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Can ASSRs be used in  
newborn hearing screening?

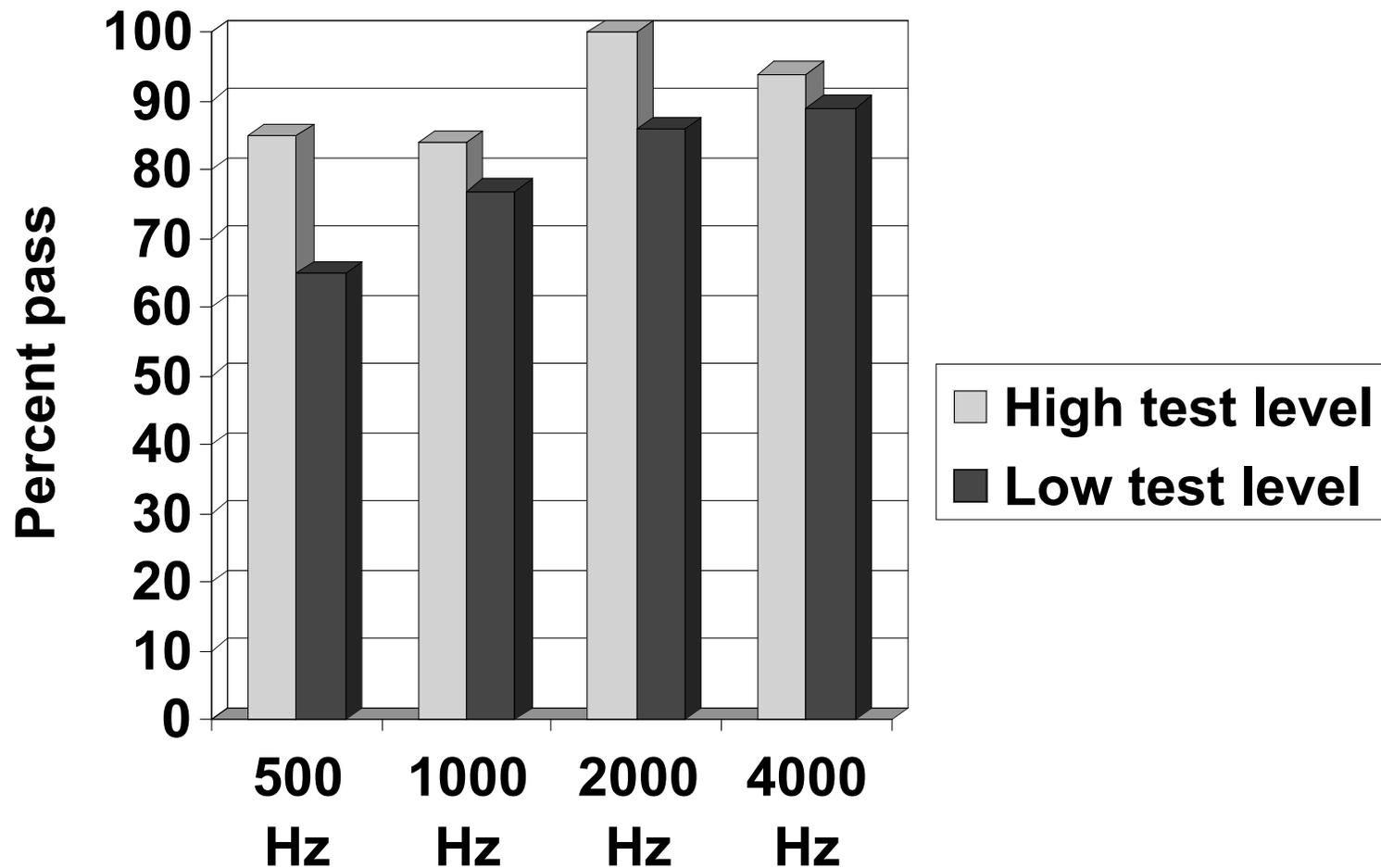
Yes, of course, but....

# What makes ASSR a suitable method for use in UNHS?

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- Objective, automated test methods are available.
- ASSRs have good correspondence with behavioral threshold in older infants and adults, even those with hearing loss.
- ASSRs for rates of >80 Hz are reliably obtained in sleeping infants and young children.
- ASSR thresholds for AM+FM tones have been established in neonates (Rickards et al, 1994).
- ASSR screening has been piloted (Cone-Wesson et al, 2002).

# Infants passed AABR @ 30 dB nHL and TEOAEs at 80 dB pSPL



# Findings

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- 4-frequency screen took less than 5 minutes.
- Tests at “high” level had results comparable to AABR and TEOAE.
  - e.g., 100% pass rate at 2 kHz
- Lower pass rates may be due to the use of AM tones rather than AM+FM, modulated noise, or other modulation envelopes that yield more robust responses.

# But.....

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- What is the target condition for which you wish to screen?
  - Mild vs. moderate or greater loss?
  - Sensory and neural hearing loss?
  - Frequency range of hearing loss?
- These decisions will influence your choice of screening technology and test protocol.

# ASSR Screening Expectation 1

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- ASSR tests with click or modulated noise stimuli would be expected to match the performance of AABR.
  - ASSR may fail more infants with neurologic dysfunction than does AABR.
    - Modulation rates for ASSR tests are faster than stimulus rates used for AABR.
    - Neurologically-compromised infants more likely to have abnormal results when high stimulus rates are used.

# ASSR Screening Expectation 2

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- Dichotic, multi-frequency, mixed-modulation stimuli (as used in MASTER technique) will be advantageous in screening applications because most infants will have normal hearing, and will pass.
- Testing dichotically saves time
  - Oh Canada! (Picton, John, et al).