Using latest evoked auditory potential technology to assess hearing thresholds of a difficult-to-test adult

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Background

**Patient basic information:**

Adult; cognitive impairment; vision impairment. No verbal language, no expressive language. Communication depends on writing instructions.

**Previous audiological assessment**

Play audiometry was attempted; patient could NOT be conditioned.

No audiometric thresholds were obtained in play audiometry.

At that time sedated ABR was recommended by physician.

**Assessment plan at Vancouver General Hospital:**

Instead of using sedated ABR, latest evoked auditory potential technology, Integrity 500 G2, was used to assess patient’s hearing thresholds.

**Method**

**Setup**

Two channel electrode montage were placed, as shown in Figure 1. (Photo permission was obtained.)
Figure 1: Electrodes montage

Environmental conditions:

Regular office room (non sound booth); 2 active cell phones

Impedance check: Excellent as shown in Figure 2.
**Results:**

Hearing thresholds at 500, 1000, 2000 and 4000 Hz were obtained bilaterally as shown in Figures 3 & 4

![Hearing thresholds results](image)

**Figure 3:** hearing thresholds results
Figure 4: Hearing thresholds results

Kalman plus because patient became restless
Testing time:

Actual testing time: 55 minutes

- session one: 40 minutes, including setup time
- Break: 10 minutes
- Session two: 15 minutes

Impressions:

We have successfully used Vivosonic Integrity G1 system for hearing threshold assessment in difficult-to-manage adults. A Global TV news was available on Youtube:

https://www.youtube.com/watch?v=tiyUa-JheyY

Compared to G1, G2 has following features:

1. **Fast.** Using G1 system, it typically takes 1.5 to 2 hours to complete 8 frequencies assessment for both ear. We could complete the same number of tests within 1 hour using G2 system.
2. **Perform well within electrically hostile noisy environments due to the new design of Vivoamp.**