Current advances in speech processing for the mini-system 22 implant

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The Spectral Maxima Sound Processor (SMSP) has been developed at the University of Melbourne for use with the mini-system 22 cochlear implant manufactured by Cochlear Pty Ltd. Studies with adult subjects have shown that perception of vowels, consonants, words, and sentences in quiet and in background noise is enhanced with the SMSP when compared with the MSP (MULTIPLEAK), currently supplied for use with this implant. Studies comparing the ability of subjects to identify speakers and to identify intonation patterns have shown no reduction due to the SMSP's use of a constant rate of electrical stimulation. Qualitative remarks of subjects are consistent with improved perception in background noise and of degraded speech such as with TV and telephone use. They also report that environmental noises and music sound more natural. Further development of the SMSP strategy and formulation of new strategies are being facilitated by a new programmable processor utilising digital signal processing.

Place pitch perception with multiple electrode cochlear implants: the use of concurrent activation of nearby electrodes to produce additional pitch percepts.

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In multiple electrode cochlear implants, each electrode produces a pitch percept which is usually related monotonically to its distance from the round window. The number of these pitch percepts is limited by the number of usable electrodes and their discriminability, varying up to a maximum of 22 for the mini-system 22 implant but sometimes significantly less. A study on two implanted subjects in which the pitch of pulse trains on two concurrently activated nearby electrodes was compared with the pitch produced when each of the electrodes was activated on its own, showed that the pitch of the concurrently activated electrodes was different from each component electrode and was placed in an intermediate position. Furthermore the pitch of the concurrent stimulation could be altered by adjusting the relative current levels on the two component electrodes. This may partly explain the improvements, particularly in vowel discrimination, obtained with the SMSP strategy described in the accompanying paper.

ENG recorded with an infra-red system or with electrodes — which is the best technique?

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1200 ENG tests have been performed at the "Hearing Research and Diagnostic Clinic" over the last 2 years. Although the infra-red system is the technique of choice to record the nystagmus, 5% of these patients had to be tested with electrodes due to their facial characteristics. The main aspects preventing the use of the infra-red system as opposed to electrodes will be discussed, as well as the advantages and disadvantages of both techniques.

Hearing disorders in urban Aboriginal schoolchildren

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There is a very high prevalence of hearing disorders in rural Aboriginal and Torres Strait Islander (ATSI) children. The present study was designed to determine the prevalence of hearing disorders in a group of urban ATSI children compared to a group of non-ATSI children from the same school and grade. A total of 716 children from 17 schools in the Brisbane region were given several screening tests for hearing as well as tympanometry and otoscopy assessments. Results indicated that urban ATSI children have a reduced prevalence of hearing disorders compared to their rural counterparts. However, this group was still at greater risk for hearing disorders than their non-ATSI peers in the same schools. Findings are discussed and their relevance to future action to alleviate this problem explored.