



**AN ANALYSIS OF HIGH RATE SPEECH  
PROCESSING STRATEGIES USING THE NUCLEUS  
24 COCHLEAR IMPLANT**

*Vandali AE, Grayden DB, Whittford LA,  
Plant KL and Clark GM*

The Co-operative Research Centre for  
Cochlear Implant Speech and Hearing  
Research and the  
Human Communication Research Centre,  
East Melbourne, Australia

Speech comprehension for a group of five users of the Nucleus 24 Cochlear Implant system was explored at three rates of electrical stimulation, 250, 807, and 1615 pulses per second per channel. For the high stimulus rate the analysis frequency was the same as for the medium rate condition. The study investigated the effect of varying rate of stimulation when using the electrode selection technique of the SPEAK strategy. This has been undertaken using a repeated ABC experimental design to account for learning and minimize ordering effects. Speech perception was assessed using open-sets of CNC words in quiet and open-sets of CLTNY sentences at signal-to-noise ratios from +20 to 0dB. Closed-sets of 19 vowels and 24 consonants were also presented, in the HIV/D and A/C/A context. The recognition and perception of distinctive features were assessed across strategies and patients. Preliminary speech perception results have shown no statistically significant difference in performance between the low and medium stimulation rates. However, significantly poorer results were observed for the high rate condition for some tests. Individual differences may be explained by the effects of rate of stimulation on speech features.

Address for correspondence:

*Professor Graeme Clark*  
384 Albert Street,  
East Melbourne. 3002  
Australia  
Fax: 61 3 9283 7518



Minerva Access is the Institutional Repository of The University of Melbourne

**Author/s:**

Vandali, A. E.; Grayden, D. B.; Whitford, L. A.; Plant, K. L.; Clark, Graeme M.

**Title:**

An analysis of high rate speech processing strategies using the Nucleus 24 cochlear implant  
[Abstract]

**Date:**

1998

**Citation:**

Vandali, A. E., Grayden, D. B., Whitford, L. A., Plant, K. L., & Clark, G. M. (1998). An analysis of high rate speech processing strategies using the Nucleus 24 cochlear implant [Abstract]. In Abstracts Paediatric Cochlear Implantation. 4th European Symposium on Paediatric Cochlear Implantation, s-Hertogenbosch, Netherlands.

**Persistent Link:**

<http://hdl.handle.net/11343/27021>

**File Description:**

An analysis of high rate speech processing strategies using the Nucleus 24 cochlear implant  
[Abstract]