

# CRITICALLY APPRAISED TOPIC #1

## TINNITUS

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# PICO

- **PICO Question:**

- *In patients who suffer from clinically significant tinnitus, do combination devices reduce hearing handicap more than conventional hearing aids as measured by the Tinnitus Handicap Inventory (THI)?*

- **Details of Evidence Request:**

- **Patients:** Patients with clinically significant tinnitus
- **Intervention:** Combination devices
- **Comparison:** Conventional hearing aids
- **Outcomes:** Tinnitus Handicap Inventory (THI)

# Tinnitus Stats

## General Population

- 10-15% experience tinnitus
  - 20% clinically significant tinnitus
    - Indicates the need for some degree of clinical intervention, and is based on the *patient's perception*.

## Veteran Population

- 24.7 million veterans
  - 3-4 million have tinnitus
  - Increasing problem for the VA
  - In 2006 ~400,000 veterans service connected for tinnitus
    - \$510,000,000 in compensation

# Clinically Significant Tinnitus

- Tinnitus may be clinically significant if:
  - ▣ Disrupts at least one important life activity.
  - ▣ Degree of disruption is “more than trivial.”
  - ▣ Causes a noticeable reduction in QoL.
  - ▣ Patient believes benefit from intervention would outweigh cost and effort

# Search Terms

<b>Field of Focus</b>	<b>Search Term</b>
Disease-related	Clinically significant tinnitus, severe tinnitus
Intervention-related	Tinnitus devices, tinnitus hearing aids, ear level device
Outcomes-related	Tinnitus Handicap Inventory, tinnitus questionnaires

# Resources Searched

## □ Resources Searched (Sept – Oct 2008)

□ We searched the following databases and Internet websites:

- Academic search premier
- Wilson omnifile full text mega edition
- General OneFile
- CQ researcher
- Pubmed
- Google Scholar



**USF Libraries  
MetaSearch  
Engine**

# Hits

	<b>ASP</b>	<b>WO</b>	<b>GO</b>	<b>CQ</b>	<b>Pub Med</b>
<b>Clinically significant tinnitus</b>	11	1	401	0	57
<b>Severe tinnitus</b>	82	22	1714	0	514
<b>Tinnitus devices</b>	19	15	555	0	519
<b>Tinnitus hearing aids</b>	40	10	403	0	229
<b>Tinnitus handicap inventory</b>	18	2	31	0	86
<b>Tinnitus questionnaire</b>	104	8	178	0	546
<b>Significant tinnitus devices</b>	0	1	0	0	75
<b>Tinnitus devices hearing aids</b>	7	0	40	0	202
<b>Ear level devices tinnitus</b>	4	3	59	0	27
<b>Ear level devices tinnitus hearing aids</b>	3	2	0	0	7

Reference list review: 3 hits

# Inclusion Criteria

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- Primary studies comparing combination devices to hearing aids for the treatment/management of tinnitus
- Males &/or Females
- Adult &/or Elderly

# Exclusion Criteria

- ❑ Study focused on a particular device funded by device company (i.e. Neuromonics)
- ❑ Study was published in a language other than English
- ❑ Studies concentrating on tinnitus devices other than hearing aids or combination devices
- ❑ Children and adolescents
- ❑ Trade Journals
- ❑ Normal hearing
- ❑ Level IV evidence

# Search Strategy Results

Search strategy resulted in **three** articles for review:

- Del Bo, L. and Ambrosetti, U. (2007) Hearing aids for the treatment of tinnitus. *Progress in Brain Research*, 166.
- Folmer, R. L. and Carroll, J. R. (2006) Long-term effectiveness of ear-level devices for tinnitus. *Otolaryngology - Head and Neck Surgery*, 134: 132-137.
- Sandlin, R. E., Olsson, R. J. (1999) Evaluation and selection of maskers and other devices used in treatment of tinnitus and hyperacusis. *Trends in Amplification*, 4, 1: 6-26.

# Search Strategy Results

<b>First Author and Year of Publication</b>	<b>Location</b>	<b>Comparison</b>	<b>Control Patients</b>	<b>Number of studies/patients</b>	<b>Outcomes</b>
Del Bo, 2007	Milan, Italy	Hearing aids vs. no device	N/A	N/A	N/A
Folmer, 2006	Portland, OR, USA	Hearing aids vs. sound generators vs. no device	Concurrent	150	Tinnitus Severity Index
Sandlin, 1999	San Diego, CA, USA	Hearing aids vs. sound generators	NA	N/A	N/A

# Results

- **Del Bo & Ambrosetti (2007)**
- Hearing aids in tinnitus patients provides two benefits:
  - Makes patient less aware of tinnitus
  - Improves communication
  - HAs should be fit to both ears for best results
- **Conditions req'd for good results:**
  - **Technologically advanced devices**
  - **Counseling**

# Results

- **Folmer & Carroll (2006)**
- 50 patients: hearing aids, 50 patients: sound generators, 50 patients: no devices
- All three groups exhibited significant reductions in Tinnitus Severity Index scores and self-rated tinnitus loudness.
- **Patients with ear-level devices reported greater improvement than those w/o devices.**
- **Counseling/more time spent w/ patients wearing devices.**

# Results

- **Sandlin & Olsson (1999)**
- Reviewed various studies in which devices (HAs, SGs, & combo devices) were used.
- Success with any device may depend on the skill of the clinician in the evaluation and selection process.
- **It becomes difficult, when good tinnitus counseling is provided, to differentiate between the therapeutic effect of the counseling *per se* and that resulting from the instrument**

# Discussion

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- How does counseling play a roll in patients' perceived tinnitus handicap?
- What can be done to separate the two effects?
  - ▣ Counseling benefits
  - ▣ Device benefits

# Conclusion

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- After careful review of the literature, one can conclude that there is no clear answer in the case of combination devices vs. hearing aids for the management of tinnitus.
- The “success” of the devices may be compounded with the level of counseling provided to the patient and further research is needed in this area.

# References

- Del Bo, L. and Ambrosetti, U. (2007) Hearing aids for the treatment of tinnitus. *Progress in Brain Research*, 166.
- Folmer, R. L. and Carroll, J. R. (2006) Long-term effectiveness of ear-level devices for tinnitus. *Otolaryngology - Head and Neck Surgery*, 134: 132-137.
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