

APPENDIX P

ANALYSIS OF AVAILABLE DATA-
PSEUDOHYPACUSIC GROUP

KEY:

- A Pseudohypacusis proofed left
 B Pseudohypacusis proofed right
 C Normal hearing left ear
 D Normal hearing right ear
 E Abnormal exaggerated hearing left
 F Abnormal exaggerated hearing right
 G Case managed successfully
 H Compensable
 I within compensable range
 J Fit
 K Correlates with previous test left
 L Correlates with previous test right
 M Sudden deterioration left
 N Sudden deterioration right
 O Referred by Occupational Health centre/ENT

Subject no	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	yes	yes	yes	yes	no	no	yes	no	no	yes	no	no	no	no	OHC
2	no	yes	.	no	.	yes	no	.	yes	no	no	no	.	.	OHC
3	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	yes	.	no	OHC
4	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	.	.	OHC
5	yes	yes	no	no	yes	yes	yes	no	no	yes	yes	yes	no	no	ENT
6	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no	OHC
7	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	no	no	no	OHC
8	yes	yes	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	ENT
9	yes	yes	no	no	yes	yes	yes	no	no	yes	no	no	no	no	OHC
10	yes	yes	.	no	.	yes	yes	yes	yes	yes	.	yes	no	no	OHC
11	yes	yes	no	yes	yes	no	yes	no	no	yes	no	yes	yes	no	ENT
12	yes	yes	no	no	yes	yes	yes	no	yes	yes	no	no	yes	yes	ENT
13	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	ENT

Subject no	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
14	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no	OHC
15	yes	yes	no	yes	yes	no	yes	no	no	yes	yes	no	no	no	OHC
16	yes	yes	no	no	yes	yes	yes	no	yes	no	no	no	yes	yes	OHC
17	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	no	yes	ENT
18	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	no	no	OHC
19	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no	ENT
20	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	no	no	ENT
21	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	no	yes	OHC
22	yes	yes	no	no	yes	yes	yes	yes	yes	no	OHC
23	yes	yes	yes	yes	no	no	yes	no	no	yes	yes	yes	no	no	OHC
24	yes	no	no	no	yes	yes	yes	yes	no	no	no	no	yes	yes	OHC
25	yes	yes	no	no	yes	yes	yes	no	yes	yes	yes	no	yes	yes	OHC
26	yes	yes	no	no	yes	yes	yes	no	no	yes	no	yes	yes	no	ENT
27	yes	yes	no	no	yes	yes	yes	no	yes	no	yes	no	yes	yes	OHC
28	yes	yes	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no	OHC
29	yes	yes	no	no	yes	yes	yes	yes	yes	yes	no	no	no	no	OHC

APPENDIX Q

COSTING OF ASSR METHODS IN THE MINING INDUSTRY

"I feel that it would be difficult, if not impossible, to derive an accurate formula for estimating the financial impact of malingering (pseudohypacusis) in respect of noise-induced hearing loss in the mining industry." (Begley, 2003)

Complicating factors that lead to this difficulty include the following:

- Production teams consist of 16 to 18 workers. If one worker is absent, the job still continues, making it difficult to quantify any production loss due to one individual's absence.
- Groups of workers are transported to hospitals and clinics on a daily basis, and one or two additional cases per day may not have a significant impact.
- It is impossible to say how much overcompensation occurs or has occurred, as no objective measure or indicator has ever been put in place. Insurers contend that two separate diagnostic audiograms and assessment by the Occupational Health or Medical Practitioner, along with a review of each case by the insurer's claims assessors should minimise false claims (Begley, 2003).

The present author and other audiologists consulting to the industry have noted an escalation of apparently erroneous compensation or overcompensation of pseudohypacusic individuals, particularly since the implementation of WCC Instruction 168 in 1995. Haugton *et al.* (1979) found that subjects were able to consistently feign or exaggerate hearing loss within 6 dB (nine per cent), well within the 10 db of variance needed to refute a compensation claim. In addition, Rickards and De Vidi (1995) found that individuals who had been compensated had exaggerated their hearing loss by 12, 2 per cent.

Taking into account the preceding points, the potential cost of pseudohypacusis has been analysed considering the following components:

- lost production;
- lost shifts;

- transport costs;
- specialist referrals;
- overcompensation;

1. LOST PRODUCTION

Lost production can be estimated is as follows (Geysler, 2003):

A 30-metre panel worked by a team of 16 workers carries a production cost of R 79 000 per day, indicating that a single worker's absence for one day amounts to R 4 937,50 in lost production. Admittedly, a drill operator's absence would have a more direct impact on production, but there are very few instances of stope teams being over-complemented and, hence, the overall average is calculated across the entire team.

2. LOST SHIFTS

A rock drill operator, normally classified as Category 4, earns an average monthly wage of R 2 260 per month, or R 113 per day.

3. TRANSPORT COSTS

Transporting workers to Occupational Health Centres, hospitals and clinics costs R 70 000 per month for a single region in one mining group (Geysler, 2003). The average number of workers transported each month is 584, implying a cost of R 120,68 per worker.

4. SPECIALIST REFERRALS

Various scenarios are possible in cases of pseudohypacusis, as follows:

4.1 Second referral for audiology

A worker may be referred for re-evaluation by the audiologist where thresholds have not been obtained. The cost can be calculated as follows:

Lost shift	R 113,00
Lost production	R4 937,50
Transport	R 120,68
Audiology:	
Consultation	R 82,30
Air-conduction audiometry	R 37,20
Bone-conduction audiometry	R 37,20
Tympanometry	R 37,20
Acoustic reflexes	R 37,20
Cost of audiology:	R 231,10
Total cost of audiologist referral:	<u>R5 402,28</u>

4.2 ENT referral

If the audiologist's second attempt to determine thresholds is unsuccessful, the worker is often referred to an ENT specialist.

Lost shift	R 113,00
Lost production	R4 937,50
Transport	R 120,68
Consultation	R 113,40
The ENT will be unable to finalise the diagnosis without a reliable audiogram, and it may be necessary to repeat audiological procedures.	
Air-conduction audiometry	R 37,20
Bone-conduction audiometry	R 37,20
Tympanometry	R 37,20
Acoustic reflexes	R 37,20
Cost of audiology:	R 231,10
Total cost of ENT referral:	<u>R5 515,68</u>

4.3 ABR testing

If the ENT is still unable to make a final diagnosis and determine hearing thresholds, an ABR may be requested.

Lost shift	R 113,00
Lost production	R4 937,50
Transport:	R 120,68
ABR testing	R 503,36
Revisit ENT	R 113,40
Total cost of ABR assessment:	<u>R5 787,94</u>

These costs indicate that without considering the effect of any overcompensation, the cost of assessing a pseudohypacusic worker can amount to between R 5 402,28 and

R 16 705,90. After all these costs have been incurred, it often happens that pure-tone thresholds have still not been determined across the frequency range and thus the case remains unresolved.

A total of 2 526 diagnostic evaluations were performed for employees in one region of a single mining group during the past financial year (Geysler, 2003). If only 10 per cent of these involved pseudohypacusis (a very conservative estimate), it implies that 253 workers cost the employer R 1,367M in unnecessary diagnostic evaluations, assuming that each one required only one day off work and that no ABR testing or ENT referrals were involved.

In this light, the R 154 000 cost for an ASSR test system (HASS, December 2003) would be recovered in a matter of months, and the instrument would not need replacement for at least five years. In addition, ASSR testing would enable the diagnosis and evaluation of noise-induced hearing loss cases to be finalised more quickly, serving the interests of both the employer and deserving workers.

4.4 Overcompensation

The literature indicates that between 9 and 33 per cent of workers who face the prospect of claiming compensation exaggerate their hearing losses. Haughton *et al.* (1979) shown that it is possible to consistently exaggerate a hearing loss within six dB (nine per cent), which should be compared with the 10 dB of variance needed to refute a test as unreliable. It is quite possible for an audiologist to overlook this amount of exaggeration.

The average compensation settlement for noise-induced hearing loss among 228 workers at one regional operation of a single mining group was approximately R 12 000 during the past financial year (Geysler, 2003). If only 10 per cent of these claimants exaggerated their hearing loss by 6 dB (a discrepancy which would be taken as a reliable reading), this would amount to a total overcompensation of R 184 000 (R 8 000 per worker x 23 workers). This is based on the following:

A worker with earnings of R 4000 per month (including salary, overtime, holiday allowance and housing) is compensated by an amount of R 12 000 for a permanent disability (PD) of 6 per cent.

This amount is based on

Earnings multiplied by percentage of PD, multiplied by 15 and divided by 30, i.e.

$$R\ 4\ 000 \times 6 \times 15 \div 30 = R\ 12\ 000.$$

If this worker has exaggerated his hearing loss by 9 per cent, his percentage PD would have risen to 10 per cent, with the following effect:

$$R\ 4\ 000 \times 10 \times 15 \div 30 = R\ 20\ 000, \text{ i.e. an overcompensation of R } 8\ 000.$$

This is a simplistic way of evaluating the possible financial impact of overcompensation, since claimants earn different salaries, and have varying levels of hearing loss and, hence, percentages permanent disability. Nevertheless, this exercise demonstrates that the use of truly objective methods for assessing noise-induced hearing loss in pseudohypacusis workers would yield considerable cost savings.

APPENDIX R

PROOF OF LANGUAGE EDITING: I NOOMÉ

14 May 2004

TO WHOM IT MAY CONCERN

This is to certify that I have language edited the whole thesis by Elize de Koker on hard copy on the understanding that she would make the language changes required on the electronic version. The last three chapters were edited electronically, using the 'track changes' facility in MS WORD to enable her to accept or reject changes and respond to editorial queries.

Yours faithfully

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