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Clinical application of an automatic system to record and analyze electrically evoked compound action potentials in cochlear implant patients

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Meanwhile all important manufacturers of cochlear implants offer the possibility to measure electrically evoked action potentials by means of the inserted electrode. It is desirable to find a correlation between these measurement outcomes and programming parameters of the patient map to facilitate the fitting procedure.

On 9 adult subjects, all implanted with a Nucleus RE-24 CA cochlear implant, NRT (Neural Response Telemetry) was performed and analyzed automatically by Cochlears CustomSoundEP software. Measurements were done on 14 electrodes intraoperatively and postoperatively during the first week of initial fitting on each of the 22 electrodes. MAPs were made based on these NRT measurements and/or with the conventional behavioral approach. At the end of the week map parameters T and C were compared to the TNRT values from the automatically performed NRT measurements.

Postoperatively measured TNRT values derived by the automatic system correspond to C parameters with a mean correlation coefficient of $r=0,75$ and to T parameters with $r=0,66$. The correlation is weaker in case of intraoperatively measured TNRT values.

The automatic systems delivers good clues for programming the speech processor. This is important especially when subjects are little children who cannot give feedback to the programming audiologist.

