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Tele-otology – a tool for education and telemedicine

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Background: The increasing accessibility and convergence of computer and imaging technologies has placed new tools in the hands of ear and hearing related clinicians. Video-otoscopes now produce high quality images, are compact and safe to use, and can link directly to a personal computers. Australia is faced with the challenge of providing ear specialist services to scattered populations across large areas, where there is a high incidence of ear disease.

Aim: To develop a tele-otology tool to improve the level of ear health care for people in remote areas.

Methodology: We have developed a tele-otology system with software that captures, stores and transmits (i) still images from a video-otoscope, (ii) a clinical history and (iii) audiometry data. If required, this information can be transmitted via a network connection to a server and then to an ear specialist for assessment and advice. We describe three scenarios in which we have incorporated this into clinical practice.
I. Meekatharra (population approx 800) is 1000km from the nearest city with very high incidence of chronic otitis media. Equipment and training for health care workers were provided to enable images, clinical history and test data to be sent to an ear specialist. Between Nov 2003 and Oct 2005 181 telemedicine consultations were provided.
II: Darwin: An audiologist in a city hospital setting utilised the tele-otology system for pre- and post-surgical assessment of patients, manage surgery lists, and education of patients and parents. 150 patients were assessed between Mar and Oct 2005, some of whom were seen on remote islands.
III. Kimberleys, Western Australia: 206 children in 12 remote communities were seen at schools in a three week period by an audiologist. The tele-otology system was used for education of patients, parents and teachers. Data on 20 patients with dry perforations was provided to an ear specialist. Outcomes: (i) Validation of tele-otology as method of improving assess for people in remote areas to an ear specialist. (ii) Validation of the video-otoscope as an educational tool. (iii) Validation of the tele-otology system as a tool in the surgical management of patients, particularly those travelling to and from remote areas.