Air conduction testing

- tests the threshold of hearing for the whole hearing system—from outer through middle to inner ear, i.e. both conductive and sensorineural mechanisms
- stimuli are air conducted pure tones presented to each ear separately via headphones
- client has to indicate when increasingly quiet sounds are heard
- standard BSA procedure used

On the audiogram:
Right ear is indicated by 0
Left ear is indicated by X

Bone conduction

- tests only the inner ear i.e. the sensorineural mechanism
- stimuli are bone conducted pure tones presented to each ear separately via a bone vibrator held to the mastoid process.
- non-test ear has to be masked
- client has to indicate when increasingly quiet sounds are heard
- standard BSA procedure used

On the audiogram: Right ear is indicated by [ Left ear is indicated by ]
Unmasked bone conduction is indicated by △

Masking the non-test ear:

in air conduction testing
- only necessary if there is a large difference (>40dBHL) between thresholds for each ear
- this could be indicative of a 'shadow' curve, where the better ear is 'hearing' for the worse ear
- because of interaural attenuation (or transcranial transmission)

Masked a-c thresholds indicated on audiogram by:
Right ear is indicated by ●
Left ear is indicated by +

in bone conduction testing
- always mask non-test ear because vibration of skull stimulates both inner ears
Therefore unmasked bone conduction will indicate the response of the better ear.
To get response of each cochlea separately, must mask non-test ear.
What are the main findings from an audiogram?

- **Type of hearing loss**

  For each ear:
  - Air conduction test indicates thresholds for whole mechanism
  - Bone conduction test indicates thresholds for sensorineural mechanism.
  - If a-c and b-c are the same, type of loss is sensorineural
  - If b-c is better than a-c, type of loss is conductive (there is an ‘air-bone gap’).

Description of pure tone audiograms.

You have to describe all these features:
(we’ll do this in workshops later)

- air conduction thresholds
- bone conduction thresholds
- relationship of a/c thresholds to b/c thresholds
- relationship of a/c and b/c thresholds to normal
- calculation of pure tone average (PTA) for air conduction thresholds
  (sum of thresholds at all frequencies divided by the number of frequencies tested)

Using the classification system described earlier:

- Calculate degree of hearing loss using PTA and BSA/BATOD guidelines
- is loss bilateral or unilateral?
- what’s the shape (or configuration) of hearing loss? Flat, sloping, ski-slope, rising, cookie-bite / u-shaped (or trough-shaped)
- what type of hearing loss is it?
- When was the onset - from the case history info.