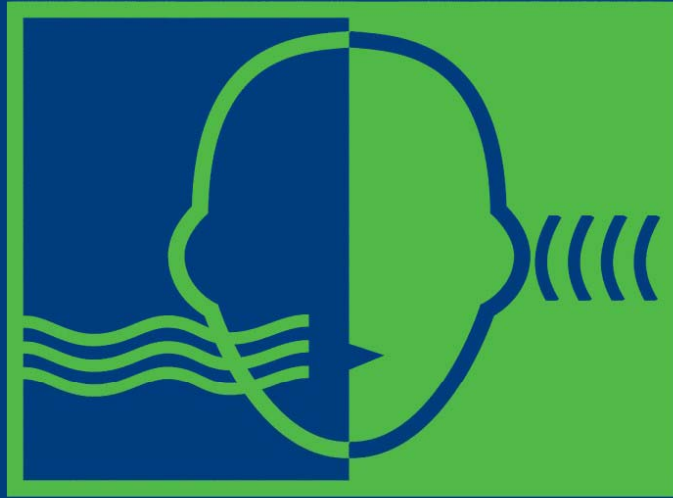


CASLPO



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**PREFERRED PRACTICE
GUIDELINE FOR
CERUMEN
MANAGEMENT**

APPROVED MARCH 2005

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CERUMEN MANAGEMENT**

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A) Preamble

Preferred Practice Guidelines (PPGs) are necessary to ensure quality care to the people of Ontario who require hearing health care. Many people who require audiological assessment or who wear hearing instruments will be affected by the presence of various amounts of cerumen impaction. It is the intent of this guideline to provide audiologists in Ontario with an overview of the cerumen management process and to provide some of the knowledge necessary to make responsible decisions regarding cerumen management. It is not intended to be a tutorial or to provide audiologists with all the information required to perform cerumen management. Audiologists are ethically responsible to ensure competence in providing cerumen management services and that their patients/clients are safe during the performance of these services. Specialized competencies are required for specific populations (such as infants, children and the medically fragile). It is essential that audiologists have the necessary expertise, resources and equipment to perform cerumen management in populations where the risk of harm may be amplified.

It is recognized that the techniques for cerumen removal may also be utilized for removal of foreign objects in the ear canal. While the focus of this PPG is cerumen management, the guidelines would also apply to situations where audiologists need to remove other substances from the ear canal. CASLPO would expect members to demonstrate the same competencies and follow the same procedures as outlined in this document.

While this guideline is recommended for the majority of cases, the College recognizes that there will arise from time to time exceptional circumstances and/or conditions when guideline procedures cannot be followed. In such instances audiologists may be required to modify recommended procedures. Audiologists should exercise professional judgment, taking into account the clinical environment and the individual patient/client needs when considering deviating from this guideline. These departures from the guideline must be documented.

B) Prevalence of Cerumen Impaction

Research studies have shown that cerumen impaction is the most common ear problem encountered by general practitioners (Berzon, 1983), and the primary cause of adult conductive hearing loss (Ginsberg & White, 1985). The percentage of people age 65 or older with cerumen impaction is reported to be as high as 34% (Gleitman, Ballachanda and Goldstein, 1992).

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." Cerumen management is within the scope of practice for audiologists in Ontario. Cerumen management requires specialized skills, and should only be performed by audiologists who are well trained and experienced in cerumen extraction procedures and who are fully prepared to manage any problems that might develop. Individual audiologists must decide whether they have the competencies to offer cerumen management services. Expertise in cerumen management is gained through hands-on training, experience and continuing education opportunities. Specialized competencies are required for specific populations (such as infants, children and the medically fragile). It is essential that audiologists determine that they have the necessary expertise, resources and equipment to provide cerumen management procedures to those individuals with conditions where the risk of harm may be amplified.

D) Definition of Service

Cerumen management essentially involves the removal of a mixture of both cerumen and ear wax from the ear canal. For the purposes of this document and to maintain consistency with what appears in the literature we will refer to the cerumen/ear wax combination as cerumen. In order to provide comprehensive audiological hearing health care, audiologists may consider offering cerumen management as part of their clinical services.

E) Target Patient/Client Population

In an audiology practice, individuals will require cerumen management if excessive cerumen prevents sufficient access to the ear canal for audiological services, or where excessive cerumen may result in misleading and inaccurate audiological test results or the inability to complete an audiological treatment plan. The individuals most likely to require audiological services are also those most likely to have a problematic amount of cerumen present, specifically, the elderly and those individuals who wear hearing instruments. In certain populations, the risk of harm in cerumen management is increased (e.g. infants, children and the medically fragile), thus audiologists must ensure that their competence is sufficient to meet the challenges that may present.

F) Resource Requirements

Audiologists providing cerumen management services should ensure that they have the appropriate equipment on site and that they have been properly trained on various cerumen extraction techniques of choice (removal by instrumentation, aural suctioning or aural irrigation). At a minimum, all audiologists performing cerumen management must have:

- Means of visualizing the ear canal with illumination, appropriate to the utilized technique.
- Cerumenolytic agents.
- Sterilization equipment.
- Means of disposing of blood products (Purdy, 2001; Ballachanda & Peers, 1992).

If instrumental extraction is to be performed, audiologists must have access to a variety of instruments such as: earloops, Lucae ear hooks (various sizes)/forceps, stainless steel and disposable ear curettes (appropriate sizes), alligator forceps and stainless steel or disposable ear specula (various sizes).

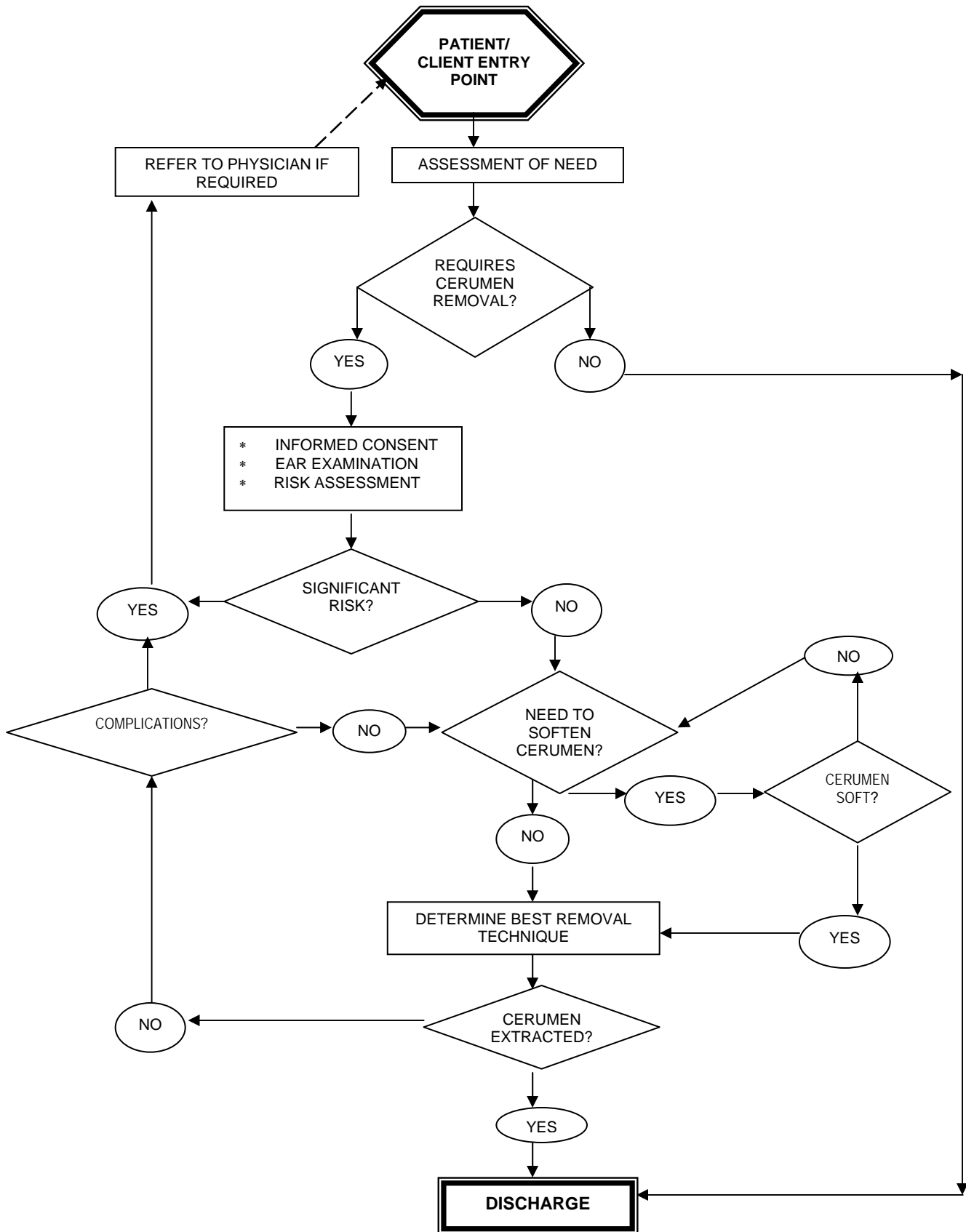
If aural suctioning is to be performed, audiologists must have access to a medical-grade aural suction apparatus with appropriate size tubes.

If aural irrigation is to be performed, audiologists must have access to an appropriate aural irrigation system and syringes.

G) Continuum of Care

This guideline outlines factors associated with cerumen management procedures. The steps involved include assessment of need to determine impaction, informed consent, risk assessment, cerumenolytic use, cerumen extraction techniques and discharge criteria.

The following diagram provides a comprehensive approach to cerumen management presented in flow chart form. This cerumen management PPG follows these various sequential and parallel steps that can be used to organize a successful cerumen management program.



H) Infection Control Guidelines

Clinicians should read and follow the infection control guidelines published by Health Canada including the infection control guidelines for hand washing, cleaning, disinfection and sterilization in health care and preventing the transmission of blood borne pathogens in health care and public services settings (Health Canada, 1998). Although cerumen is not considered an infectious medium, there is a risk of skin laceration from the removal procedure and thus standard practices for hand washing and glove use should be utilized as a minimum (Roeser & Roland, 1992). It should also be noted that it can be difficult to know if cerumen contains fresh or dried blood or mucous because of the colour or consistency of the cerumen. Therefore caution should be taken when handling cerumen during cerumen management or while handling in-the-ear hearing instruments or earmolds (Ballachanda, Roeser and Kemp, 1996). Health Canada infection control guidelines note that hand washing is the single most important procedure for preventing infections. Recommended hand-washing techniques should always be followed by all clinicians, support staff and patients/clients.

While completing the history information, the patient/client should be asked specific questions about the presence of infectious diseases and ear canal lesions. Referral for further medical management should be completed prior to performing cerumen management whenever there is a question about active infection or soft tissue lesion.

All instruments used in cerumen management require sterilization (Ballachanda, Roeser and Kemp, 1996, American Academy of Audiology, 2003, Hockley, 2004). While cerumen itself is not an infectious substance it may contain blood or mucous which may be infectious. In addition, there is the risk in cerumen management of perforating intact skin, which may cause even slight bleeding during the procedure. For these reasons, instruments used in cerumen removal are considered "critical items" which according to Health Canada, present a potential risk of infection. Critical items require thorough cleaning and sterilization before use. Sterilization may be accomplished using heat (e.g. steam under pressure such as an autoclave) or soaking in a chemical solution (e.g. glutaraldehyde or hydrogen peroxide following manufacturer recommendations for concentration and exposure times) (Health Canada 1998).

I) Competencies

The audiologist:

1. Demonstrates knowledge of control and prevention of disease transmission in audiologic practice including published infection control guidelines.
2. Demonstrates knowledge of anatomy, physiology and pathophysiology of the pinna, external ear canal and tympanic membrane.
3. Demonstrates knowledge of common medical or post-surgical conditions of the external ear canal, tympanic membrane or middle ear that alter the appearance and/or function of the external ear canal or tympanic membrane.
4. Demonstrates skill in inspection of pinna, external ear canal and required audiological procedures such as tympanometry.
5. Demonstrates skill in the use of otoscopy.
6. Demonstrates skill in at least one of the cerumen removal procedures described in this document.
7. Demonstrates knowledge of a variety of cerumen removal techniques and appropriate equipment (American Speech-Language-Hearing Association, 1992).
8. Demonstrates knowledge of procedures to follow and whom to contact in the event of an emergency or if medical assistance is needed.

J) Documentation

Appropriate record keeping is a necessity in cerumen management. It is important to record in the patient/client's record the status of the ear canal before and after the cerumen management procedure has been performed, the type of management procedure used, the status of the tympanic membrane (or modifications to the intervention plan if the tympanic membrane cannot be observed) and the outcome of the cerumen management procedure in full at the time of each patient/client contact. Audiologists are directed to the Proposed Records Regulation (CASLPO, 1996)¹ to meet the requirements for record keeping. The patient/client's informed consent should also be documented.

K) Precautions

Audiologists must 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 should be taken at all times. Audiologists must also ensure that they have liability insurance coverage that extends to cerumen management procedures (ASHA, 1992).

L) Components of Service Delivery

1. ASSESSMENT OF NEED

A thorough and careful case history plays an important role in cerumen management. The audiologist should ensure that the case history is up-to-date and include:

- a) Documentation of medications, which may increase the risk of cerumen removal (especially blood thinners such as but not limited to Warfarin, Fragmin, Coumadin).
- b) Conditions of the outer and middle ear, or past medical/surgical procedures of the outer and/or middle ear (e.g. perforations or pathological conditions of the pinna, ear canal, and tympanic membrane, myringotomy tube).
- c) A record of medical conditions such as diabetes mellitus, AIDS, cardiac-related problems or other conditions that might increase the risk in cerumen management (Roeser & Roland, 1992). Audiologists should proceed with caution when undertaking cerumen removal procedures when these medical conditions exist.

Where the audiologist does not feel competent to manage the risks, the patient/client should be referred to a more experienced professional (audiologist or physician) for intervention.

2. INFORMED CONSENT

The patient/client must be fully informed of the outcomes, benefits and risks associated with cerumen management before the intervention is provided. The Health Care Consent Act² requires that members give patients/clients the information required to make a decision

¹ Draft Regulation for Records CASLPO (1996)
http://www.caslpo.com/english_site/m_memregulrec.asp

² Health Care Consent Act, 1996 S.O. 1996, CHAPTER 2 Schedule A [online].
http://www.e-laws.gov.on.ca/DBLaws/Statutes/English/96h02_e.htm

regarding treatment. The minimum information given needs to include: the nature of the treatment, the expected benefits, any probable or serious risks and side effects of the treatment, alternative courses of action, and the likely consequences of not having the treatment. CASLPO requires that members document all consent to treatment discussions. (See Appendix II for a sample checklist to guide a consent to treatment discussion). Members are reminded that the crucial element in obtaining consent to treatment is the discussion of the pertinent information and not the act of signing a consent form. Audiologists should use the patient/client's up-to-date case history as the basis of an informed consent discussion.

3. EXAMINATION OF THE EAR

An ear canal examination is an important component to cerumen management as it assists in the determination of the presence of cerumen and the necessity of removal. The examination should consist of a visual and otoscopic examination. (See Appendix III.) The purpose of the visual inspection is to note any conditions that may alter or prevent the use of techniques for safe cerumen removal. The patient/client should be informed of any abnormalities and recommended courses of action. The purpose of the otoscopic examination is to determine whether it is appropriate to commence cerumen removal. The following factors need to be established: the presence and type of cerumen and the status, shape and size of the ear canal. The status of the tympanic membrane should be visualized and assessed when possible. If visualization is not possible, tympanometry should be performed to ensure that the tympanic membrane is intact. If the tympanic membrane cannot be visualized the audiologists should proceed with caution with cerumen management procedures. Where the audiologist does not feel competent to manage the risks, the patient/client should be referred to a more experienced professional (audiologist or physician).

4. RISK MANAGEMENT ASSESSMENT

The risk assessment will assist the audiologist in determining the safest, most effective technique for cerumen removal. Much of the information related to contraindication can be obtained through the case history, therefore the audiologist should ensure that the case history is up-to-date prior to proceeding with cerumen removal procedures. In cases where the audiologist determines that the extraction process will worsen the patient/client's condition or cause further complications (Manning, 1992; Wilson & Roeser, 1997), the patient/client must be referred to a more experienced professional (audiologist or physician).

Audiologists should recognize that there are risks associated with cerumen management including, but not limited to:

- Injury to the ear canal.
- Perforation of the tympanic membrane.
- Exacerbation of chronic middle ear disease.
- Possible damage to the ossicular chain.
- Failure to remove cerumen.

The following conditions present greater than average risk for complications following cerumen management. Where the audiologist does not feel competent to manage the risks, a referral to a more experienced professional (audiologist or physician) is required.

- Conditions of the pinna, ear canal or tympanic membrane that may restrict the extraction process.
- Recent earache.

- Temporal bone fracture.
- Otitis externa or active otitis media.
- History of ear surgery (e.g. stapedectomy) (Wilson & Roeser, 1997; Graber, 1986).
- Use of blood-thinning agents (Warfarin, Fragmin, Coumadin for example).
- Aural Drainage.
- Dizziness, such as:
 - Vertigo (spinning sensation) (constant or occasional).
 - Unsteadiness (constant or occasional).
- Medical conditions such as diabetes mellitus/acquired immune deficiency syndrome (AIDS) (Wilson & Roeser, 1997; Roeser & Roland, 1992) .
- Any other possible condition or systemic abnormality that would put the patient/client at risk.

The use of cerumenolytic agents is contraindicated if the patient/client has:

- A tympanic membrane perforation.
- Pressure equalization (PE) tubes.
- Irritation or rash in the ear or on the outer part of the ear.
- Chronic otitis media.

Cerumenolytic agents should be used with caution with young children.

Utilizing irrigation or aural suction techniques for cerumen management is contraindicated when the ear canal is occluded, obscuring the tympanic membrane as verified by immittance and/or otoscopy or where there is an indication of tympanic membrane perforation or middle ear pathology.

5. CERUMEN SOFTENING PROCEDURES

Cerumenolytic agents are designed to dissolve cerumen. Their use is essential when the cerumen is hardened and firmly attached in the ear canal. The member must be familiar with appropriate cerumenolytic agents and the techniques for their use, according to the manufacturers' instructions. The member should also be aware of the possible side effects (allergic reaction for example). Contraindication has been found to propylene glycol solution as this solution causes cerumen to swell (Manning, 1992). Warming of solutions used for wax removal (to body temperature or slightly above) is sometimes helpful (Hawke, 2002). Appendix IV provides information on cerumen softening.

6. CERUMEN REMOVAL TECHNIQUES

Cerumen removal can be carried out through the use of instruments, suctioning, irrigation or a combination of all three. Any procedure for cerumen management should be considered an invasive procedure with a risk of complication or trauma to the patient/client. Audiologists should proceed with caution and never work beyond their level of professional expertise. Before proceeding with cerumen extraction procedures, it is important to explain the procedures to the patient/client thoroughly including the risks associated with cerumen management, and to obtain informed consent. Appendix II provides an example of a checklist to assist in obtaining informed consent from the patient/client. This discussion, which would include risks, benefits and the patient/client's wishes must be documented.

i. Extracting cerumen by instrument

After determining the type (wet or dry) and manageability of the cerumen impaction, the audiologist may choose to remove the cerumen using appropriately sized curettes, blunt wax hooks, probes and/or aural forceps with appropriate illumination and magnification when deemed appropriate. It is important to be aware of the proximity of the instrument being used for cerumen removal to the tympanic membrane at all times. Instrument contact with the tympanic membrane may cause pain or perforation. If the blockage cannot be safely removed from the lining of the canal, the procedure should be stopped. A determination should be made if the cerumen in the canal will interfere with further audiological intervention. If the audiologist is unable to proceed due to a blockage, then consideration of an alternative method of removal or referring the patient/client to a more experienced professional (audiologist or physician) to deal with the blockage, must be considered.

ii. Extracting cerumen by aural suctioning

When the cerumen appears wet or runny and located near the entrance of the ear canal, aural suctioning may be an appropriate method for removal. A combination of aural suctioning and extraction by instrument may be considered an appropriate method for cerumen removal. A variety of aural suction devices with Canadian Standards Association (CSA) approval are available through reputable suppliers. Appropriate-sized suction tips must be chosen based upon the patient/client's ear canal size and shape.

iii. Extracting cerumen by aural irrigation

Cerumen extraction via aural irrigation is reportedly the most common procedure for cerumen management. Pressured body temperature water is injected into the ear canal at an angle and dislodges the cerumen, fragments it and forces it from the ear canal. For safe, effective use it is essential that a low (minimal) pressure setting be used with the jet irrigator. Higher settings can cause damage to the ear including perforation of the tympanic membrane. The jet stream should be positioned upward and slightly posteriorly – never directly – at the tympanic membrane. There are commercially available ear tips designed to divert the pressure from direct contact with the tympanic membrane.

After inspection of the ear canal, cotton balls may be placed at the entrance of the ear canal to absorb any excess water. Use of alcohol or other drying agents are contraindicated when the cerumen removal process has resulted in canal abrasions.

7. DISCHARGE CRITERIA

Before discharging a patient/client post-cerumen extraction procedures need to be employed (Manning, 1992; Wilson & Roeser, 1997; Roeser & Roland, 1992). These procedures include:

- a) A careful otoscopic inspection of the ear canal to review the status of the ear canal and to determine whether any residual bleeding requires a medical referral. The ear canal and possibly the tympanic membrane may be slightly reddened.
- b) Removing any residual blood with a cotton swab.
- c) Pure-tone audiometry and/or immittance tests may be utilized to document any improvements in hearing ability or changes in pre-existing hearing loss. Caution should be noted when performing these tests after aural suctioning procedures as damage to equipment could be caused by residual water in the ear canal. Performance of

audiometry and/or immittance tests should be done when post extraction audiological function needs to be documented.

- d) Documentation of the post-management condition of the ear.

If the blockage has not been successfully removed, the cerumen extraction procedure may need to be repeated, a course of cerumenolytic agent treatment may need to be undertaken, or blockage extraction using a different procedure may be attempted. The audiologist may also make a decision to make a referral to a more experienced professional (audiologist or physician).

Prompt medical treatment should be initiated for any of the following cerumen management complications:

- Inadvertent damage to the ear canal.
- Active bleeding that has not resolved. (Use of a nasal decongestant may stop mild post extraction bleeding. Insure that the patient/client does not have an allergy to such a substance before using.)
- Report of pain by patient/client after the procedure is completed.
- Perforation of the tympanic membrane.
- Dizziness at time of discharge (Ballachanda, 1993).
- Tinnitus.
- Report of temporary threshold shift at discharge.
- Any other unexplained post-treatment symptoms or if the audiologist feels it is necessary.

Appendix I: What Is Cerumen?

Glands in the outer part of the ear canal produce cerumen. Earwax differs slightly from cerumen because the primary component of earwax is keratin (derived from dead skin). Other components include sweat and oil.

Cerumen is a normal product of a healthy ear and appears to serve a protective function. Too little or too much cerumen increases the likelihood of infection. The literature indicates two types of cerumen, wet and dry. Dry cerumen is ash-like and flaky and contains by weight about 20% lipid (fat). Wet wax consists of approximately 50% lipid and can be further categorized as soft or hard (Burkhart, Burkhart, Williams, Andrews, Adappa & Arbogast, 2000). Soft wax is usually sticky and moist and is often seen in children. Hard wax is drier and much more likely to be impacted.

Cerumen is most likely to become impacted when it is pushed against the eardrum by cotton-tipped applicators or other objects people put into their ears, including hearing instruments. It can also be caused by overproduction of wax by the glands in the ear canal or by an abnormally shaped ear canal.



Appendix II: Consent for Cerumen Removal by an Audiologist: Checklist for Discussion

- _____ is an Audiologist registered with the College of Audiologists and Speech-Language Pathologists of Ontario (CASLPO)
- Patient/client understands that:
 - The presence of cerumen (ear wax) may:
 - Prevent adequate access to ear canal for audiological care and may make it difficult to realize the full benefit from hearing instruments.
 - Increase the risk of infection in ear.
 - Extraction/ removal, following the Cerumen Management Preferred Practice Guideline of the CASLPO, has been recommended.
 - Every precaution possible will be undertaken to avoid discomfort or adverse results.
 - Removal of the cerumen may entail using drops to soften the cerumen and extraction by instrument, suctioning or rinsing with water.
 - Risks to cerumen removal include, but are not limited to:
 - Injury to the ear canal.
 - Perforation of the eardrum (causing a hole or rupture of the eardrum).
 - Worsening/aggravation of chronic problems related to presence of 'fluid' in the middle ear.
 - Possible damage to the small bones of the middle ear.
 - Failure to remove the blockage.
- Audiologist has identified any conditions which may increase risk of cerumen management such as:
 - Tympanic membrane perforation (existing hole in the eardrum)
 - Myringotomy or pressure equalization (PE) tubes (small tubes surgically placed into the eardrum by an ear, nose and throat surgeon, to help drain fluid out of the middle ear to reduce the risk of ear infections)
 - Diabetes mellitus
 - Acquired immune deficiency syndrome (AIDS)
 - History of ear surgery or temporal bone fracture
 - Aural drainage
 - Prior or ongoing ear infection
 - Use of blood-thinning medication (e.g. Warfarin, Coumadin, Heparin, high dose Aspirin)
 - Dizziness
 - Vertigo ("a dizzy / spinning sensation") (constant or occasional)
 - Unsteadiness (constant or occasional)
 - Tinnitus (sensation of a ringing, roaring, or buzzing sound in the ears or head)
 - Recent earache
 - Chronic or pathological conditions of the external ear, ear canal or ear drum
 - Any other health condition that the audiologist should be aware of before proceeding:
- Patient/client consents to procedure

Appendix III: Ear Examination Protocol Prior to Performing Cerumen Management Removal Procedures

1. Visual Examination

Prior to the otoscopic examination of the ear canal, an initial inspection of the ear should be conducted.

- a) Observe and note open sores and make a decision regarding need for medical referral. Look for abrasions caused by an improperly fitted hearing instrument.
- b) Observe the condition of the auricle, discuss with the patient/client and note any remarkable findings.
- c) Apply pressure to the tragus by attempting to partially fold it over the opening of the ear canal. Gently bend the auricle to assess for discomfort, as this could be associated with middle ear fluid or infection. Document any discomfort observed and refer for medical attention if necessary. Look for scars behind the auricle indicating surgery (Manning, 1992).

2. Otoscope Examination

Prior to proceeding with cerumen management, the audiologist should ensure that the tympanic membrane is intact and appears healthy. Excessive or impacted cerumen or complete blockage may make otoscopic examination of the tympanic membrane difficult. Pulling the pinna backward and upward and introducing a bright light into the ear canal can facilitate ease of viewing. If visualization is not possible, tympanometry should be performed to ensure that the tympanic membrane is intact. If the tympanic membrane cannot be visualized blockage removal procedures should proceed with caution. Where the audiologist does not feel competent to manage the risks, a referral to a more experienced health professional (audiologist or physician) is required

During the otoscopic examination:

- a) Determine whether the occluding material in the ear canal is cerumen.
- b) View and assess the coloration and status of the tympanic membrane. The tympanic membrane should be pale grey, conical and semi-transparent in the normal healthy ear, and positioned obliquely at the medial end of the external auditory canal (Hawke, Knee and Alberti, 1990).
- c) Determine whether infection is present in the external ear canal.
- d) Assess the type of cerumen (wet, dry, hard, soft) and the amount of blockage.
- e) Determine the potential need for softening.
- f) Note the shape and size of the ear canal and the amount of hair present.
- g) Resolve any questions or contraindications prior to proceeding.
- h) Make a determination as to the appropriate procedure(s) to extract the cerumen (Ballachanda, 1993).



Appendix IV: Cerumen Softening Techniques

It is best if the softening agent is used 2-3 times daily for 3-5 days prior to the cerumen management appointment; however the frequency of use is dependent on the type of product being utilized. Minimally it should be used 30-45 minutes prior to attempting cerumen extraction in cases with hard wax. It is the responsibility of the audiologist to ensure that the patient/client knows how to properly use the softening agent and is aware of any side effects, if the patient/client is going to use the softening agents at home prior to the appointment.

If the patient/client wears a hearing instrument on the ear to be treated with cerumenolytics, it is important to caution the patient/client not to wear the hearing instrument immediately after using the softening agent in order to avoid possible blockage/damage to the instrument from the product and to allow air into the ear canal to promote drying.

Appendix V: Cerumen Removal Procedures

Prior to starting cerumen extraction, the clinician should read and follow the infection control guidelines published by Health Canada including the infection control guidelines for hand washing, cleaning, disinfection and sterilization in health care and preventing the transmission of blood borne pathogens in health care and public services settings. Suction tips, specula, earlight tips, irrigation tips, etc. should be disinfected prior to (re)use. Critical instruments should be sterilized prior to (re)use.

1. Extracting cerumen by instrument

General steps for cerumen extraction by instrument include the following:

- a) Use a high-quality light source on an instrument that allows for good depth perception to visualize into the ear canal. In most circumstances, a hand-held otoscope is sufficient for illumination. Other otoscope or headset designs that provide a large magnifying lens and high-quality lighting can also be used. Any instrument must be inserted carefully into the ear canal so that it does not contact the blockage, as discomfort or damage to the tympanic membrane may occur. Use of an otoscope with an open head for cerumen removal is not recommended.
- b) The most commonly used procedure for cerumen removal by instrument involves placing the tip of the curette above the impaction and gently pushing down to embed the curette in or position it behind the cerumen while pulling out (Kelso, 2003). In some cases, carefully inserting the curette or right-angle pick into the opening and pulling it out can be done. This must be done with caution. The clinician should be very careful to minimally insert the curette past an opening in the cerumen.
- c) If the cerumen encountered appears dry or hardened, terminate the procedure and use cerumenolytics (if appropriate) to soften the mass.
- d) If the cerumen is wet and sticky, suction may be a better choice for removal.
- e) When the blockage has been removed, remove the curette from the ear canal. An otoscopic examination should be performed to view the final status of the ear and removal of the cerumen.
- f) If a forceps is used, insert it in the ear canal with the jaws in the closed position.
- g) When the forceps is in close proximity to the blockage, gently open the jaws, being extremely careful not to touch the lining of the canal. Gently grasp the blockage and slowly remove it from the canal.

- h) If the blockage appears to be imbedded or attached to the lining of the canal, stop the procedure and refer the patient/client to a health professional with expertise (audiologist or physician).
- i) If a small amount of cerumen appears to be left on the canal wall, it should not be scraped away. This could cause discomfort for the patient/client. Leaving a small amount on the canal wall will not impair testing and may prevent itching.
- j) Follow post-cerumen extraction procedures described earlier in the discharge criteria section of this PPG (Manning, 1992; Wilson & Roeser, 1997).

2. Extracting cerumen by aural suctioning

General steps for cerumen management by aural suctioning are the following:

- a) Carefully perform an otoscopic examination to ensure that there is no perforation of the tympanic membrane or myringotomy tube and that the patient/client is a good candidate for extraction via aural suctioning. Also identify the exact location of the blockage and the tympanic membrane, and identify the canal walls.
- b) Use the thumb to cover the suction hole in the thumb depression of the tip to ensure maximum suction pressure.
- c) Gently apply the tip of the suction tip into the cerumen and allow the suction device to suction the cerumen through the tip. Do not attempt to scrape the cerumen with the suction tip, as the end of the suction tip has a sharp edge. Do not scrape the canal wall with the end of the tip as this may cause discomfort to the patient/client.
- d) When suctioning, rest the end of the suction tip on the wax and gently depress into the matter.
- e) Attempting to 'spear' the cerumen may cause undue pressure or damage to the tympanic membrane. Instead, allow the suction action of the pump to grasp and remove the cerumen.
- f) Keep a warm cup of water nearby to suction through the tube periodically to keep the pathway clear. Cleaning of the tip may be required throughout the procedure, so appropriate cleaning procedures during treatment should be used to keep the tip clean and unblocked.
- g) With some equipment, large pieces of cerumen will likely clog the line when suctioned through the apparatus.
- h) Be aware that the sound created by the suction device may create temporary threshold shifts and/or tinnitus.
- i) Be aware that some populations (e.g. young children) are often frightened by the loudness of the suctioning.
- j) Place suction tips in alcohol submersion following each procedure and sterilize them. Soak tubing and the diffuse container in alcohol, bathe them in bleach and air dry them at the end of the day.
- k) Follow post-cerumen extraction procedures described earlier in the discharge criteria section of this PPG (Manning, 1992; Wilson & Roeser, 1997).

3. Extracting cerumen by aural irrigation

General steps for aural irrigation are as follows.

- a) Ensure that you use a headlight with bright illumination.
- b) Have the patient/client hold an empty kidney-shaped basin just below the pinna, pressing the basin firmly against the side of the face.
- c) Tilt the head slightly downward so that the water will drain easily.
- d) Draw the pinna gently backward and upward to straighten the ear canal for water delivery and to ease the cerumen removal.
- e) Place the nozzle of the syringe or the tip of the irrigator at the entrance of the ear canal, ensuring that it is always visible and directed toward the roof of the canal.
- f) Using appropriate pressure, direct the stream of water into the ear canal to remove the cerumen.
- g) After irrigation, inspect the ear canal and drain any remaining water from the canal.
- h) Ensure that the ear canal is dry after cerumen removal to prevent infection. A cotton ball can be gently placed at the ear canal entrance to absorb any excess water.
- i) Follow post-cerumen extraction procedures described earlier in the discharge criteria section of this PPG (Manning, 1992; Wilson & Roeser, 1997; Roeser & Roland, 1992).

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