CLINICAL PRACTICE GUIDELINE: Emergency Department

# Sudden Sensorineural Hearing Loss (SSNHL)

Disclaimer: This Clinical Practice Guideline ('CPG') was written for use in The Royal Victorian Eye and Ear Hospital Emergency Department. It should be used under the guidance of an Ophthalmology or ENT registrar. If clinical advice is required, please contact the Eye and Ear Admitting Officer for assistance: EYE: +61 3 9929 8033; ENT: +61 3 9929 8032. Links to internal Eye and Ear documents cannot be accessed from the website CPG.

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.

## 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

## How to Assess:

### 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

### 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

### Investigations:

- 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 75 mg daily for seven days then taper over one week
- Prednisolone may be commenced for cases presenting within 28 days 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, intra-tympanic (IT) steroid injection would be indicated (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:
    - If case presenting within 28 days of the initial sudden hearing loss, refer to injection clinic using AENT appointment referral in one week
    - if case presenting more than 28 days of the initial sudden hearing loss, refer to Otology clinic within 6 weeks with repeat audiogram
- Arrange MRI to exclude a tumor of internal auditory canal - this should be followed up in Otology Outpatient Clinic within 2 months

## 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 Patient Information

# Appendix 1:

Intra-tympanic (IT) steroids injection for sudden onset sensorineural hearing loss (SSNHL) Protocol

**Patient consent: written consent should be taken**

- Chance of failure of treatment
- Risk of dizziness/ tinnitus/ ear fullness
- Persistent tympanic membrane perforation (TMP)
- Water precaution for a week

**Administration of IT Dexamethasone**

- Apply topical anesthetic to the eardrum and wait for 20 minutes. Remove topical anesthetic completely. Do not use phenol
- Prepare Dexamethasone warm up to body temperature
- Instill solution to middle ear in the inferior quadrants with 25G/spinal needle (0.4-0.8 ml) under microscopic guidance.
- Let patient lie in a supine position with affected ear up for 15-30 minutes.
- Patient should be instructed to avoid excessive swallowing

**Patient instructions**

- Water precautions
- Report any change of hearing/vertigo

**Follow up**

Audiometry in one week after last injection and review in injection clinic

**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

Jinfei Li, MM, and Lei Ding, MM. Effectiveness of steroid treatment for sudden sensorineural hearing loss: A Meta-analysis of randomized controlled trials. Annals of Pharmacotherapy 2020; 54: 949–957

Chandrasekhar SS, Tsai Do BS, Schwartz SR, Bontempo LJ, Faucett EA, Finestone SA, Hollingsworth DB, Kelley DM, Kmucha ST, Moonis G, Poling GL, Roberts JK, Stachler RJ, Zeitler DM, Corrigan MD, Nnacheta LC, Satterfield L. Clinical practice guideline: Sudden hearing loss (Update). Otolaryngol Head Neck Surg 2019 ;161(1suppl): S1-S45

# 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 non-surgical and surgical amplification and hearing restoration options.

**Evidence Table**

| Author(s) | Title | Source | Level of Evidence (I – VII) |
|---|---|---|---|
| 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 Melynk 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.

| Version Details: | |
|---|---|
| CPG No: | CPG35.0 |
| Responsible Executive: | Executive Director, Medical Services |
| Review Officer: | Director, Emergency Department |
| Contributor(s): | • Clinical Practice Guideline Working Group<br>• Director Emergency Department<br>• ENT Fellow<br>• ENT Consultant<br>• ENT Medical Officer |
| National Standard: | Comprehensive Care |
| Version Number: | 6.0 |
| Approval Date: | 27/10/2021 |
| Next Review Due: | 27/10/2026 |