PROTOCOL – USING THE AUDIOMETERS

EQUIPMENT AND TEST ENVIRONMENT

1. A **member of staff** should **initially check the audiometers** before being used each session. The tester must not fiddle with the wires or connections. If there is a problem, call in a member of staff.
2. **Clean** the audiometer, headphones and response button with a **medical wipe**.
3. **Check the paperwork** for the subject to ensure full permission has been obtained.
4. **To turn the audiometer on** press the **tone switch** . **To power off hold down the two rotary wheels at the same time for a few seconds.**
5. **Record the student's name and register class on the record sheet**.
6. Set the subject so that **their face is visible to the tester**, but not able to see the tester with the audiometer controls. The subject shall not be able to see or hear the tester adjust the audiometer controls.
7. If there is a **loud noise** along the corridor or in the room then **temporarily stop the test.**
8. Check the ambient (room) noise level is less than **35 dB**. If it is higher than this don't complete the test until the background noise decreases.

PREPARATION FOR TESTING

9. **Talk slowly and clearly** to the subject and put them at ease, check they understand what you are asking. Be aware of the subject's age, hearing, language skills and any other possible communication difficulties.
10. If the subject has a lot of **wax in their ears** don't complete the test but ask them to come back when it is sorted.
11. **Ask if the subject has been exposed to loud noise** during the previous 24 hours. If the answer is yes then ask the subject to return to be tested another day. ('Loud' can be determined by having to shout or use a raised voice to communicate at a distance of 1 metre or 3 feet).
12. **Ask if the subject has tinnitus**, as this may affect their ability to detect tones in one or both ears. Speak to a member of staff if the answer is yes.
13. **Ask the subjects if they have better hearing in one ear;** if they do, start the test with this ear, if there is no difference start the test with the **left** ear.

14. **Give the subject the instruction sheet** to read and also **read the instructions**:

    "I am going to test your hearing by measuring the quietest sounds that you can hear. As soon as you hear a sound (tone), press the button. Keep it pressed for as long as you hear the sound (tone), no matter which ear you hear it in. Release the button as soon as you no longer hear the sound (tone). Whatever the sound and no matter how faint the sound, press the button as soon as you think you hear it, and release it as soon as you think it stops."

15. **Ask the subject to remove any glasses**, **headwear or ear-rings** that may obstruct the headphones. Wherever possible, hair, scarves etc., should not be allowed to sit between the ear and the headphones.
16. Check the **audiometers show** when the subject **presses the response button** and when they release the response button.
17. Carefully **fit the headphones**, **Red** to the subject's **Right Ear**
18. Tell the subject **not to hold or move the headphones**, after checking with the subject that there is no discomfort. Make sure the headphones are correctly fitted over the ear canals.

TEST ORDER

19. Start with the better-hearing ear or the **left ear** and test at the following frequencies in this order.
    a. 1000 Hz.
    b. 2000 Hz,
    c. 4000 Hz,
    d. 8000 Hz,
    e. 500 Hz and
    f. 250 Hz in that order.
    g. Then, for the first ear only, retest at 1000 Hz.

    If the retest value is no more than 5 dB different from the original value take the more sensitive threshold as the final value, but if the retest value differs from the original value by more than 5 dB then get someone else to conduct the test.(This is probably best done at another time)

Where needed and practicable, test also at intermediate frequencies 750 Hz, 1500 Hz, 3000 Hz and 6000 Hz (3000 Hz and 6000 Hz may be required in cases of high-frequency hearing loss).

20. Test the opposite ear in the same order. The retest at 1000 Hz is normally not required in the second ear unless tests in the first ear revealed significant variation.

LENGTH OF TONE

21. **Play each tone <u>randomly</u>** for between **1 and 3 seconds**. The timings **mustn't be predictable**. Don't stop the signal as soon as the subject responds. The subject should respond for the duration of the sound.
22. For students play a tone of 1000 Hz at 30 dB (40 dB for a teacher). **<u>NEVER PLAY ANY SOUND ABOVE 80 dB</u>**
23. If there is no response, increase the level of the tone in 10-dB steps until a response occurs. If the tone is still inaudible at 80 dB HL, then stop the test and seek out a member of staff.

METHOD FOR FINDING THRESHOLD

24. (i) If the subject response to a tone is positive, **reduce the level of the tone in -10 dB** steps until no further response occurs.
25. (ii) **Increase** the level of the tone in **5 dB steps** until a response occurs.
26. (iii) After the first response using an ascending approach, **decrease the level by 10 dB** and begin another **ascending 5 dB** series until the subject responds again.
27. (iv) Continue to **decrease the level by 10 dB and increase by 5 dB** until the subject responds at the same level on **two out of two, three or four** (i.e. 50 % or more) responses on the ascent. This is the hearing threshold level.
    Threshold is defined as the lowest level at which responses occur in at least half of a series of ascending trials with a minimum of two responses required at that level.
28. **Record** this value on the student sheet. MARK a X for the Left Ear results and a O for the right ear.
29. (v) Proceed to the next frequency, starting at a clearly audible level and use the 10-dB-down, 5-dB-up sequence.
30. Subjects with short attention spans, may find the full test rather tiring. In these cases **call in a member of staff** to complete the test (it may be appropriate to test fewer frequencies, as it is better to test fewer frequencies accurately than to attempt a

complete test on an un-cooperative subject where the accuracy will be in doubt. When frequencies are omitted from the test the reason shall be recorded. With such subjects other modifications to technique may be required, such as the use of longer test tones or alternative response methods. Again these variations in technique shall be recorded.)

31. When the test has been completed, **carefully remove the headphones** from the subject.
32. **Thank the subject** for helping with the test and tell them they can collect their results in one week. Remind them to add to their Saltire Award volunteering and also their planner for their CV.
33. If there are any **unusual results consult a member of staff** who will issue the subject with a referral card.
34. Remind the students to log their use of earbuds/ headphones for one month.

Mrs Hargreaves, Dr Lidwell, Ms McGillivray and Dr Hargreaves, and the Science Faculty

THANKS FOR YOUR HELP,
1 DOWN 600 TO GO!

RESULTS

These should be transferred to the spreadsheet, with the sound level logged at each frequency for each ear.

Have this hecked and then the audiogram can be returned to the student.