Competency Based Training Manual

Audiometric Testing

Nurse Examination
Medical History
Pre-Employment Medical Testing
Spirometry Testing
Drug and Alcohol Screening
Vision Testing
Contents

Audiometric Testing .................................................................................................................. 3
Purpose ...................................................................................................................................... 3
Scope ......................................................................................................................................... 3
Why test Audiometry in a Pre-Employment Medical? ............................................................... 3
Hearing Loss ............................................................................................................................. 3
   Prescribed workplaces .......................................................................................................... 3
Baseline hearing tests ............................................................................................................. 4
Periodic Hearing Test .............................................................................................................. 4
Hughson-Westlake Audiometry Protocol .................................................................................. 4
Paperwork ................................................................................................................................. 5
Theory Examination ................................................................................................................ 11
Audiometric Testing

Purpose

This training manual provides a concise outline of how to perform Occupational Audiometric testing including using the Hughson-Westlake Audiometric Protocol.

Scope

This training manual provides relevant information for all health professionals and medical screeners who conduct pre-employment medical assessments as part of their clinical duties. The training manual provides the minimum requirements for completing audiometric testing as part of a pre-employment medical at KINNECT.

Why test Audiometry in a Pre-Employment Medical?

Occupational hearing loss is one of the leading causes of work-related disorders. Audiometric testing of workers hearing is important to the success of a noise management program since it is the only way to actually determine if occupational hearing loss is being prevented by the noise management control measures. Because occupational hearing loss happens gradually over time, workers often fail to notice changes in their hearing ability until a relatively large change occurs. By comparing audiometric tests from year to year, early changes can be detected and appropriate protective measures implemented to prevent further damage.

Hearing Loss

It is compulsory for employers to arrange baseline hearing tests for all workers in prescribed workplaces, even if wearing hearing protection. All workers in Western Australia (other states are exempt) employed in a prescribed workplace for the first time must have a baseline hearing test within twelve months of commencing employment. It is the employer’s responsibility to arrange and pay for all WorkCover WA audiometric tests.

Prescribed workplaces

A prescribed workplace exists when workers receive a personal noise dose of 90dB(A) or above during an eight hour day, or its equivalent, and where such a day is representative of the worker’s typical work practices (approximately equal to the noise from an idling heavy motor truck at a distance of one metre).
Any workers who receive noise above the peak exposure of 140dB(lin) on one or more occasions, even for a short time, will also require testing (approximately equal to the peak noise level from a mid to high calibre firearm at the user's ear).

**Baseline hearing tests**
A baseline hearing test is the initial audiometric testing conducted to establish the worker’s baseline (reference) or overall Percentage Loss of Hearing (PLH). The PLH of all subsequent tests will then be compared to the baseline PLH.

It is important to note that a worker only requires a baseline hearing test once in his or her lifetime.

**Periodic Hearing Test**

Periodic hearing test forms part of a health surveillance program. Periodic hearing test can be conducted on a regular basis as means of monitoring the occupational hazard (i.e. noise exposure) on a worksite. Periodic hearing tests are used to track any changes in an employee’s hearing over time.

KINNECT complete baseline hearing tests as part of Pre-Employment Medicals and Periodic hearing test as part of health surveillance.

**Hughson-Westlake Audiology Protocol**

Occupational audiology test are done utilising the Hughson-Westlake Audiology Protocol.

1) Instruct the person to be tested as follows:

   "You are going to hear a series of tones through the earphones. Listen carefully and signal by pressing the button each time you hear one of these tones, no matter how faint the tone is"

2) Place the headphones on the persons head. The red headphone is placed on the right ear, and the blue headphone on the left. Make sure the centre of the earphone is directly in line with the ear canal.
3) With the hearing level dial set a 0dB hold the tone button on and turn the dial at a moderate speed so that the level of sound gradually increases. As soon as the subject responds, release the tone switch.

4) Turn the hearing level dial down 10dB, present a short (about 1 second) burst of the tone.

5) If the subject responds, reduce the tone a further 10dB and present another tone. Repeat this procedure until the subject fails to respond.

6) When the subject fails to respond increase the level of the tone by 5dB and test again, presenting a total of three tone bursts. If the subject responds to only one of these three tone bursts, turn the hearing level dial up another 5dB and present another 3 bursts.

7) If the subject responds to two of the three tone bursts, decrease the level of the tone by 5dB and again present three tone bursts. The lowest level at which two out of the three bursts are heard is taken as the subjects threshold level.

8) Test for frequencies above 1000Hz in the same way, then retest 100Hz. On retest, the levels at 1000Hz should be within +/- 5dB. If not, the test should be repeated until agreement can be obtained.

9) Finally, test for the frequency of 500Hz.

10) Remove the headphones from the subjects head.

Please Note:

It is preferable to complete an occupational audiometric test prior to conducting a spirometry test as during the spirometry test there can be a build-up of pressure in the ear canal which may negatively influence the results of any subsequent hearing test.

If a patient has long hair or is wearing glasses, you will need to ensure they remove their glasses and have pushed any hear back and away from the headphones and ears so as to avoid any potential interference.

Paperwork

KINNECT audiometric paperwork is detailed in figure 1.1 and figure 1.2
There are 8 important questions that need to be asked prior to conducting the test. These questions provide vital information for the medical doctor who is reviewing the audiometric results.

Once you have completed the audiometric test, scribe all of the results into the audiometric table including the 2nd reading on the 1000Hz level.

Percentage Hearing Loss (PHL%) can be calculated using the PHL calculator located on the desktop of your computer.

### Audiometry: Hughson-Westlake (Manual) Protocol

<table>
<thead>
<tr>
<th>Hz</th>
<th>500</th>
<th>1000</th>
<th>1500</th>
<th>2000</th>
<th>3000</th>
<th>4000</th>
<th>6000</th>
<th>8000</th>
</tr>
</thead>
<tbody>
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<td>10</td>
<td>/</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>25</td>
<td>10</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>1st reading (start here)</td>
<td>2nd reading (after 8000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RIGHT</td>
<td>15</td>
<td>10</td>
<td>/</td>
<td>10</td>
<td>15</td>
<td>15</td>
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<td></td>
<td>1st reading (start here)</td>
<td>2nd reading (after 8000)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Percentage Hearing Loss (PHL%) - Left**

0.2 %

**Percentage Hearing Loss (PHL%) – Right**

0.2 %

**Percentage Hearing Loss (PHL%) - Binaural**

0.1 %

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**Clinician to ask applicant:**

- Have you experienced a cold, respiratory infection or ear discharge in the last 2-3 weeks
  - Yes
  - No
- Do you have trouble with your hearing or with communication
  - Yes
  - No
- Do you use a hearing aid
  - Yes
  - No
- Do you have frequent ringing in your ears (tinnitus)
  - Yes
  - No
- Have you been exposed to frequent or repeated loud noise outside work? (music / gun fire)
  - Yes
  - No
- Do you have a history of hearing problems or deafness?
  - Yes
  - No
- Have you ever claimed worker’s compensation or other compensation for hearing loss
  - Yes
  - No
- Have you been exposed to loud noise without hearing protection in the last 16 hours
  - Yes
  - No

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Some pre-employment medicals require the tester to indicate whether the hearing test results indicate no, mild, moderate or severe hearing loss. Hearing loss is calculated on Hz levels up to 4000 only. This can be done using the below criteria:

**Assessment (Loss) outcome**

- **Nil** = HLdB of 25 or less
- **Mild** = HLdB of 26-40
• Moderate = HLdB of 41-55
• Severe = HLdB of 56 or more

Recommendations are to correlate to the outcome as follows:
• No action = Nil loss
• Review Protection = Mild loss or Moderate
• Medical Review = Severe loss
Sending Spirometry and Audiometry Results as PDF’s

So as to save time and effort printing and then scanning audiometry and spirometry data so as to send to pepresults@kinnect.com.au, please see below for a step by step guide on how to send the results directly from your computer.

1. **Print to PDF the results you want to send.**

   Click on print and select Print To PDF.

   A Primo PDF box will appear, select the print option and click create pdf.

   A PDF’d document will appear after a few seconds.

2. **Sending a PDF’d document.**

   Once you have PDF’d the desired document go to ‘File’ and select the option ‘Send File’

   This will insert the PDF’d document into an email.
3. Sending results in email

Once the PDF is inserted in an email – select pepresults@kinnect.com.au as the recipient.

4. Inserting KINNECT signature and sending

You will notice that your mail signature is not in the email.

To insert your signature before sending select ‘Signature’ on the tool bar and ‘KINNECT’

This will insert your signature into the email.

Press send so that the results are sent to pepresults@kinnect.com.au.
## Theory Examination

1) It is compulsory for employers to arrange baseline hearing test for all workers working in prescribed workplaces (T)  
   - T  F

2) Audiometric testing can be done as either a baseline measurement or a periodic measurement (T)  
   - T  F

3) The red headphone goes on the left ear of the patient (F)  
   - T  F

4) The patient needs to respond to 2 out of the 3 bursts of tones in order to have obtained the correct measurement (T)  
   - T  F

5) The patient does not have to take off glasses prior to having their audiometric test done (F)  
   - T  F

6) How many hours must a patient not have been exposed to any loud noises prior to the audiometry test? 16 hours

7) Why do employers do audiometry testing as part of pre-employment medicals?  
   The Pre-Employment audiometry is used as a base line to compare with ongoing audiometric test results with health surveillance screening by the employer. This provides an indication as to the success of noise prevention programs on the worksite and to the audiometric "health" of the employee.

KINNECT Employee:  
_________________________  
Christine Matison

Supervisor:  
_________________________

Supervisor Signature:  
_________________________