



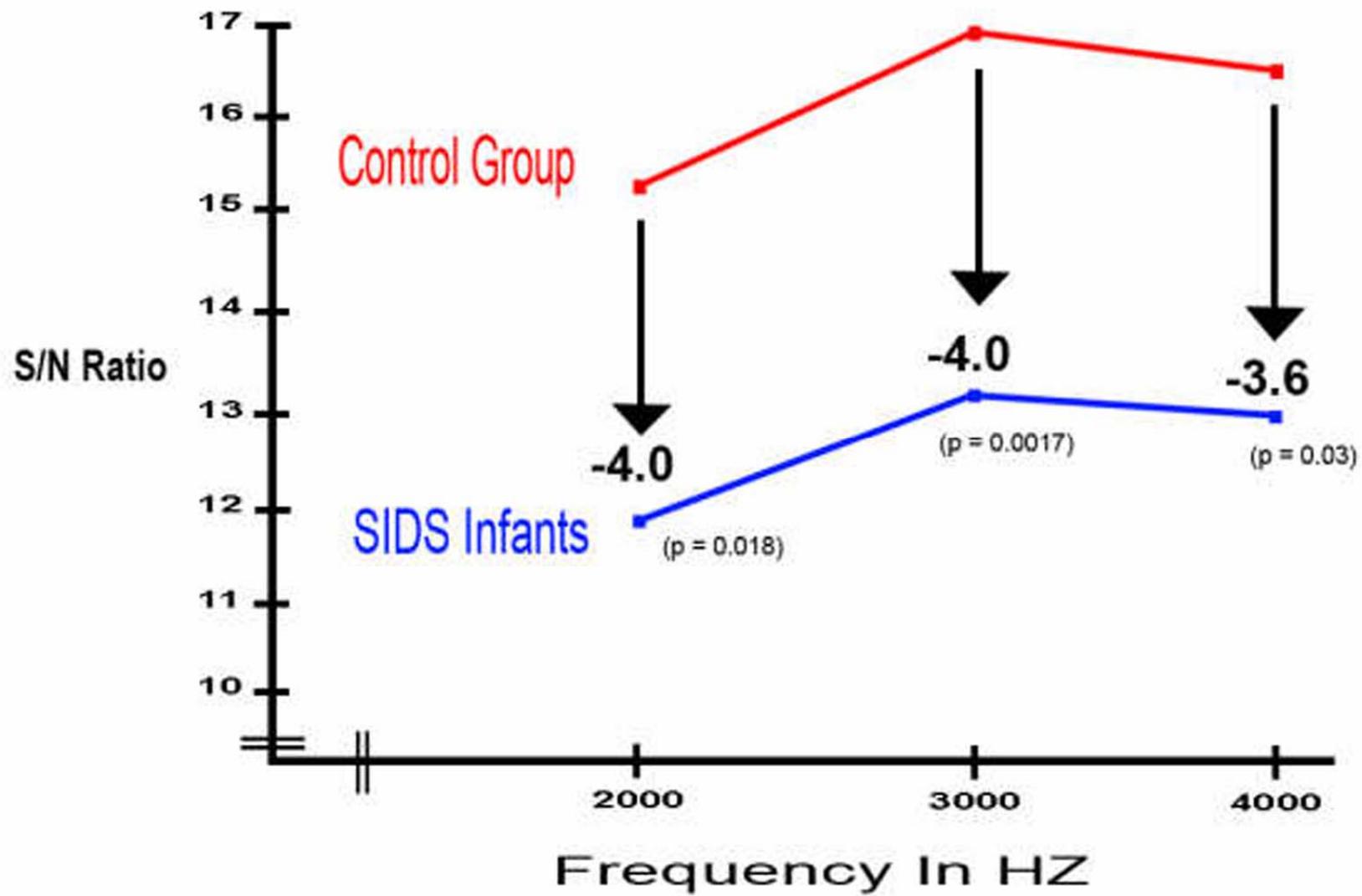
# MYSTERY OF SIDS

- ◆ Unsolved mechanism; Need go out of the box
- ◆ Preliminary Finding of a Hearing Alteration at Birth
- ◆ New Perspective; Unifying theory



*“Never, ever, think outside the box.”*

- ◆ Rhode Island Newborn Hearing Screen Database
- ◆ 31 SIDS versus 31 Matched Controls
- ◆ Consistent right sided hearing difference
- ◆ 3 of 4 frequency points significant  $p < 0.05$



- ◆ Points to possibility of early identifier by Newborn Screen test
- ◆ Large scale follow up studies are planned.
- ◆ Opportunity to standardize Newborn Hearing Screening

# What is SIDS ?

- ◆ Present dead
- ◆ Peak incidence 2-4 months of age
- ◆ Death rare < 3 weeks and > 6 months
- ◆ Sleep
- ◆ Sleep position
- ◆ Smoking
- ◆ Overheating
- ◆ Seasonal
- ◆ URI 40%
- ◆ Racial/ Socio-economic
- ◆ Latitudes

# What are we Missing?

- ◆ Critical Role of the Inner Ear in Respiratory Control; Is it possible?
- ◆ Hearing as a marker
- ◆ Vestibular function related to mechanism of death

# Unifying Theory

- ◆ Birthing injury from Placental transfusion at Delivery
- ◆ High pressure injury to small veins in susceptible organs
- ◆ Includes the inner ear and central CO<sub>2</sub> chemoreceptor zone

- ◆ Inability to transmit useful information about CO<sub>2</sub> levels
- ◆ Bilateral Injury
- ◆ Not all babies with injury will die but all SIDS cases proposed to have inner ear and CO<sub>2</sub> chemoreceptor injury

# Unifying Theory

- ◆ Brain unable to detect and respond appropriately to rising CO<sub>2</sub> levels due to birth injury
- ◆ Single pathogenesis; features/risk factors unified by inability to detect rising CO<sub>2</sub> due to birth injury

# FUTURE PLANS

- ◆ Large scale retrospective and prospective studies of SIDS Newborn hearing
- ◆ Response of Infant mouse with vestibular injury to rising CO<sub>2</sub> study
- ◆ Computer Model of High Pressure Birth Injury; followed by animal study

