

# UC Irvine

## UC Irvine Previously Published Works

### Title

BRAIN-STEM MATURATION IN PRE-TERM INFANTS

### Permalink

<https://escholarship.org/uc/item/9r84g10m>

### Journal

PEDIATRIC RESEARCH, 10(4)

### ISSN

0031-3998

### Authors

AMLIE, RN  
STARR, A  
SANDERS, S  
[et al.](#)

### Publication Date

1976

### Copyright Information

This work is made available under the terms of a Creative Commons Attribution License, available at <https://creativecommons.org/licenses/by/4.0/>

Peer reviewed

BRAINSTEM MATURATION IN PRE-TERM INFANTS. Ragnar N. Amlie, Arnold Starr, Stephen Sanders, and Robert F. Huxtable. (Spon. by Thos. L. Nelson). Univ. of CA,

Col. of Med., Dept. of Ped., Irvine, CA.

Auditory evoked responses(AER) were studied in pre-term infants soon after birth and then at intervals. AER are the far field reflections of electrical activity in the auditory pathway in its course through the brainstem. The potentials are recorded from scalp electrodes. Ten clicks per second at 65, 45 and 25 dBSL are transmitted through earphones to the infants while in incubators. The responses are amplified and averaged on line in a computer. Seven consistent waves can be defined in the first 15 msec following the clicks. The latency of each was measured at each sound level. Forty-four infants with gestational ages(GA) of 30-44 weeks were tested. The table shows the mean latency in msec from the

GA(wks)	Wave I	III	VI-V	
30-32	3.6	6.2	8.6	first tests as a function of GA of waves I
32-34	2.9	6.	8.2	III & IV-V at 65 dB. The data shows a de-
34-36	2.2	5.	7.6	crease in latency with decreased GA. The
36-38	1.9	4.8	7.	rate of maturation appears to decrease
38-40	1.9	4.9	7.	after 36 weeks. Subsequent tests indicate
40-42	1.8	4.7	6.9	that extrauterine life before 40 weeks
42-44	1.5	4.5	6.6	may affect maturation. If the $\Delta$ between

waves I and IV-V in each infant is an indication of myelination of auditory pathways, it reflects the same maturation trend as the decreasing wave latency with GA. Significant deviations of latency and amplitude have proved to be an indicator of neurologic abnormalities. AER can serve as an objective measure for hearing, reflect maturation and indicate the integrity of the brainstem as it affects the auditory pathway.