

Objective: To investigate whether brain development with respect to auditory pathways is faster in utero or outside utero.

Study design: Included were NICU graduates from 25-31 weeks, all without hearing loss.

AABR results were centrally registered up to 46 weeks postmenstrual age of the 2-stage NHS Program in all Dutch NICUs as well as diagnostic examinations from 1998 to 2016.

As AABR results do not reflect individual longitudinally test-results for each week postmenstrual age, multiple imputation as a statistical correction method was used to predict the missing data. Therefore the assumption was made that if the newborn had a pass result, this will stay a pass afterwards. Also, when a refer was measured at a certain postmenstrual age we assumed that the newborn would have a previous refer as well.

In total, ten predictions were conducted and afterwards pooled.

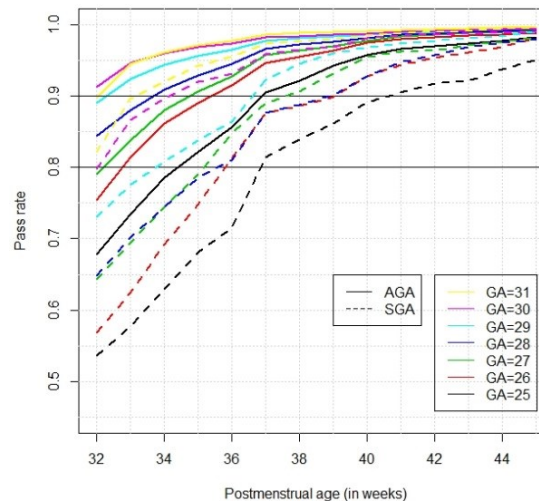
Results

Tabel 1: 23,964 NICU graduates (28,754 AABR results) were eligible.

| GA | n | %SGA |
|----|------|------|
| 25 | 856 | 7.3% |
| 26 | 1738 | 6.6% |
| 27 | 2438 | 8.2% |
| 28 | 3254 | 6.5% |
| 29 | 4139 | 5.4% |
| 30 | 5417 | 5.5% |
| 31 | 6122 | 6.0% |



Fig 1 : GA increased by SGA significantly ($p < 0.001$) effects the AABR passing rates after adjustment for postmenstrual age.



Conclusions:

1. After adjustment for postmenstrual age in very preterm newborns, lower Gestational Age (increased by dysmaturity) is associated with lower pass rates in AABR hearing screening.
2. This finding suggests that functional auditory development is increasingly delayed with decreasing GA of the newborn suggesting delayed outside utero development of the auditory pathway.

