



College of Audiologists and
Speech-Language Pathologists of Ontario

Ordre des Audiologistes et
des Orthophonistes de l'Ontario

PRACTICE STANDARDS AND GUIDELINES FOR HEARING ASSESSMENT OF ADULTS BY AUDIOLOGISTS

5060-3080 Yonge Street, Box 71
Toronto, Ontario M4N 3N1
416-975-5347 1-800-993-9459
www.caslpo.com

Approved: March 2008
Reformatted: April 2014

EXECUTIVE SUMMARY

This document provides an overview of practice standards and guidelines for hearing assessment in adults. It provides information on:

- Prevalence of hearing loss in the adult population.
- Need for treatment of hearing loss in adults.
- Basic components of a hearing assessment test battery for adults.
- Consideration for adaptation of the test battery for special populations.
- Material and equipment requirements for conducting hearing assessments in adults.
- Guidelines for professional collaboration requirements.
- Health and safety precautions associated with hearing assessment in adults.
- Competencies required by the audiologist.
- The components of a service delivery model.
- Guidelines for conducting procedures used for hearing assessment of adults.
- Conditions that would require a medical referral (red flags).

TABLE OF CONTENTS

A) PREAMBLE.....	1
B) DEFINITION OF SERVICE	2
C) SCOPE OF PRACTICE	5
D) TARGET PATIENT/CLIENT POPULATION	6
E) RESOURCE REQUIREMENTS.....	7
E) RESOURCE REQUIREMENTS.....	8
F) COLLABORATION REQUIREMENTS	10
G) HEALTH AND SAFETY PRECAUTIONS	12
H) COMPETENCIES	14
I) COMPONENTS OF SERVICE DELIVERY:	16
1. INFORMED CONSENT	16
2. DETERMINATION OF NEED.....	17
3. RISK MANAGEMENT DETERMINATION	17
4. PROCEDURES	17
6. INITIATING THE INVOLVEMENT OF OTHERS	27
7. DISCHARGE CRITERIA.....	27
J) DOCUMENTATION	28
K) GLOSSARY	29
APPENDIX 1	31
L) REFERENCES	33

A) PREAMBLE

Practice Standards and Guidelines (PSGs) are necessary to ensure quality care to the people of Ontario who require hearing health care. The initial assessment of auditory function is fundamental to providing quality hearing health care. It is the intent of this guideline to provide audiologists in Ontario with an overview of the specific processes for hearing assessment in adults and to provide some of the knowledge necessary to make reasonable decisions regarding adult hearing assessment. This guideline is meant to be used as a decision-making framework. It is not intended to be a tutorial or to provide audiologists with all the information required to conduct hearing assessments for adults. Audiologists are ethically responsible to ensure their competence in hearing assessment for adults and to ensure that their patients/clients are safe during the performance of these services. Specialized competencies are required for specific populations (e.g., functional hearing loss, congenitally deaf, developmental problems, neurologically impaired). It is essential that audiologists have the necessary expertise, resources and equipment to assess hearing loss in populations where the risk of harm may be amplified.

This PSG incorporates both “must” and “should” statements. “Must” statements establish standards that members must always follow. In some cases, “must” statements have been established in legislation and/or CASLPO documents. In other cases, the “must” statements describe standards that are established for the first time in this PSG.

“Should” statements incorporated into this guideline describe best practices. To the greatest extent possible, members should follow these best practice guidelines. Audiologists should exercise professional judgment, taking into account the environment(s) and the individual patient/client’s needs when considering deviating from this guideline. Audiologists must document and be prepared to fully explain departures from this guideline.

B) DEFINITION OF SERVICE

Hearing loss is a common problem in today's society due to the combined effects of aging, disease, heredity and noise. The prevalence of hearing loss in a given population is affected by age, sex and race. The ability to define the prevalence of hearing loss depends on the ability to identify the type and degree of loss, and the area(s) of abnormality in the auditory system (outer ear, middle ear, inner ear, and brain). Mild and even moderate losses may not be identified, as they do not pose a problem for people with excellent perceptual abilities and good coping skills. An estimate of the incidence of hearing loss in the general population may range between 8 and 10 per cent.¹ In the adult population, the incidence of hearing loss increases with age. Roughly 2 per cent of adults between 18 and 44 years of age, 6 per cent between 45 and 64 years of age,² and 30 per cent of adults 65 years of age and over present with hearing loss.^{3,4}

The goal of hearing assessment of adults is to quantify and qualify hearing in terms of the degree, type, site (as appropriate) and configuration of the hearing loss. In all cases following a hearing assessment, the audiologist must communicate the results of the assessment to the patient/client. If a hearing loss is identified, the audiologist must review with the patient/client the impact on communication and provide initial information regarding possible treatment options. These options may include counselling, medical or surgical intervention, prescription/provision of personal hearing instruments, prescription/provision of advanced listening technologies, skill development through aural (audiologic) habilitation/rehabilitation, or simply monitoring of the condition through periodic assessment.

Hearing assessment is conducted using a test battery approach. The basic components of this test battery approach include:

1. Case history
2. Otoscopic exam
3. Acoustic immittance measures
4. Pure-tone audiometry
5. Speech audiometry
6. Additional site of lesion testing
7. Counselling

Other tests may be included in the battery contingent on the results of the basic battery and interventions that are recommended and the nature of the patient/client being assessed.

The philosophy of PSGs is intended to be consistent with the World Health Organization's (WHO) International Classification of Functioning (ICF), Disability and Health⁵ to support the

¹ Statistics Canada (Housing, Family and Social Statistics Division), a Profile of Disability in Canada, 2001. Catalogue no. 89-579

² (National Academy of an Aging Society analysis of data from the 1994 National Health Survey of Disability Phase I, 1994).

³ Weinstein BE. Age-related hearing loss: how to screen for it, and when to intervene. *Geriatrics*. 49(8):40-5, 1994.

⁴ DHHS: U.S. Department of Health and Human Services. *Healthy People 2010*. 2nd ed. Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office. November 2000

⁵ World Health Organization. (2001). *The International Classification of Functioning, Disability, and Health*. Geneva, Switzerland: Author.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

use of unified terminology across health-related disciplines,^{6, 7} Discussion of the purpose of hearing assessment in adults is framed using WHO terminology as illustrated below.

The overall objective of hearing assessment for adults is to optimize the individuals' ability to communicate in natural environments and thus improve their quality of life. This objective is best achieved through the provision of services that are integrated into meaningful life contexts. The WHO's established health classification system, the ICF, offers service providers an internationally recognized conceptual framework and common language for discussing and describing human functioning and disability.⁸ This framework can be used to describe the role of audiologists in enhancing quality of life through audiologic assessment and treatment, regardless of setting, as illustrated below.

Hearing assessment must address not just the ear and hearing function but also the unique set of characteristics of the whole person, including hearing and communication needs and demands, linguistic and cognitive abilities, limitations of vision and motor control, familial attitudes to impairment and interventions, listening and communication environments and supports.

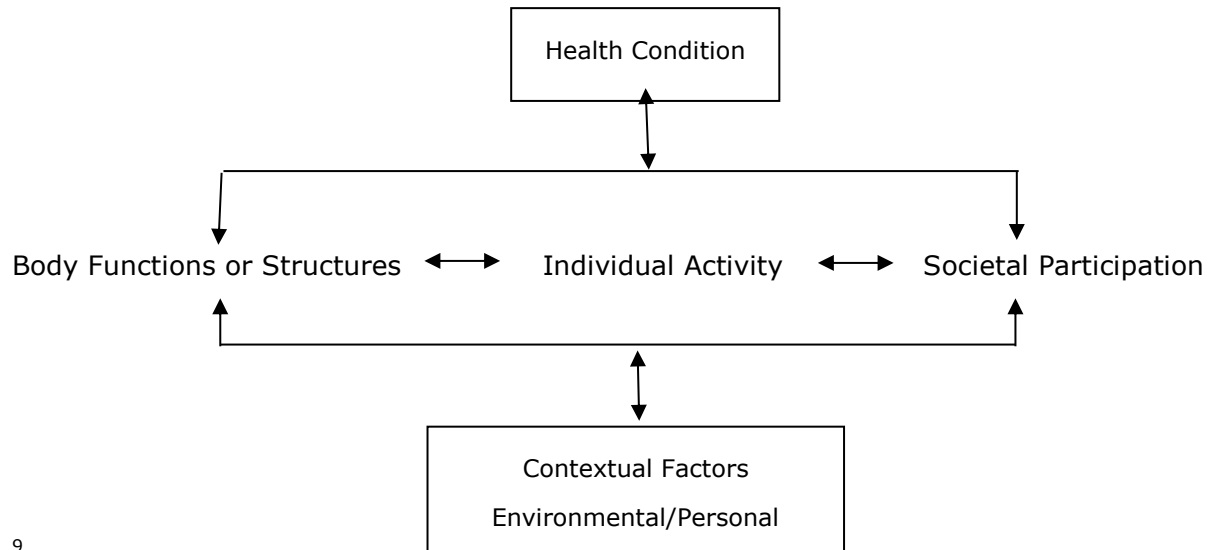
Dimension	Definition	Examples
Impairment	Problems in body structures and/or body functions such as significant deviation or loss	Hearing loss sufficient to interfere with communication ability; tinnitus, otalgia and vertigo
Activity/ Participation	Aspects of functioning from an individual or societal perspective	Difficulty in conversations, limitations in expressing ideas, opinions, choices, wants and needs, social isolation, dependence on others for functional communication, academic difficulties, under-employment or loss of employment
Contextual Environmental Factors	Factors that impact disability ranging from the individual's immediate environment to the general environment	Lack of family and friendship support to enable communication, inaccessible environments, reduced social acceptance, financial constraints, inflexible academic environment, vocational limitations
Contextual Personal Factors	Individual factors that influence performance in the environment	Race, gender, age, lifestyle, habits, upbringing, coping styles, social background, education, past experiences, character style, behaviour.

⁶ Eadie, T. L. (2001). The ICDH-2: Theoretical and Clinical Implications for Speech-Language Pathology. *Journal of Speech-Language Pathology and Audiology*, 25(4), 181-200.

⁷ Threats, T. T. (2002). *The International Classification of Functioning, Disability and Health*. Heart and Stroke Foundation of Ontario, Presentation, Aphasia Institute, Toronto.

⁸ World Health Organization. (2001). *The International Classification of Functioning, Disability, and Health*. Geneva, Switzerland: Author.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS



9

Hearing assessment for adults by audiologists encompasses all components and factors identified in the WHO framework. That is, audiologists work to improve quality of life by reducing impairments to communication due to hearing loss by lessening limitations to activity and participation and/or modifying the environmental barriers of the individuals they serve. Audiologists serve individuals with known impairments, delays or disorders (e.g., permanent or transient hearing impairment) as well as those with activity limitations or participation restrictions (e.g., communicative and social interaction, academic involvement and limitations to success), related to auditory impairment which may not have been formally identified. The role of audiologists includes prevention of specific disorders as well as identification and (re)habilitation of these functions.

⁹ Eadie, T. L. (2001). The ICDH-2: Theoretical and Clinical Implications for Speech-Language Pathology. *Journal of Speech-Language Pathology and Audiology*, 25(4), 181-200.

C) SCOPE OF PRACTICE

The *Audiology and Speech-language Pathology Act, 1991*, states: "The practice of audiology is the assessment of auditory function and the treatment and prevention of auditory dysfunction to develop, maintain, rehabilitate or augment auditory and communicative functions. 1991, c. 19, s. 3 (1)." Hearing assessment is within the scope of practice of audiologists in Ontario and in fact forms the core responsibility in the area of assessment for the practice of audiology. Hearing assessment to quantify and qualify hearing in terms of the degree, type and configuration of the hearing loss in adults requires specialized skills. This should only be performed by audiologists who are well trained and experienced in the required procedures and who are fully prepared to manage any problems that may develop. Expertise in hearing assessment is gained through the academic training program, hands-on training, experience and continuing education opportunities. Specialized competencies are required for specific populations (functional hearing loss, congenitally deaf, developmental problems, neurologically impaired, hearing instrument prescription and fitting, and cochlear implants). It is essential that audiologists have the necessary expertise, resources and equipment to assess hearing in those individuals with conditions where the risk of harm may be amplified.

D) TARGET PATIENT/CLIENT POPULATION

The target population for assessment would include any individual 19 years of age or older at risk for hearing loss, or any adult who may present with a possible dysfunction of the auditory system. These persons should be seen for an audiologic diagnostic assessment.

Target Impairment

The target impairment includes any degree of hearing threshold elevation which will compromise auditory function or limit activity and participation, in the absence of intervention. Most hearing impairment is characterized by a loss of sensitivity to sound, as reflected in audiometric thresholds.

E) RESOURCE REQUIREMENTS

Audiologists must have the following resources to perform hearing assessment for adults:

1. An audiometric test environment compliant with ANSI S3.1- 1999 (R 2003) (or current version) for maximum permissible ambient noise levels for audiometric test rooms.¹⁰ If any portion of the hearing assessment is conducted through a sound field speaker, then the room should meet the minimum dimensional requirements for speaker calibration.
2. A type 1A (ANSI S3.6 - 2004 or current version) full-range dual channel diagnostic audiometer with insert earphones (Etymonic 3A or 5A pending Health Canada approval) and TDH style headphones (ANSI S3.7 - 1995 or current version), and bone conduction oscillator (ANSI S3.13 – 1987 (R 2007) or current version);
3. High resolution otoscope with paediatric and standard tips;
4. A type 1 (ANSI S3.39 - 1987 (R 2007) or current version)) full-range acoustic immittance measurement system;
5. Materials required to meet the standards for infection control based on the needs of the practice. In most instances, resources to ensure cleaning, sanitization and low level disinfection will be sufficient (e.g., disposable gloves, cleaning solutions). In cases where the need for infection control is semi-critical, such as with a patient/client who presents with non-intact skin, resources for intermediate or high level disinfection will be required. (Refer to Infection Control for Regulated Health Professions, CASLPO Edition: 2006.)

All of the above equipment should be routinely checked for function and calibrated annually as defined in the appropriate standard. (refer to [CASLPO's Position Statement on Equipment and Servicing Requirements by Audiologists](#))

¹⁰ Frank, T. (2000). ANSI Update: Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms. American Journal of Audiology, 9, 1-6.

E) RESOURCE REQUIREMENTS



Standard

E.1

Audiologists must have the required resources in order to perform hearing assessment in adults.

Audiologists must have the following resources to perform hearing assessment for adults:

6. An audiometric test environment compliant with ANSI S3.1- 1999 (R 2003) (or current version) for maximum permissible ambient noise levels for audiometric test rooms.¹¹ If any portion of the hearing assessment is conducted through a sound field speaker, then the room should meet the minimum dimensional requirements for speaker calibration.
7. A type 1A (ANSI S3.6 - 2004 or current version) full-range dual channel diagnostic audiometer with insert earphones (Etymonic 3A or 5A pending Health Canada approval) and TDH style headphones (ANSI S3.7 - 1995 or current version), and bone conduction oscillator (ANSI S3.13 – 1987 (R 2007) or current version);
8. High resolution otoscope with paediatric and standard tips;
9. A type 1 (ANSI S3.39 - 1987 (R 2007) or current version)) full-range acoustic immittance measurement system;
10. Materials required to meet the standards for infection control based on the needs of the practice. In most instances, resources to ensure cleaning, sanitization and low level disinfection will be sufficient (e.g., disposable gloves, cleaning solutions). In cases where the need for infection control is semi-critical, such as with a patient/client who presents with non-intact skin, resources for intermediate or high level disinfection will be required. (Refer to Infection Control for Regulated Health Professions, CASLPO Edition: 2006.)

All of the above equipment should be routinely checked for function and calibrated annually as defined in the appropriate standard. (refer to CASLPO's Position Statement on Equipment and Servicing Requirements by Audiologists {in press})

Special Populations:

Additional electrophysiological devices may be required for the purposes of assisting in defining site of lesion (e.g., auditory evoked potentials, electronystagmography, otoacoustic emissions).

¹¹ Frank, T. (2000). ANSI Update: Maximum Permissible Ambient Noise Levels for Audiometric Test Rooms. *American Journal of Audiology*, 9, 1-6.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

Adults with developmental impairments may require instrumentation that facilitates appropriate assessment. This would include behavioural assessment tools that employ a conditioned response paradigm such as a visual reinforcement audiometry system (VRA), and/or reinforcement systems for conduction of a “play” type paradigm, as well as an auditory brainstem response (ABR) system, and otoacoustic emissions. This equipment may not be considered part of the required resources.

Hearing Instrument Prescription and Fitting:



Standard
E.2

Audiologists must have the required resources to meet the needs of the population served and procedures utilized.

If the audiologist is conducting the assessment for the purposes of hearing instrument prescription and fitting, a real-ear measurement system and appropriate computer instrumentation with software is required.



Standard
E.3

Audiologists must make appropriate and expedient referrals when they do not have the required resources to meet the needs of the patient/client.

Cerumen management tools and materials as required. Refer to [Preferred Practice Guideline on Cerumen Management for Regulated Health Professionals](#) for appropriate techniques and materials;

F) COLLABORATION REQUIREMENTS



Standard
F.1

Audiologists must refer when their competencies or service delivery are not sufficient to meet the patient/client needs or safely manage the risks.

It is important that the audiologist understands his/her role in the hearing assessment process. Appropriate referrals must be facilitated when assessment results indicate a need for further assessment or treatment beyond the available resources, scope of practice or expertise of the audiologist. In the event that personal amplification or an advanced listening technology is the preferred treatment option and the assessing audiologist does not prescribe or dispense these devices, a referral must be made to an appropriate professional.



Standard
F.2

The assessing audiologist must collaborate with other audiologists involved in the care of a patient/client according to the Position Statement on Concurrent Intervention Provided by CASLPO Members.

There may be more than one audiologist involved in hearing assessment and ongoing care of an individual, and therefore it is important that each audiologist understands his/her role in the provision of hearing assessment in adults. The transference of a portion or all of hearing assessment procedures between audiologists is not a delegation but rather collaboration. The role and level of responsibility of each audiologist to the patient/client in hearing assessment and rehabilitation procedures is determined by the wishes of the patient/client and by the existing collaboration between audiologists. This collaboration must be in the best interest of the patient/client and must meet the requirements of the [Position Statement on Concurrent Intervention Provided by CASLPO Members](#).

Where the roles of the audiologists overlap, both members must adhere to the Position Statement on Concurrent Intervention Provided by CASLPO Members. The following factors must be considered and documented:

1. The rationale to support the provision of concurrent intervention;
2. The goals of intervention and the role of each clinician in achieving those goals;
3. The method of ongoing communication between clinicians;
4. The frequency of ongoing communication;
5. The method of communication with others involved with the patient/client's care (such as significant others and health care professionals).



Standard

F.3

Audiologists must adhere to CASLPO's Position Statement on Resolving Disagreements between Service Providers when disagreements occur.

There may be situations where two or more professionals will be providing care to the same patients/clients. The CASLPO code of ethics requires that members "maintain positive professional relationships with their colleagues, students and other professionals."

The member must make reasonable attempts to resolve any disagreement directly with the other professional, and take such actions as are in the best interests of the patient/client. The [CASLPO Position Statement on Resolving Disagreements between Service Providers](#) must be followed.

G) HEALTH AND SAFETY PRECAUTIONS

Guide
G.1

Audiologists should consider modification or discontinuation of an assessment if the presenting condition of the external ear or ear canal requires treatment.

All components of service delivery must be executed in such a way as to ensure the safety of the patient/client and clinician by adhering to generally accepted infection control practices.

Audiologists must employ routine infection control practices according to [Infection Control](#) for Regulated Health Professionals, CASLPO Edition (2006). Audiologists must implement additional precautions specific to the practice of audiology and the particular procedures employed. Audiologists should pay particular attention to the requirements for hand washing and the criteria for disinfection. "Hand washing is the single most important procedure for preventing infections."

The audiologist must determine the status of the patient/client's external ear and ear canal prior to beginning the assessment. (See Standard I.4) In the event of an abnormality (e.g., presence of blood, fluid, inflammation, other potentially infectious substance, or impacted cerumen), portions or all of the assessment may be precluded until the presenting condition is appropriately treated. Modification or discontinuation of the assessment due to an abnormality is at the discretion of the audiologist.



Standard
G.1

Audiologists must employ routine infection control practices and implement additional precautions specific to the practice of audiology.

In the event that the audiologist proceeds with all or a portion of the assessment, any device that makes contact with the abnormality must be disinfected or disposed of in an appropriate fashion.

Audiologists must also ensure that appropriate precautions are taken to prevent risk of harm to themselves. All staff responsible for cleaning and sterilizing equipment must be properly trained and should wear personal protective equipment appropriate to the task. Precautionary measures for blood- and fluid-borne pathogens must be taken when necessary. Although the handling of otoscope and probe tips is usually considered non-critical, audiologists must protect themselves and staff appropriately with patients/clients with chronic non-intact skin (e.g., chronic middle ear drainage) or where skin is fragile, such as with the frail elderly.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS



Standard

G.2

Audiologists must adhere to the Preferred Practice Guideline for Cerumen Management when cerumen management is indicated.

Audiologists must adhere to the [Preferred Practice Guideline for Cerumen Management](#) for appropriate infection control guidelines if the ear to be assessed requires cerumen removal before proceeding with the insertion of a probe or tympanometry tip.

H) COMPETENCIES



Standard

H.1

Audiologists must have the required competencies to perform procedures covered in this PSG.

Audiologists must:

1. Demonstrate knowledge of:
 - a. Anatomy and physiology of the auditory system.
 - b. Normal auditory functioning
 - c. Disorders of the auditory system and the nature of their presentation in diagnostic assessments.
 - d. Instrumentation associated with diagnostic assessment.
 - e. Interpretation of test battery results as relates to hearing disorders.
2. Demonstrate the ability to obtain a relevant case history from the patient/client with a focus on the causes and presentation of hearing loss in the adult population.
3. Demonstrate knowledge of the interpretation of case history results as relates to hearing disorders.
4. Demonstrate knowledge of an appropriate otoscopic examination technique of the external ear and ear canal.
5. Demonstrate knowledge of the pathologies of the external ear and ear canal that may be identified through otoscopic examination, how they relate to hearing disorders and their treatment.
6. Demonstrate knowledge of and skill in evidence-based hearing assessment procedures.
7. Demonstrate knowledge of an appropriate acoustic immittance protocol to demonstrate the presence or absence of pathologies of the outer and middle ear.
8. Demonstrate knowledge of interpretation of tympanometric assessment results as relates to pathologies of the outer and middle ear and hearing disorders.
9. Demonstrate knowledge of an appropriate acoustic stapedial reflex assessment protocol to demonstrate the presence or absence of pathologies of the acoustic stapedial reflex arc.
10. Demonstrate knowledge of interpretation of acoustic stapedial reflex assessment results as relates to pathologies of the acoustic reflex arc and hearing disorders.
11. Demonstrate knowledge of an appropriate protocol for manual pure-tone audiometry including air conduction, bone conduction and masking techniques.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

12. Demonstrate knowledge of the interpretation of the results of manual pure-tone audiometry as relates to hearing disorders.
13. Demonstrate knowledge of speech audiometry protocols including speech recognition thresholds, word recognition, and comfort and loudness discomfort levels.
14. Demonstrate knowledge of the interpretation of speech audiometry assessment results as relates to hearing disorders.
15. Demonstrate knowledge of the interpretation of combined test battery assessment results as relates to hearing disorders.
16. Demonstrate knowledge and skill in patient/client centred service provision with an emphasis on linguistic and cultural sensitivity, privacy protection and informed consent.
17. Demonstrate knowledge of appropriate counselling, referral and treatment options as relates to hearing disorders.
18. Demonstrate knowledge and skill in the appropriate use of supportive personnel when utilized. (See [CASLPO Position Statement on Guidelines for the Use of Supportive Personnel.](#))

I) COMPONENTS OF SERVICE DELIVERY:



Standard

I.1

Audiologists must obtain informed consent to the hearing assessment.

1. INFORMED CONSENT

The patient/client must be informed of the outcomes, benefits and risks associated with service as specified by the Health Care Consent Act¹² before an assessment is conducted (refer to CASLPO's position statement [Consent to Provide Screening and Assessment Services](#) (2007)). This discussion must be documented. It is necessary for the audiologist to inform the patient/client of:

- The nature of the procedures that will be conducted.
- The expected patient/client response during each procedure.
- Any discomfort or risk that may be associated with a given procedure.
- The outcome of a given procedure and its interpretation as relates to a patient/client's hearing disorder.
- Recommendations for treatment or follow-up.

Audiologists are reminded that the crucial element in obtaining consent is the discussion of the information listed above and not the act of signing a consent form.

Informed consent to perform hearing assessment can be provided in written or verbal format. (refer to [Obtaining Consent: A Guide for Audiologists & Speech-Language Pathologists](#). CASLPO (2007)).



Standard

I.2

Audiologists must obtain knowledgeable consent to collect and manage information obtained during hearing assessment.

The [Personal Health Information and Protection Act \(PHIPA\), 2004](#), requires that audiologists must also obtain knowledgeable consent to the collection and use, retention and disclosure of any information obtained during hearing assessment. This consent can also be provided in written or verbal format.

¹² Health Care Consent Act, 1996 S.O. 1996, CHAPTER 2 Schedule A [online].
laws.gov.on.ca/html/statutes/english/elaws_statutes_90m56_e.htm

2. DETERMINATION OF NEED



Standard
J.3

Audiologists must perform a determination of need.

An assessment of the need for a hearing assessment will be determined by the patient/client's initial complaint and presenting risk factors that may be associated with a hearing disorder.

The audiologist must assess the needs and/or capabilities of patients/clients in order to appropriately assess hearing. Patients/clients will have variable abilities to comply with assessment procedures primarily based on physical and cognitive capacity.

3. RISK MANAGEMENT DETERMINATION



Standard
J.4

Audiologists must use caution and procedures that minimize the discomfort that may be associated with the assessment and procedures.

Audiologists must take steps to minimize the risks associated with conducting a hearing assessment. Health and safety precautions as outlined previously must always be considered. Generally the risks associated with hearing assessment in adults are minimal. Some minor discomfort may be experienced with the insertion of otoscope specula, immittance tips and insert phone foam tips. Some discomfort may be experienced due to excessive sound levels being presented in the assessment.

4. PROCEDURES

Guide
G.1

Audiologists should conduct the procedures covered in this PSG in a manner which is patient/client-centered, and linguistically and culturally sensitive.

- A. Audiologic assessment of co-operative adults: The process of conducting a basic audiologic assessment in co-operative adults should be done in a manner that is patient/client-centred, linguistically and culturally sensitive, and in the language of the patient/client/caregiver's choice, if possible.



Standard
J.5

Audiologists must have or have access to a case history which contains the components specified.

The following procedures are to be included in the assessment process of co-operative adults:

i. Case History

Audiologists should obtain a case history directed by risk factors associated with hearing loss. Minimal information obtained in the history should include but not be limited to:

- The source of the referral and, therefore, the professional context for the concern;
- The patient/client's reason for having his/her hearing assessed;
- The patient/client's perception of his/her apparent hearing disability and the effect that it has on communication and daily living;
- Time of onset and apparent aetiology of the hearing problem;
- Whether hearing levels are apparently symmetrical;
- Whether there is any associated tinnitus or dizziness;
- Whether there is any relevant familial history of hearing loss;
- Any history of employment or recreational noise exposure;
- Information regarding previous hearing assessment or treatment;
- Other medical or surgical history that may be related to the hearing problem, including medications, or that may affect the hearing assessment process.



Standard
J.6

Audiologists must conduct an otoscopic examination of each ear.

At the end of the case history conversation, the hearing assessment procedures to be undertaken must be explained to the patient/client as part of the informed consent process (Standard I.1).

ii. Otoscopy

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

The audiologist must conduct an otoscopic examination of each ear. *Appropriate techniques should be used to minimize intrusiveness to the patient/client.* The purpose of the otoscopic examination is:

- To ensure that the ear canal is clear of any debris or infection that may preclude conducting the assessment or that may require treatment prior to or subsequent to the assessment;
- To identify any features of the external ear or ear canal that may contribute to the diagnosis of hearing impairment;
- To determine the most appropriate means of coupling assessment devices (insert earphones, acoustic immittance tips) to the external ear or ear canal in order that a hermetic seal may be achieved;
- To minimize risk of harm in subsequent procedures.

Guide
J.2

Audiologists should conduct the procedures covered in this PSG in a manner which is patient/client-centered, and linguistically and culturally sensitive.

iii. Acoustic Immittance Measures:

Acoustic immittance measures consist of both tympanometry and acoustic reflex measures.

- Tympanometry essentially evaluates the flexibility or acoustic immittance of the middle ear system (tympanic membrane, ossicles, coupling to cochlea). Relevant measures include peak tympanometric immittance or compliance, peak tympanometric pressure, and gradient. Comparison of individual patient/client results relative to normative or known pathological results assists the audiologist in determining the functioning of the middle ear system, possible pathologies and potential contributions to a presenting hearing loss.

Tympanometric measures should be routinely completed, unless there is a contraindication (e.g., recent or past middle ear surgery, low tolerance to pressure changes).

- Acoustic reflex measures traditionally include measures of acoustic reflex thresholds and reflex decay. These measures can be conducted either through an ipsilateral or contralateral presentation. The measurement itself is referenced to the ear in which the reflex-eliciting stimulus is presented. Again, comparison of patient/client results to normative data or known pathological presentations assists the audiologist in assessing the function of the acoustic reflex arc. Reflex thresholds and decay assist in assessing the overall integrity and function of the reflex arc and assist in making diagnostic statements related to the aetiology of the hearing loss. Audiologists should be knowledgeable of the variables affecting these measures and their relative clinical efficacy.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

Acoustic reflex measures should be routinely completed, unless there is a contraindication (e.g., recent or past middle ear surgery, low tolerance to stimulus loudness).



Standard

J.7

Audiologists must complete manual pure-tone audiometry with co-operative patients/clients.

- i. **Manual Pure-Tone Audiometry:** Completion of manual pure-tone audiometry is mandatory to the hearing assessment process in co-operative patients/clients. A definition of auditory threshold for frequency-specific stimuli for both ears remains the cornerstone of audiometric assessment. Minimally, pure-tone audiometry should consist of air conduction thresholds for both ears for octave frequencies from 250 to 8000 Hertz, and bone conduction and masking as necessary. Inter-octave frequencies may be included depending on the purpose of the assessment and the configuration of the audiogram.

Guide

J.3

Audiologists should follow a modified Hughson-Westlake Protocol for pure-tone audiometry except where the patient/client is unable to condition to the task.

The interpretation of all other tests is conducted in consideration of the pure-tone thresholds. Treatment and follow-up strategies are primarily dictated by a definition of hearing levels for pure-tone signals provided through behavioural audiometry. Consequently, pure-tone audiometry is considered the most essential aspect of a basic diagnostic audiologic assessment.

Traditionally, manual pure-tone audiometry has been conducted using a modified Hughson-Westlake Protocol.¹³ Audiologists should follow a similar approach. Modifications to this approach should be made in light of the patient/client's ability to condition to the task. Modifications should not be made simply to reduce patient/client assessment time unless the patient/client is unable to maintain attention to task.

Guide

J.4

Audiologists should attempt speech-based measurement procedures when relevant to the hearing concern or reason for referral.

- i. **Speech Audiometry:** Speech is a natural stimulus for audiometry as most complaints from patients/clients involve hearing and understanding speech. Traditional speech audiometry consists of both measurement of speech recognition threshold (SRT) and word recognition testing.

¹³ American Speech-Language-Hearing Association. (1978). Guidelines for manual pure-tone audiometry. *Asha*, 20, 297-301

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

The basic purpose of speech recognition testing is to quantify a patient/client's threshold for speech material. Synonymous terms for SRT include speech reception threshold and spondee threshold (ST). Clinically, SRT/ST is used as a validity check on pure-tone thresholds. Research would support that there are minimal differences between the thresholds for spondaic words and averages of pure-tone thresholds.¹⁴

The recommended procedure for obtaining an SRT parallels that for obtaining a pure-tone threshold.¹⁵ Factors to consider in obtaining an SRT include age of patient/client, language facility, and physical condition. In the event that an SRT cannot be completed on a patient/client, a speech detection threshold (SDT) or speech awareness threshold (SAT) may provide useful diagnostic information.

There are differing opinions regarding the utility of an SRT.¹⁶ In the case of a patient/client who provides a reliable pure-tone audiogram, one has to consider the clinical efficacy of completing an SRT for the purposes of confirming pure-tone thresholds. From a subjective perspective, SRT measures may be useful in determining approximate threshold levels in patients/clients who may not condition well for pure-tone audiometry (PTA). Discrepancy between the SRT and PTA may also assist in delineating whether a patient/client may present with a functional hearing impairment (pseudohypacusis). Other factors that can contribute to a discrepancy include developmental factors, atypical audiometric configurations, and fluctuations in hearing sensitivity, as well as cognitive, language or auditory processing disorders.^{17,18} As such, the SRT may not be considered essential in the basic assessment of adult patients/clients who are cooperative and have provided reliable pure-tone threshold information.

Word Recognition Testing: attempts to provide a measure of a patient/client's ability to understand speech in quiet. Test protocols include monosyllabic words presented to one or both ears at a comfortable listening level or at a level that optimizes the word recognition score. This would appear to be useful in deciding treatment strategies (predicted benefit from amplification). As well, it is thought to assist in the determination of site of lesion (cochlear versus retrocochlear). Unfortunately, available research on traditional word recognition testing does not

¹⁴ Wilson, R., Morgan, D., & Kirks, D. (1973). A proposed SRT procedure and its statistical precedent. *Journal of Speech and Hearing Disorders*, 38, 184-191.

¹⁵ American Speech-Language-Hearing Association. (1988, March). Guidelines for determining threshold level for speech. *Asha*, pp 85-89

¹⁶ Wilson, R.H., & Margolis, R.H. (1983). Measurement of auditory thresholds for speech stimuli. In Konkle, D.F., & Rintelmann, W.F. (Ed). *Principles of Speech Audiometry* (pp. 79 -126). Baltimore: Academic Press

¹⁷ Berlin, C.I., Wexler, K.F., Jerger, J.F., Halperin, H.R., & Smith, S. (1978). Superior ultra-audiometric hearing: a new type of hearing loss which correlates highly with unusually good speech in the "profoundly deaf." *Otolaryngology*, 86, 111-116

¹⁸ Roesser, R. (1982). Moderate to severe hearing loss with an island of normal hearing. *Ear and Hearing*, 3, 284-286

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

support either of these premises.^{19, 20} Consequently, while a measure of patient/client speech perception ability would appear necessary to determine the amount of disability associated with a given degree, configuration, and type of hearing impairment, the clinician is cautioned in the interpretation of results obtained from traditional speech audiometry protocols. Minimally one should be aware that the filter effect provided by the degree and configuration of a patient/client's hearing loss and the level at which the stimulus is presented will significantly affect results on traditional speech audiometry procedures. Therefore, these results may not be reflective of either degree or type of disability or predictive of the expected success of rehabilitative strategies.

Degraded Speech Audiometry: Degraded speech testing may be conducted to attempt to assess patient/client difficulties in receiving and understanding speech under less than optimal listening conditions. Simple degraded speech testing would consist of assessing speech recognition abilities in background noise. This may be useful in predicting perceived benefit from amplification in the adult population.

Degraded speech assessments may also include assessment tools where the speech stimuli have been degraded by electroacoustic modification of the frequency, temporal or intensity characteristics of the speech signal. These tests are used extensively in the assessment of central auditory problems.²¹

Guide
J.5

Audiologists should consider site of lesion testing where a neurologic disorder is questioned.

- i. **Site of Lesion Testing:** Initial site of lesion assessment is a direct result of pure-tone audiometry. A comparison of air and bone conduction pure-tone thresholds provides an indication of whether a hearing loss is conductive, mixed or sensorineural in nature. Acoustic immittance measures assist in confirming both conductive (through static compliance and acoustic stapedial reflex measures) and sensory (through acoustic stapedial reflexes measures) hearing loss.

In the audiologic test battery, possible neurologic disorders are best assessed through electrophysiological site of lesion testing using auditory brainstem response (ABR). However, medical assessment using MRI remains the definitive test for neurologic disorders affecting the auditory system.

¹⁹ Thornton AR, Raffin MJM. (1978). Speech-discrimination scores modeled as a binomial variable. *Journal of Speech and Hearing*, 21, 507 -518

²⁰ Turner, R.G., Robinette M.S., & Bausch C.D. (1999). *Clinical Decisions*, Chapter 15 in *Contemporary Perspectives in Hearing Assessment*, Musiek F.E. & Rintelmann Ed. Allyn & Bacon

²¹ Wilson R.H. & Strousse A.L. (1999): *Auditory Measures with Speech Signals*, Chapter 2 in *Contemporary Perspectives in Hearing Assessment*, Musiek F.E. & Rintelmann Ed. Allyn & Bacon



Standard
J.8

Audiologists must counsel the patient/client regarding the degree and type of hearing loss and the implications of this hearing loss on communication. Counselling must be patient/client-centred.

iv. Counselling: Initial counselling for adult patients/clients with hearing loss must include a clear statement of degree and type of hearing loss and the implications of this hearing loss for communication. Counselling must be patient/client-centred and sensitive to:

- The patient/client's initial presenting concern;
- His/her perception of the resulting disability;
- Cognitive, physical, lifestyle and financial limitations.

Guide
J.6

Audiologists should utilize further assessment procedures to meet specific patient/client needs as indicated.

B. Assessing adults that are difficult to test

On occasion, adult patients/clients may present as difficult to test after the standard procedures have been attempted as specified in Section 4a above. This may be related to:

- Tinnitus
- Motivation
- Neurologic/cognitive factors

Tinnitus:

Tinnitus may interfere with the perception of a pure-tone signal at or near threshold. Individuals with severe tinnitus may be best assessed with a pulsed pure-tone (200 msec duty cycle).²²

Motivational factors:

Motivational factors may be a consideration with adults who wish to either hide or exaggerate their hearing impairment. The former may occur in occupational hearing loss monitoring. It may also be related to a denial that the hearing impairment actually exists and a desire to avoid treatment (hearing instrument prescription and fitting). Familial conflict may be a contributing factor.

More commonly, motivational factors would be involved with adults who wish to present with a hearing impairment where none exists, and/or a desire to exaggerate an existing hearing condition. Either of these cases would be considered malingering and/or presentation of a functional hearing impairment. Malingering generally is a result of psychological factors (e.g., desire for attention) or the potential for financial gain. This area of 'forensic' or medical-legal audiology requires additional,

²² Hall J.W. & Haynes D.S. (2001): Audiological Assessment and Consultation of the Tinnitus Patient, *Seminars in Hearing*, 22: 37-50

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

specialized knowledge, training and skills, and meticulous attention to stimulus presentation and response evaluation.

Detection and minimization of a functional impairment component may require both behavioural and electrophysiological assessment techniques. Behavioural techniques include modification of the pure-tone audiometry assessment technique (instructions and timing of stimulus presentation) and a comparison of speech and pure-tone audiometric results. Reasonable consistency should exist between pure-tone thresholds by air and bone conduction, speech reception thresholds and speech recognition scores, and acoustic immittance (acoustic stapedial reflex thresholds) measures.

Additional tests, such as pure-tone and speech Stenger testing may assist in detecting the functional impairment when significant asymmetry exists in the initial assessment results.

Electrophysiological assessment using cortical evoked potentials may be necessary in order to demonstrate the presence of a functional component and to quantify true hearing threshold levels.

Neurologic/cognitive factors:

Adults presenting with significant neurologic disorders/cognitive impairment may require an assessment test battery that is adapted appropriately. This may require the use of behavioural procedures that are more commonly employed with infants and young children (visual reinforcement audiometry or play audiometry as described in the CASLPO PSG for Hearing Assessment in Children by Audiologists, 2007). Objective assessment procedures such as electrophysiological measurements and otoacoustic emissions (OAEs) will be required dependent on the patient/client's ability to co-operate for behavioural assessment.



Standard
J.9

Audiologists must include assessment of inter-octave frequencies and RECD measurements when performing an audiologic assessment for hearing instrument prescription.

Based on the results of the hearing assessment using the standard procedures outlined in Section 4a above, the audiologist must assess the needs and/or capabilities of patients/clients in order to appropriately prescribe hearing instruments. These needs will vary based on their age, education, understanding of technology, knowledge of the English language, health conditions etc., as described in the Preferred Practice Guideline for Dispensing Hearing Aids by Audiologists, CASLPO, 2007.

When performing manual pure tone audiometry for the purposes of prescribing a hearing aid, inter-octave frequency assessment must be included. In addition, real-ear to coupler difference (RECD) Measurement: RECD measurements²³ are an important component in the provision of hearing instruments for adults. RECD

²³ Moodie, K.S., Seewald, R.C., & Sinclair, S.T. (1994). Procedure for predicting real ear hearing aid performance in young children. *American Journal of Audiology* 3, 23-31.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

measures assist in providing a more accurate definition of hearing thresholds, and as well, allow targets to be generated for both real-ear and 2 cc.-based performance of the hearing instrument, if insert earphones are used in the hearing assessment process.

5. CONTINUUM OF CARE



Standard
J.10

Audiologists must make appropriate referrals when the presenting condition requires intervention that goes beyond audiologic management.



Standard
J.11

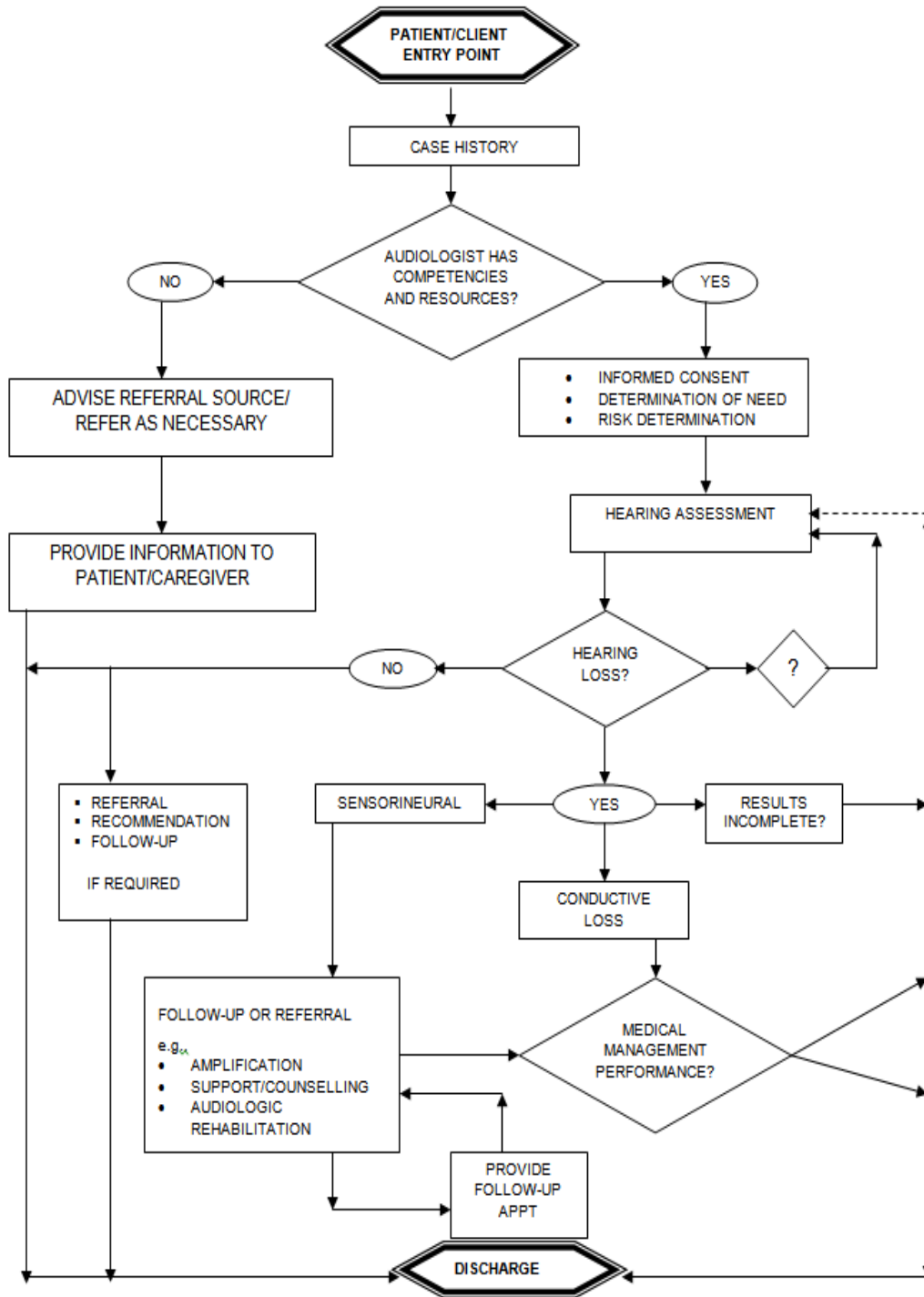
Audiologists must inform the patient/client of appropriate support and intervention services or refer so that the patient/client can be provided with the appropriate information.

Upon referral, the audiologist determines the assessment needs of the patient/client, his/her competence in performing the required procedures, and assesses risk. If appropriate, the audiologist proceeds with the audiologic hearing assessment of the individual and, dependent upon the outcome, (i.e. identification of hearing impairment, if any), offers to provide or initiates the involvement of other providers, as required. The sequence of procedures is as follows:

- Audiologic hearing assessment of individual by audiologist including review of results with patient/client and appropriate individuals.
- Medical assessment/evaluation (if required)
- Referral for support and intervention services to support the psychological needs of the patient/client and appropriate individuals as well as to assist in making of intervention decisions.
- Amplification (as required);
- Audiologic Rehabilitation (as required)
- Hearing reassessment/hearing aid re-evaluation (required if chosen by patient/client).

The following diagram outlines the components of care necessary for audiologists to follow when assessing hearing for hearing loss in adults.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS BY AUDIOLOGISTS



6. INITIATING THE INVOLVEMENT OF OTHERS



Standard
J.12

Audiologists must refer the patient/client when their competencies are not sufficient to meet the patient/client needs or safely manage the risks

Audiologists must refer a patient/client to another professional in situations where:

1. The audiologist does not have the competencies to meet the patient/client individual needs.
2. The determination of risk is such that the audiologist cannot safely provide service to the patient/client.

7. DISCHARGE CRITERIA



Standard
J.13

Audiologists must discharge the patient/client when therapeutic goals are met.

Discharge of the patient/client must occur when certain basic therapeutic goals have been met including:

- Normal hearing is identified, and recommendations are given that include information on risk indicators for late onset and progressive hearing impairment, signs and symptoms of hearing loss.
- If the identified hearing impairment is determined to be conductive in type, information is provided that includes the implications of the audiologic diagnosis. Recommendation for medical treatment and management is provided, and in what instances follow-up hearing assessment may not be required.
- If the identified hearing impairment is determined to be mixed or sensorineural in type, information is provided that includes the implications of the audiologic diagnosis and recommendations for follow-up. These may include the need for medical treatment and management, information on amplification options, the importance of early intervention and the need for services to support language development, and transition to another service provider is arranged.

J) DOCUMENTATION



Standard
K.1

Audiologists must retain documentation in accordance with CASLPO standards.

All hearing assessment records must be maintained in accordance with CASLPO standards.

K) GLOSSARY

Adult

A person 19 years of age and older.

Assessment

Use of formal or informal measures by an audiologist or speech-language pathologist, in accordance with the member's scope of practice, to determine a patient/client's functioning in a variety of areas of functional communication and/or swallowing or hearing, resulting in specific treatment recommendations.

Intermediate Level Disinfection

Level of disinfection required for some semi-critical items. Intermediate level disinfectants kill vegetative bacteria, most viruses and most fungi but not resistant bacterial spores.

Intervention:

Includes any member or supportive personnel involvement in the provision of member services to patients/clients, including but not limited to screening, assessment, treatment and management.

Low Level Disinfection:

Level of disinfection required when processing noncritical items or some environmental surfaces. Low level disinfectants kill most vegetative bacteria and some fungi as well as enveloped (lipid) viruses (e.g., hepatitis B, C, Hantavirus, and HIV). Low level disinfectants do not kill mycobacteria or bacterial spores. Low level disinfectants-detergents are used to clean environmental surfaces.

Noncritical Items

Those items that either touch only intact skin but not mucous membranes or do not directly touch the patient. Reprocessing of noncritical items involves cleaning and/or low level disinfection.

Patient/Client:

Individual with a possible or confirmed communication and/or swallowing disorder, who is meant to benefit from a member's intervention.

Screening

Screening is a process where a member applies certain measures that are designed to identify patients who may have a hearing, balance, communication, swallowing or similar disorder[s], for the sole purpose of determining the patient's need for a speech-language pathology assessment, an audiological assessment, or both. This does not include:

- a. Inadvertently noticing possible hearing, balance, communication, swallowing or similar disorder[s], or
- b. Considering information that is shared about an individual's possible hearing, balance, communication, swallowing or similar disorder[s], for the purpose of providing general educational information and/or recommending a referral for a

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

speech-language pathology screening or assessment, an audiological screening or assessment, or both.”

Interpretation and communication of the results of a screening are limited to advising the individual on whether or not there may be a need for a speech-language pathology assessment and/or an audiological assessment and must not be used for treatment planning.

Semicritical Items

Devices that come in contact with nonintact skin or mucous membranes but ordinarily do not penetrate them. Reprocessing semicritical items involves meticulous cleaning preferably followed by high level disinfection (level of disinfection required is dependent on the item. Depending on the type of item and its intended use, intermediate level disinfection may be acceptable.

Treatment

An intervention which has as its goal to enhance the communication and/or swallowing skills of the patient/client.

APPENDIX 1

Summary of Specific Potential Harms from Audiometric Errors or Omissions

General adult harms

False diagnosis of normal hearing: failure to manage a genuine disorder

False assurance and failure to seek necessary help

Reinforcement of denial of functional limitations

Failure to detect a psychogenic disorder

Increased anxiety, frustration and disillusionment with hearing health care

False diagnosis or overestimation of hearing loss: needless anxiety and labelling

Failure to detect asymmetry of hearing loss and flag a possible acoustic tumour, for which early intervention is associated with better surgical outcomes

Failure to detect a conductive hearing loss component that may be treatable medically

False diagnosis of a conductive component that is absent

False diagnosis of fluctuating or progressive hearing loss that is treatable medically

Inappropriate medical referral, further investigations and treatments

Lack of provision of necessary assistive technologies

Provision of unnecessary assistive technologies

Provision of inappropriate assistive technologies

Physical damage to residual hearing from overamplification

Needless discomfort from and aversiveness of amplified sound

Failure to achieve maximum benefit from assistive technologies

Needless continuation of significant functional limitations

Development of inappropriate and maladaptive attitudes and behaviours

Needless disruption of family relationships

Needless loss of workplace productivity

Inability to perceive auditory warning of environmental and occupational hazards

Inappropriate medico-legal outcomes and remedies

Inappropriate access to occupational health resources and financial compensation

Ineffective use of personal and health care resources

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

Other harms

Caregiver false assurance, needless anxiety, or confusion

Continuation of inappropriate communication styles

Lack of timely information and decision-making

False inference of behavioural, psychological or developmental disorder

Failure to maintain speech and language appropriately

Failure to optimize academic potential

Failure to optimize vocational potential

Psychological, cognitive, and social development harms

L) REFERENCES

American Speech-Language Hearing Association. (1978). Guidelines for manual pure-tone threshold audiometry. *Asha*, 20, 297-301

American Speech-Language-Hearing Association. (1988, March). Guidelines for determining threshold level for speech. *Asha*, pp. 85-89

ANSI S3.1 –1999 (R 2003) Standards for maximum permissible ambient noise levels for audiometric assessments

ANSI S3.39-1987 (R 2007) American National Standards Specifications for Instruments to Measure Aural Acoustic Impedance and Admittance (Aural Acoustic Immittance)

ANSI S3.6-2004 American National Standard Specifications for Audiometers

Audiology and Speech-language Pathology Act, 1991

Berlin, C.I., Wexler, K.F., Jerger, J.F., Halperin, H.R., & Smith, S. (1978). Superior ultra-audiometric hearing: a new type of hearing loss which correlates highly with unusually good speech in the "profoundly deaf." *Otolaryngology*, 86, 111-116

Boothroyd, A. Speech Perception, sensorineural hearing loss and hearing aids. IN G.A. Studebaker and I. Hochberg (eds.), *Acoustical factors affecting hearing aid performance* (pp. 277-279). 2nd ed. Boston: Allyn and Bacon. 1993a.

[CASLPO: Obtaining Consent: A Guide for Audiologists & Speech-Language Pathologists. \(2007\)](#)

[CASLPO Position Statement on Resolving Disagreements between Service Providers \(2007\)](#)

[CASLPO Preferred Practice Guideline for the Prescription of Hearing Aids to Adults \(2000\)](#)

Canada Communicable Disease Report, Supplement: Infection Control Guidelines for Hand Washing, Cleaning, Disinfection and Sterilization in Health Care. December 1998

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

Carhart, R. & Jerger, J.F. (1959). Preferred method for clinical determination of pure-tone thresholds. *Journal of Speech and Hearing Disorders*, 24, 330-345

Clark, J.G., R.J Kemp and A.U. Bankaitis (2003). Infection Control Task Force. American Academy of Audiology

DHHS: U.S. Department of Health and Human Services. Healthy People 2010. 2nd ed. Understanding and Improving Health and Objectives for Improving Health. 2 vols. Washington, DC: U.S. Government Printing Office. November 2000

Hall J.W. & Haynes D.S. (2001): Audiological Assessment and Consultation of the Tinnitus Patient, *Seminars in Hearing*, 22: 37-50

Health Care Consent Act (S.O. 1996)

National Academy of an Aging Society analysis of data from the 1994 National Health Survey of Disability Phase I, 1994

[Position Statement on Concurrent Intervention Provided by CASLPO Members \(2001\)](#)

[Position statement on Consent to Provide Screening and Assessment Services \(2007\).](#)

[Preferred Practice Guideline for Prescription of Hearing Aids by Audiologists \(2007\)](#)

[Proposed Regulation of Records. CASLPO. \(1996\).](#)

Rintelmann W.F., Schan S.A., Blakley B.W. (1991) Pseudohypacusis, *Otolaryngol Clin North Am.* Apr;24(2): 381-390

Roesser, R. (1982). Moderate to severe hearing loss with an island of normal hearing. *Ear and Hearing*, 3, 284-286

Statistics Canada (Housing, Family and Social Statistics Division), a Profile of Disability in Canada, 2001. Catalogue no. 89-579

Thornton AR, Raffin MJM. (1978). Speech-discrimination scores modeled as a binomial variable. *Journal of Speech and Hearing*, 21, 507 -518

Tomlin, T., Rance, G., Graydon, K. & Tsialios, I. A comparison of 40 Hz auditory steady-state response (ASSR) and cortical auditory evoked potential (CAEP) thresholds in awake adult subjects. *International Journal of Audiology* 2006: 45:580-588.

PRACTICE STANDARD: FOR HEARING ASSESSMENT OF ADULTS
BY AUDIOLOGISTS

Turner, R.G., Robinette M.S., & Bausch C.D. (1999). Clinical Decisions, Chapter 15 in Contemporary Perspectives in Hearing Assessment, Musiek F.E. & Rintelmann Ed. Allyn & Bacon

Weinstein BE. Age-related hearing loss: how to screen for it, and when to intervene. Geriatrics. 49(8):40-5, 1994

Wilson, R.H., & Margolis, R.H. (1983). Measurement of auditory thresholds for speech stimuli. In Konkle, D.F., & Rintelmann, W.F. (Ed). Principles of Speech Audiometry (pp. 79 – 126). Baltimore: Academic Press

Wilson R.H. & Strousse A.L.(1999): Auditory Measures with Speech Signals, Chapter 2 in Contemporary Perspectives in Hearing Assessment, Musiek F.E. & Rintelmann Ed. Allyn & Bacon

Wilson, R., Morgan, D., & Kirks, D. (1973). A proposed SRT procedure and its statistical precedent. Journal of Speech and Hearing Disorders, 38, 184-191