service

1. Informational counseling
   - ☐ Educational video about ear, hearing and hearing loss
   - ☐ Educational video about pathophysiology of tinnitus and hyperacusis
2. Patient with tinnitus and hearing loss
   - ☐ Guidance in using hearing aids as hearing amplification and tinnitus masker at Home
3. Patient with tinnitus and/or hyperacusis
   - ☐ Guidance in using masker as therapy
   - ☐ Guidance in desensitization therapy
4. Counselling and therapy session
   - ☐ Guidance for tinnitus activity
   - ☐ Counseling session on self-help / support
   - ☐ Guidance in using mobile apps in managing tinnitus and/or hyperacusis based on patient needs and preferences (if applicable).
   - ☐ Monitoring of patient's progress
   - ☐ Relapse prevention activity
5. Questionnaires
   - ☐ To identify patient's level of annoyance before, during and after therapy
6. Tinnitus and/or hyperacusis support group

8.2 Flowchart of teleaudiology tinnitus and hyperacusis service



Recommended duration of teleaudiology session:
30 minutes to 1 hour per session

9.0 TELEAUDIOLOGY COCHLEAR IMPLANT SERVICE

Patients seek for teleaudiology cochlear implant services need to have an optimum CI mapping and have to use the device consistently. The services can only be provided by satellite hospitals.

9.1 Scope of Cochlear Implant Service

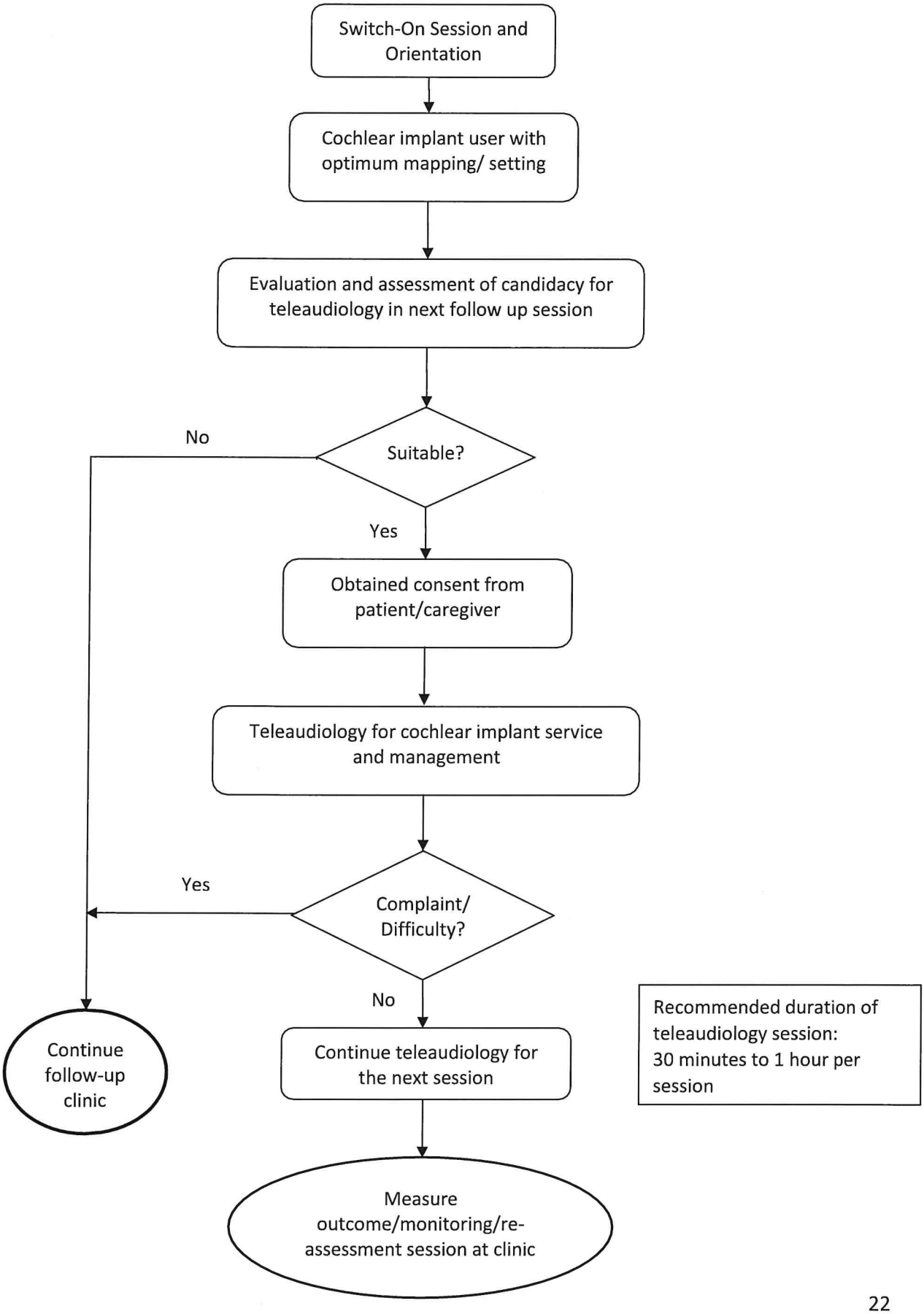
Purpose of visit	Session Aim	Method of Delivery	
		Face to face session	Teleaudiology
Intraoperative session	Impedance and intraoperative measurement	✓	
Switch on session	Cochlear Implant Activation	✓	
Cochlear implant orientation	Understanding of handling the device	✓	✓ (Hybrid)
Follow up session	Troubleshooting Verification assessment • Mapping • Aided assessment i. Aided soundfield ii. Aided Electrophysiology iii. Recorded Speech Test	 ✓ ✓ ✓ ✓	✓ (Synchronous)
Follow up session	Validation assessment / Outcome Measurement / Monitoring • Mapping • EARS speech test • Questionaire • Troubleshooting	 ✓ ✓	 ✓ (Synchronous) ✓ (Synchronous) ✓ (Synchronous)

NOTES:

Scope of services that can only be covered during teleaudiology for cochlear implant session :

i. Orientation training of cochlear implant processor after the switch on session.
ii. Validation questionaire/ Outcome measurement for adult/postlingual cases ,such as :
    - Client Oriented Scale of Improvement (COSI)
    - Abbreviated Profile of Hearing Aid Benefit (APHAB)
    - Nijmegen Cochlear Implant Questionaire (NCIQ)
    - Hearing Environments and Reflections on Quality of Life (HEAR- QL)
iii. Outcome Measurement / Validation questionaire for Paediatric / Prelingual cases such as:
    - Parents' Evaluation of Aural/Oral performance of Children (PEACH)
    - Teachers' Evaluationof Aural/Oral performance of Children (TEACH)
    - Screening Instrument For Targeting Education Risk (SIFTER)
    - Meaningful Auditory Integration Scale (MAIS)
    - Meaningful Utterances Speech Scale (MUSS)
iv. For aural rehabilitation, please refer to teleaudiology aural rehabilitation services as in item 6.0.

9.2 Flow chart of teleaudiology cochlear implant service



10.0 REFERENCES

American Psychological Association, 2013. Guidelines for the practice of teleaudiology [viewed 12 July 2020]. Available from: https://www.apa.org/practice/guidelines/teleaudiology

American Society of Hearing & Speech, 2020. Telepractice Services and Coronavirus/COVID-19 [viewed 15 July 2020]. Available from from: https://www.asha.org/Practice/Telepractice-Services-and-Coronavirus/

American Society of Hearing & Speech, 2017. Telepractice [viewed 1 September 2020]. Available from from: https://www.asha.org/practice- portal/professional-issues/telepractice/

Bahagian Perkembangan Perubatan, Ministry of Health Malaysia, 2020. Garis Panduan Pelaksanaan Klinik Virtual di Hospital.

Blaiser, K. M., & Edwards, M., 2012. Telepractice Services at Sound Beginnings at Utah State University. *The Volta Review*, *112*(3), 365-372.

Brennan, D., Tindall, L., Theodoros, D., Brown, J., Campbell, M., Christiana, D., & Lee, A., 2010. A blueprint for telerehabilitation guidelines. *International journal of telerehabilitation*, *2*(2), 31.

British Academy of Audiology, 2020. A guide to remote working in Audiology [viewed 13 July 2020]. Available from from: https://www.baaudiology.org/a-guide-to-remote-working-in-audiology-services-during- covid-19-and-beyond/

British Society of Audiologist, 2016. Practice Guidance Common Principles of rehabilitation for Adults in Audiology Services.

Garfinkel, S., 2005. VoIP and Skype security. Skype Security Overview-Rev 1.6 [viewed 1 September 2020]. Available from: July 11, 2010 from http://www.tacticaltech.org/files/tacticaltech/Skype_ Security.pdf.

Jacobs, P. G., & Saunders, G. H. (2014). New opportunities and challenges for teleaudiology within Department of Veterans Affairs. *Journal of rehabilitation research and development, 51*(5), vii-xii.

Joint Guidance of United Kingdom Professional Bodies, 2020. Audiology and otology guidance during Covid-19. [viewed 13 July 2020]. Available from: http://www.thebsa.org.uk/wp-content/uploads/2020/05/Covid-19-audiology-and-otology-guidance-1-May-020.pdf

Kuhn, D., Walsh T., & Fries S., 2005. Security considerations for voice over IP systems: Recommendations of the National Institute of Standards and Technology (NIST). Technology Administration, U.S. Department of Commerce Special Publication, 800-58.

Malaysian Medical Council Advisory, 2020. Advisory on Virtual Consultation (during the Covid-19 pandemic).

Malaysian Society of Clinical Psychologist, 2020. MSCP's Guidelines on Providing Psychological Services during the Covid-19 Era. [viewed 15 August 2020]. Available from: https://www.mscp.my/post/mscp-s-guidelines-on-providing-psychological-services-during-the-covid-19-era

Ministry of Health Malaysia, 1997. Malaysia's teleaudiology blueprint leading healthcare into the information age [viewed 17 August 2020]. Available from: https://www.moh.gov.my/ moh/resources/ auto%20download% 20 images/ 5ca1b20928065.pdf

Ministry of Health Malaysia, 2016. General Hospital Operational Policy in ICT Environment.

Ministry of Health Malaysia, 2017. Cochlear implant Service operational Policy.

Ministry of Health Singapore, 2005. National Teleaudiology Guideline [viewed 18 August 2020]. Available from: https://www.moh.gov.sg/resources-statistics/guidelines/national-teleaudiology-guidelines

Pineau, G., & Caron, L., 2006. *Telehealth: Clinical Guidelines and Technical Standards for Telepsychiatry: Report*. Québec (Province).

Sawyer, L. B. E., & Campbell, P. H., 2009. Beliefs about participation-based practices in early intervention. *Journal of Early Intervention*, *31*(4), 326-343.

Swanepoel D.W and Hall J.W. (2010). A Systematic Review of Telehealth Applications in Audiology.

The British Psychological Society, 2020. Considerations for psychologists working with children and young people using online video platforms [viewed 13 July 2020]. Available from: https://www.bps.org.uk/coronavirus-resources/professional/working-children-young-people-online-video.

The National Center for Hearing Assessment and Management (NCHAM), 2019 [viewed 5 December 2020]. Available from: A Practical Guide to the Use of Teleaudiology in Providing Early Intervention Services to Infants and Toddlers Who Are Deaf or Hard of Hearing. http://www.infanthearing.org/ti-guide/index.html

Unit Audiologi Hospital Rehabilitasi Cheras, 2020. Guideline for teleaudiology services in Unit Audiology Hospital Rehabilitasi Cheras (unpublished guideline).

11.0 APPENDIX

11.1 Appendix 1: Determination of Candidacy Form for Teleaudiology *(For Audiologist Use Only)

*Adapted from Guideline for Teleaudiology Services in Unit Audiology HRC (2020)

DETERMINATION OF CANDIDACY FORM FOR TELEAUDIOLOGY

RN : ..... **Date:** ..... **Race:** ..... **Gender:** .....

Name : ..... **Age** : .....

Suitability of Candidacy

AREAS TO ADDRESS	Adequate	Assisted	Not Fit for Teleaudiology
PHYSICAL o Vision o Hearing o Auditory discrimination o Manual dexterity (fine motor)			
BEHAVIOR o Attention o Compliance and commitment o Effort/motivation			
COGNITIVE o Ability to follow oral directions and instructions o Ability to complete tasks o Reading skills o Writing skills			
COMMUNICATION o Receptive abilities o Expressive abilities o Support available (for special needs patients)			
AVAILABILITY OF RESOURCES o **AVAILABILITY OF EQUIPMENT** • Handphone/laptop/ Computer/tablet: [mobile or static] [dedicated or multiple use] • Video camera • Headphones • Microphone			
o **AVAILABILITY OF TECHNOLOGY** • Email: • Internet connection/ Wifi			
o **SUITABILITY OF SPACE/ENVIRONMENT** • Private room • Noise level adequate • Light adequate • Furniture adequate • Materials access adequate • Safety adequate			
o **AVAILABILITY OF FACILITATOR (IF NEEDED)** • Parent/Caregiver/ Spouse/Family members available			
TELEAUDIOLOGY METHOD o Synchronous (real-time) o Asynchronous (store and forward) o Self-monitoring data submission o Virtual platform to use:			

11.2 **Appendix 2: Sample of Consent Form** *Adapted from Guideline for Teleaudiology Services in Unit Audiology HRC (2020)

HOSPITAL .....

BORANG PERSETUJUAN

BAGI MENYERTAI TELEAUDIOLOGI

Teleaudiologi merupakan satu inisiatif yang dijalankan di Hospital ..... untuk memastikan penjarakan sosial dapat dilaksanakan secara berterusan serta memberi kemudahan kepada pelanggan untuk mendapatkan perkhidmatan Audiologi secara berterusan seiring dengan teknologi semasa. Servis ini dijalankan untuk menyampaikan perkhidmatan secara maya, langsung dan interaktif yang merangkumi konsultasi klinikal, terapi dan pelan rawatan di antara Pegawai Pemulihan Perubatan (Audiologi) dan pelanggan.

Saya_____No. K/P_____telah diberi penerangan oleh Pegawai Pemulihan Perubatan (Audiologi) mengenai pelaksanaan teleaudiologi dan **BERSETUJU / TIDAK BERSETUJU** untuk menyertai sesi teleaudiologi mengikut terma dan syarat yang berikut:

1. Maklumat klinikal semasa sesi konsultasi akan dikongsi dengan Pengamal Perubatan lain untuk tujuan rujukan bagi kesinambungan perawatan. Kerahsiaan pesakit adalah diutamakan.
2. Pesakit adalah digalakkan untuk bersama-sama dengan seorang penjaga semasa sesi berlangsung bertujuan untuk membantu dari segi teknikal dan membantu untuk meneruskan sesi latihan di rumah.
3. Sebarang rakaman video/ audio sepanjang sesi teleaudiologi tidak boleh ditular/ disebar/ dikongsi kepada pihak luar oleh kedua-dua pihak.
4. Rakaman tidak boleh digunakan sebagai bukti untuk tindakan undang- undang terhadap KKM.
5. Pegawai yang bertanggungjawab ke atas pesakit boleh memberhentikan konsultasi jika:
    - berlaku gangguan kepada capaian internet atau jika berlakunya sebarang masalah teknikal,
    - perbincangan selain tujuan konsultasi kesihatan pesakit / penjaga,
    - keadaan pesakit / penjaga tidak mengizinkan untuk meneruskan teleaudiologi.
6. Pesakit mungkin memperoleh manfaat dari penggunaan teleaudiologi tetapi saya faham bahawa hasil/ keputusan selepas terapi mungkin berbeza dan tidak terjamin.
7. Saya (Penjaga) berhak untuk tidak meneruskan teleaudiologi atas pilihan sendiri / pesakit pada bila-bila masa dan akan memaklumkan kepada Pegawai bertanggungjawab dengan kadar segera.
8. Saya (Penjaga) akan hadir /membawa pesakit ke Klinik Audiologi sekiranya terdapat keperluan untuk pemeriksaan lanjutan.

Tandatangan,

.....

(Pesakit/ Penjaga)

Nama : _____

No K/P : _____

Tarikh : _____

Jika Penjaga

Hubungan dengan pesakit :

Nama Pesakit : _____

No K/P : _____

.....

(Saksi *)

Nama: _____

No K/P : _____

Jawatan : _____

Tarikh : _____

Cop Klinik:

*Saksi boleh terdiri dari Anggota Kesihatan di fasiliti yang terlibat

Peringatan: Pesakit hendaklah membuat persiapan rapi pada hari dan masa temujanji yang ditetapkan untuk sesi teleaudiologi termasuk kemudahan teknikal seperti komputer atau telefon bimbit dan akses internet baik.

11.3 Appendix 3: Sample of Outcome Measure Questionnaire

TELEAUDIOLOGY SATISFACTION QUESTIONNAIRE *Adapted from Guideline for Teleaudiology Services in Unit Audiology HRC (2020)

1) How do you rate the overall quality of the teleaudiology consultation?
   - ☐ Excellent
   - ☐ Good
   - ☐ Fair
   - ☐ Poor
   - ☐ Not Sure

2) How would you rate the technical quality of the teleaudiology consultation?
   - ☐ Excellent
   - ☐ Good
   - ☐ Fair
   - ☐ Poor
   - ☐ Not Sure

3) How would you rate the quality of the audiologist/ therapist during the teleaudiology session?
   - ☐ Excellent
   - ☐ Good
   - ☐ Fair
   - ☐ Poor
   - ☐ Not Sure

4) How do you rate the quality of care delivered by the teleaudiology service compared to the quality of face-to-face session?
   - ☐ Better
   - ☐ About the same
   - ☐ Not as good
   - ☐ Not sure

5) Were you comfortable using the teleaudiology consultation?
   - ☐ Yes, very comfortable
   - ☐ Yes, somewhat comfortable
   - ☐ No, somewhat uncomfortable
   - ☐ No, very uncomfortable

6) Did you experience any difficulties that might affect the quality of care delivered by the teleaudiology services?
   - ☐ Not at all
   - ☐ Sometimes
   - ☐ Often

7) Would you continue to use the teleaudiology services?
   - ☐ Yes, in the same way as the services have been organized
   - ☐ Yes, but with some improvements
   - ☐ No

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