

# Cost modeling example:

- For each noisy infant/child being evaluated the kalman-filtered EEG/ABR improves the chance of obtaining a response at near threshold levels by up to 35%.
- What does this mean in terms of costs?

# What's it worth to you?



- 10 dB closer to true threshold?
  - Hearing aid fitting
  - Other diagnostic procedures
- 35% increased likelihood of obtaining a response?
  - Covert that to audiology time: estimate saving 10 minutes per patient
  - If cost of an eval is \$600/hour (all overheads considered) then that is \$100/patient.

# A conservative example



- 3 natural sleep ABRs/day @ \$600.00/test
- Advanced signal processing (kalman+*in-situ* amplifier) results in a 35% increased likelihood of being able to obtain a near threshold response during steady or intermittent noise.
- This could translate to 10 minutes of time saving/test.
- \$300.00 savings/day.

# The Jackpot



- For every patient that can be tested without sedation/anesthesia, the cost savings is up to \$5,000.00/test.
- Given your case-load, how many patients/month would be eligible for natural sleep (or moderately quiet wakefulness) ABRs?

# Other scenarios



- Ability to obtain an ABR at 20-30 dB nHL in a moderately wakeful may result in cost savings if combined with:
  - Tympanometry results
  - OAE results
- If a “pass” for these quasi-screening results, then it may be more appropriate to follow the infant using behavioral methods.

# Features of the system we did not test



- Wireless connection (blue-tooth)
- 1 vs. 2 channels

## How much cost-savings from use of wireless connection of amplifier to computer?



- We did not test this feature in our lab or clinic-based verification studies.
- The comparison data are obvious
  - 100% performance for wireless system
  - 0% performance for conventional hard-wired system.
- How many times did you wish you could test an infant while driving them around in a car to induce sleep??
  - N= 1 (me)
  - About 1,000,000

# Other features



- Currently, the wireless system is limited to 1-channel.
- Does the benefit of wireless out-weigh the cost of having only 1 channel ?
  - How often do you use information from the second channel?
  - Put a \$\$ value on that and compare it to your estimated value of the wireless connection.
- Positive or negative net effect?

# Cost-Modeling Summary



- Costs and benefits must be considered on a “practice-pattern” basis.
- Costs and benefits can be modeled using strict or lax criteria.
  - Strict criteria = conservative estimate of savings
  - Lax criteria = greater estimate of savings
- Empirical data suggests up to a 35% “advantage” for kalman-filtered + in-situ amplifier (2 features of Vivosonic) ABR.
- Other features (e.g. wireless) may result in additional benefits/cost-savings but should be calculated with respect to limitations (e.g., 1-channel).