Introduction
Sudden Sensorineural Hearing Loss (SSNHL)
- Defined as: Hearing loss of 30 dB or greater in at least three frequencies over a period of 72 hours or less.
- Incidence: 1/5,000 persons per year in the United States.
- Likely underreported to spontaneous resolution in many cases, and lack of recognition of SSNHL as the primary diagnosis—most present with full or blocked ear.
- Treatment recommended within 2-4 week from initial onset with high-dose steroids.
- Delayed recognition has risk for permanent profound hearing loss which carry psychosocial consequences including loneliness, isolation, and depression.
- Cost: as much as one million dollars across one’s lifetime.
- Medicare does not pay for hearing aid devices at this time.

Summary/Synthesis of Evidence
- Patients with SNHL most often present to PCP’s first.
- PCP’s must distinguish CHL from SNHL.
- Patients with SHL most often present with full or blocked ear.
- Many cases, and lack of recognition of SNHL as the primary diagnosis.
- Urgent care, family practice, internal medicine physicians, nurse practitioners, physician assistants.

Purpose
To determine whether an educational intervention for PCP’s in a Large southwest hospital-affiliated regional outpatient healthcare organization may increase knowledge about current guideline recommendations and increased the frequency of identification and appropriate management of SSNHL in adult patients.

Aim 1:
Determine the effectiveness of an educational intervention for primary care providers on knowledge about current SSNHL guidelines.

Aim 2:
Increase PCP knowledge on SSNHL over a 12-week period

Aim 3:
Increase PCP frequency of identification and management of SSNHL over a 12-week period

Methods
- Design: Single group pre/posttest educational intervention
- Setting: Large southwest hospital-affiliated regional outpatient healthcare organization
- Inclusion Criteria:
  - Physicians, nurse practitioners, physician assistants
  - Urgent care, family practice, internal medicine
- Exclusion Criteria:
  - PCP’s with prior otolaryngology experience
  - PCP’s working outside the metro area
- Intervention:
  - Face to face with written handout
  - Covered key points of AAO-HNSF SSNHL guidelines
- Data Collection:
  - Baseline Pre/posttest: novel, 5 item, paper and pencil survey
  - 12-week posttest and 4-item survey, Survey Monkey
- Design: Single group pre/posttest educational intervention
- Setting: Large southwest hospital-affiliated regional outpatient healthcare organization

Results
Demographics
Baseline (n=30): Slightly more males (57%), mostly white, non-Hispanic Latino, majority (67%) family practice
12-weeks (n=18): Similar demographics, except more physicians (73%) Similar to target population

Baseline pretest scores (n=30)
(M=2.87, SD=1.22), Normal distribution
Increased average: 1.83 points, 95% CI (2.26, 1.40); P<0.5,
Paired t-test

12-week group (n=18)
Baseline posttest (M=4.72, SD=0.67), 12-week posttest (M=4.4, SD=0.78)
P value = 0.6
Wilcoxon Signed Ranks

12-week follow-up survey
All but 2 (89%): Increased consideration of SSNHL as differential diagnosis
100%: More likely to prescribe high-dosed steroids
67% had not seen a patient with SHL: Half of these report increased referrals to ENT

Findings
- Increased average knowledge, 95% CI (2.26, 1.40); P<0.5,
- Increased knowledge about guidelines, about identifying SSNHL and about recommendations for management
- Knowledge is maintained over time,
- May increase adherence to guidelines
- May improve patient outcomes by reducing risk for permanent profound hearing loss

Discussion

Strengths
- No current studies investigating PCP intervention about SSNHL
- Assessed both knowledge increase and meaningful practice change
- Results: increased knowledge that is maintained, and practice change.
- Potential for significantly improving patient quality of life

Limitations
- Participants: Mostly white, non-Hispanic Latino
- Only 18 completed 12-week survey and posttest
- Only 5 pre/posttest questions: limited how and what to ask
- One item 80% correct: general knowledge; One item 20% correct: statistic

Recommendations
- Validated tool
- Questions to replace outliers
- More questions: assess single concepts
- Larger sample

Conclusions
Educating PCP’s about SSNHL
- May increase knowledge about guidelines, about identifying SSNHL and about recommendations for management
- May increase adherence to guidelines
- May improve patient outcomes by reducing risk for permanent profound hearing loss

Figure 1. Percent correct responses by primary care providers for individual pre/posttest items just before, just after, and 12 weeks following an educational intervention for sudden sensorineural hearing loss. * Denotes significant change in pretest from initial posttest score. † Denotes no significant change from initial posttest to 12-week posttest score

Table 1
Sample characteristics for educational intervention participants
<table>
<thead>
<tr>
<th>Variable</th>
<th>Participants (n=30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Credentials, No. (%)</td>
<td>MD (10 (33.3))</td>
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<tr>
<td></td>
<td>DO (7 (23.3))</td>
</tr>
<tr>
<td></td>
<td>NP (7 (23.3))</td>
</tr>
<tr>
<td></td>
<td>PA (6 (20.0))</td>
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<tr>
<td>Number of Years in Practice, No. (%)</td>
<td>0-5 (15 (50))</td>
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<tr>
<td></td>
<td>5-10 (4 (13.3))</td>
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<tr>
<td></td>
<td>10-15 (4 (13.3))</td>
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<tr>
<td></td>
<td>15-20 (1 (3.3))</td>
</tr>
<tr>
<td></td>
<td>&gt;20 (6 (20.0))</td>
</tr>
<tr>
<td>Practice Type, No. (%)</td>
<td>Family Medicine (20 (66.7))</td>
</tr>
<tr>
<td></td>
<td>Internal Medicine (3 (10))</td>
</tr>
<tr>
<td></td>
<td>Urgent Care (7 (23.3))</td>
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<tr>
<td>Gender of Provider, No. (%)</td>
<td>Male (17 (56.7))</td>
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<tr>
<td></td>
<td>Female (13 (43.3))</td>
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<tr>
<td>Provider Described Ethnicity, No. (%)</td>
<td>Non-Hispanic/Latino (23 (76.7))</td>
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<tr>
<td></td>
<td>Hispanic/Latino (2 (6.7))</td>
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<tr>
<td></td>
<td>Prefer not to answer (5 (16.7))</td>
</tr>
<tr>
<td>Provider Described Race, No. (%)</td>
<td>White (24 (80))</td>
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<tr>
<td></td>
<td>American Indian or Alaskan (3 (10))</td>
</tr>
<tr>
<td></td>
<td>Native (1 (3.3))</td>
</tr>
<tr>
<td></td>
<td>Two or more races (1 (3.3))</td>
</tr>
<tr>
<td></td>
<td>Prefer not to answer (2 (6.7))</td>
</tr>
</tbody>
</table>

Note: MD = Medical Doctor, DO = Doctor of Osteopathy, NP = Nurse Practitioner, PA = Physician Assistant

Figure 1. Percent correct responses by primary care providers for individual pre/posttest items just before, just after, and 12 weeks following an educational intervention for sudden sensorineural hearing loss. * Denotes significant change in pretest from initial posttest score. † Denotes no significant change from initial posttest to 12-week posttest score