

# Praćenje parametara NRT-a i behavioralnih mjerenja kod djece operirane u optimalnoj vs. školskoj dobi

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## **Follow-up of NRT recording parameters and behavioral measures in children operated in optimal vs. school age**

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Key words: ECAP, Behavioral measures, Optimal age children, School age children, Follow-up

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**Objective:** ECAPs recorded with the NRT system have been confirmed as a useful tool in predicting behavioral measures of stimulation levels in many studies. Benefit of that procedure for programming CI is well known and of special importance for young children. As NRT waveform displays information about spiral ganglion cell population which are crucial in transferring electrical stimulation to more proximal parts of central hearing pathways, it could also be interesting as a diagnostic tool for checking function of the auditory nerve and possible changes of the neural periphery over time.

The aim of current study is to assess the influence of deafness duration before the operation on NRT measures in relationship to objective measures, as well as the effect of stimulation on primary auditory neurons over time in two groups of patients operated at different age.

**Study design:** Two groups of examinees are involved by this longitudinal study:

- (1) 15 prelingually deaf children operated in optimal age (up to 4 years), and
- (2) 15 prelingually deaf children operated in age of 10–17 years.

The EAP were recorded with the Nucleus 24 NRT system. Responses were evoked by the apical, middle and basal electrode in each child.

Parameters that are followed are NRT thresholds, response morphology, N1P2 amplitudes, N1 latencies, T and C map levels, dynamic range, and pure tone audiogram thresholds.

Follow-up period was 2 years.

**Results:** Subjects are currently under evaluation.

**Conclusions:** Auditory deprivation results in degenerative effects on hearing pathways including spiral ganglion cells, what might be more limited in children operated during first years of life. It is proposed that larger population of functioning spiral ganglia evoke a greater degree of neural response synchrony resulting in responses of larger amplitude and shorter latency than in postlingually deaf adults, as have been showed in some investigations. According to some other studies, correlation of NRT thresholds with age has not been confirmed. Details about the relationship of NRT recording parameters and behavioral measures (T and C levels, EAP thresholds as a percentage of the map dynamic range, pure tone hearing), as well as the effect of electrical stimulation in the primary auditory neurons over time, will be presented in each group of patients. Possible differences regarding mentioned parameters between two groups of patients will be discussed.