

## Disclaimer

SEE ALSO: Hearing loss, audiogram

**DESCRIPTION** – Sensorineural hearing loss of greater than 30 dB over 3 contiguous pure-tone frequencies occurring within a 3-day period without an identifiable cause.

## **HOW TO ASSESS**

### Red Flags:

- Sudden sensorineural hearing loss (SSNHL) is a diagnosis of exclusion
- Consider herpes zoster oticus if pain or vesicles of pinna/ear canal present

### On History:

- Sudden onset of painless unilateral hearing loss, generally noticed on waking
- Associated with unilateral tinnitus in 70% of cases
- Associated with mild disequilibrium in 40-50% of cases
- Absence of otorrhoea, otalgia, headache, neurological symptoms, vesicles involving the pinna and/or ear canal

### On Examination:

- Normal ear canal and tympanic membranes
- Rinne positive tuning fork test (air conduction > bone conduction) in mild/moderate hearing loss and false Rinne negative (bone conduction > air conduction due to sound conduction via the cranium being heard by the non-test ear) in severe/profound loss. Weber's test lateralises to the non-affected ear. If a tuning fork is not available, the Hum Weber may be used. In this test, if the patient hums, the sound will often be heard in the non-affected ear in cases with SSNHL and in the affected ear in cases with conductive hearing loss.
- Whisper-voice testing confirms loss
- No cranial nerve abnormality
- No stigmata of autoimmune disease

## On Investigation:

- Audiogram required on the same day or next working day showing SSNHL of at least 30 dB in three frequencies with onset over less than 3 days

## ACUTE MANAGEMENT:

- If not contraindicated, prescribe prednisolone 1mg/kg/d orally up to 60 mg daily for ten days then taper over one week
  - Prednisolone may be commenced for cases presenting within one month of the initial sudden hearing loss
  - Prednisolone can be commenced empirically if audiogram not available on the same day – confirm hearing loss with audiogram and review appointment next working day
  - Commencement of prednisolone should occur following patient education regarding SSNHL
- If oral corticosteroids are contraindicated, refer for intra-tympanic steroid injection (see [Appendix 1](#))
- There is no evidence for antiviral therapy in SSNHL
- Refer urgently to neurologist if other focal neurological abnormalities present

## FOLLOW UP:

- Arrange repeat audiogram and ENT outpatient (AENT clinic) follow up in 2 weeks
- Arrange MRI to exclude a tumor of internal auditory canal - this should be followed up in Otology Outpatient Clinic within 2 months
- If oral steroids have failed (either at ED presentation, or at AENT) refer for intra-tympanic steroid injection.

## DISCHARGE INSTRUCTIONS:

- Discuss potential side-effects of short-term corticosteroid course and patient education discussion points for SSNHL (see [Appendix 2](#))
- Give patient copy of [Sudden Sensorineural Hearing Loss Factsheet](#)

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## Appendix 1

### Intra-tympanic dexamethasone (ITD) for sudden onset sensorineural hearing loss (SSNHL) Protocol

#### **Treatment schedule**

1. Initial or primary treatment - if oral steroids are contraindicated, or if patient prefers. There is no evidence to prefer this over oral steroid therapy.
2. Adjunctive treatment given concomitantly with systemic steroids. There is no evidence to prefer this over oral or intra-tympanic therapy alone.
3. Salvage therapy after failure of systemic steroids. There is some evidence that this can be effective.

Notes: The primary reason for the use of ITD without systemic steroids is in patients who cannot tolerate or are at greater risk of complications from systemic steroids (e.g., diabetics).

Salvage therapy will commence soon after tapering dose of steroids therapy. It can be considered if there is no response a week after the commencement of oral therapy.

#### **Patient consent**

Chance of failure of treatment

Risk of dizziness/ tinnitus/ ear fullness

Persistent tympanic membrane perforation (TMP)

Document in the medical record these have been discussed

#### **Tests prior to treatment**

Audiometry: pre oral steroid/ post-oral steroid (if the case for salvage therapy)

#### **Administration of ITD**

Apply anesthetic cream (AnGel Cream® or EMLA®) to the eardrum and wait for 30 minutes. Remove cream by suction (Do not use phenol).

Prepare Dexamethasone 8mg/2ml warm up to body temperature.

Instill solution to middle ear with 25G/spinal needle (0.4-0.8 ml) under microscopic guidance. Perforate the tympanic membrane anterior to the malleus. Inject approximately 0.5 ml postero-inferiorly into the tympanic membrane.\*

\* Recommended method unless the supervising consultant prefers another.

Let patient lie in a supine position with affected ear up for 15-30 minutes.

Patient should be instructed to avoid excessive swallowing.

The procedure will be done twice weekly for 2 consecutive weeks.

## **Patient instructions**

Water precautions

Report any change of hearing/vertigo

## **Follow up**

Audiometry in one week after last injection

\*\* According to the AAOHNS guideline for ITS, Higher concentration of steroid is recommended (Dexamethasone 24mg/ml, 16mg/ml or Methylprednisolone 40mg/ml).

## **Reference**

Spear SA, Schwartz SR. Intratympanic steroids for sudden sensorineural hearing loss: a systemic review. *Otolaryngol Head Neck Surg* 2011; 145: 534-543.

Seggas I, Koltsidopoulos P, Bibas A et al. Intratympanic steroid therapy for sudden hearing loss: A review of the literature. *Otol Neurotol* 2011; 32: 29-35.

Lim HJ, Kim YT, Choi SJ et al. Efficacy of 3 Different Steroid Treatments for Sudden Sensorineural Hearing Loss: A Prospective Randomized Trial. *Otolaryngology -- Head and Neck Surgery* 2013; 148: 121-127

## Appendix 2

### **Patient Education Discussion Points for Sudden Sensorineural Hearing Loss (SSNHL)** (From Robert J. Stachler et al Otolaryngology -- Head and Neck Surgery 2012 146: S1)

The cause of sudden sensorineural hearing loss (SSNHL) is often not readily apparent and thus called idiopathic. It rarely affects both ears and can be associated with other symptoms such as tinnitus, vertigo, and fullness in the ear.

Approximately one-third to two-thirds of patients with SSNHL may recover some percentage of their hearing within 2 weeks. Those who recover half of their hearing in the first 2 weeks have a better prognosis. Patients with minimal change within the first 2 weeks are unlikely to show significant recovery.

Early recognition of SSNHL is important. Although there is a lack of evidence-based research, it is generally accepted that early intervention may increase recovery.

Many treatments have been proposed for SSNHL, but research about their effects is limited by small sample size and varying experimental designs. The benefits of therapy may include more prompt and complete recovery of hearing, but side effects also must be considered when choosing among the available options.

Watchful waiting is an alternative to active treatment as between one-third and two-thirds of patients may recover hearing on their own and can be monitored with repeat hearing tests.

Sudden hearing loss can be frightening and may result in embarrassment, frustration, anxiety, insecurity, loneliness, depression, and social isolation. Individual or group counselling can be helpful in supporting patients with SSNHL.

Audiologic rehabilitation needs to be addressed as soon as the hearing loss is identified. This includes counselling and discussion of nonsurgical and surgical amplification and hearing restoration options.

## Evidence Table

Author/s	Title	Source	Level of Evidence (I – VII)	Comments
Robert J. Stachler et al	Clinical Practice Guideline: Sudden Hearing Loss	Otolaryngology - Head and Neck Surgery 2012 146: S1	I	
Benjamin PC Wei et al	Steroids for idiopathic sudden sensorineural hearing loss	Cochrane Database of Systematic Reviews 2013 Issue 7. Art. No.: CD003998	I	
Lawrence R et al	Controversies in the management of sudden sensorineural hearing loss: an evidence-based review	Clin Otolaryngol. 2015 Jun;40(3):176-82	I	

### The Hierarchy of Evidence

The Hierarchy of evidence is based on summaries from the National Health and Medical Research Council (2009), the Oxford Centre for Evidence-based Medicine Levels of Evidence (2011) and Melynck and Fineout-Overholt (2011).

- I** Evidence obtained from a systematic review of all relevant randomised control trials.
- II** Evidence obtained from at least one well designed randomised control trial.
- III** Evidence obtained from well-designed controlled trials without randomisation.
- IV** Evidence obtained from well designed cohort studies, case control studies, interrupted time series with a control group, historically controlled studies, interrupted time series without a control group or with case series.
- V** Evidence obtained from systematic reviews of descriptive and qualitative studies.
- VI** Evidence obtained from single descriptive and qualitative studies.
- VII** Expert opinion from clinician, authorities and/or reports of expert committees or based on physiology.

### **CPG Suite General Disclaimer**

These CPGs were written for use in the RVEEH speciality Emergency Department. They should be used under the guidance of an ENT or Ophthalmology registrar, and certain medications / procedures should only be undertaken by speciality registrars.

If you require clinical advice, please contact our admitting officer for assistance:

EYE: 03 9929 8033 ENT: 03 9929 8032