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The BAER
(Brainstem Auditory Evoked Response)

What is the BAER? The diagnostic BAER is a procedure for testing the lower auditory pathways including the inner ear and the brainstem by recording the electrical activity produced by a 'click' stimulus. It is these areas, particularly the inner ear, that are affected in the common hereditary deafness syndromes of companion animals. The BAER results are a series of electrical waves representing the neuronal activity, produced by the stimulus, as it moves from one location to another along the auditory pathways. Any defect preventing the generation of the neuronal signals or interrupting their transmission will be seen as variations in the BAER when compared to a normal response. This can be seen in the figure below where the waves seen in the 'Normal' response are missing from the upper one.

How is the test performed? The test itself is fairly simple and painless. Three small, sharp needle electrodes are placed below the skin in the head region after which a 'click' is directed down the ear canal using a small earpiece. The electrical activity is amplified and displayed on the computer screen. Anaesthesia or sedation is rarely required. Assuming a cooperative animal, the whole procedure can take less than five minutes! A full printout of the results and findings is provided for each animal at the time of testing.

What is a bone conduction test? The normal route for the BAER stimulus is down the ear canal, across the middle ear and into the inner ear. Since the inner ear is buried in bone, it is possible to stimulate it directly by applying the stimulus to the bone itself. This is done using a special stimulator pressed firmly against the skull. This bypasses the outer and middle ear. Its use is reserved for older animals that failed the air conduction BAER and have an extensive history of middle ear infections or outer/middle ear problems.