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An innovative approach to improve ear, nose and throat surgical access for remote living Cape York Indigenous children



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ABSTRACT

Introduction: On a background of high rates of severe otitis media (OM) with associated hearing loss, children from the Torres Strait and Cape York region requiring ear, nose and throat (ENT) surgery, faced waiting times exceeding three years. After numerous clinical safety incidents were raised, indicating a failure of the current system to deliver appropriate care, the governing Hospital and Health service opted to deliver surgical care through an alternate process. ENT surgeries were performed on 16 consented children from two remote locations via the private health care system, funded by a health provider partnership.

Methods: We examined the collaboration processes alongside clinical findings from this ENT surgery. Collated patient data, included patient demographics, clinical and audiometry presentation features were reviewed and compared pre and post-operatively. Cost savings associated with the use of TeleHealth post-operatively were briefly examined.

Results: Surgeries were successfully completed in all 16 children. The reported mean waitlist time for ENT surgery was 1.2 years. Pre-surgery pure-tone average hearing thresholds were reported at left: 30.9 dB, right: 38.2 dB. The majority of presentations were for bilateral OM with Effusion (69%). Post-surgical follow up indicated successful clinical outcomes in 80% of patients and successful hearing outcomes in 88% of patients. Mean difference pure-tone average hearing thresholds, left: 8.4 dB and right: 11.2 dB. Furthermore, the majority of patients reported improved hearing and breathing. The use of TeleHealth for post-operative review enabled a minimum cost saving of AUD\$21,664 for these 16 children. Overall, a high level of staffing resources was required to successfully coordinate this intense surgical activity.

Conclusion: This innovative approach to a health system crisis enabled successful ENT surgical and hearing outcomes in 16 children, whose waitlisted time grossly exceeded state health recommendations. Using private health facilities funded by a health partnership, while unlikely to be a suitable model of care for routine service delivery; may be applied as an adjunct service model when blockages and delays lead to sub-standard service provision. This approach may be applicable to other health care facilities when facing extended elective surgery wait times in ENT or other specialty areas.

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1. Introduction

Internationally, ear disease especially otitis media, is reported at higher rates in Indigenous children than non-Indigenous, as described from Australia, Canada, USA, Peru and New Zealand [1–7]. Furthermore, remote living children are more likely to suffer ear disease infections than children living in urban settings, in Indigenous and non-Indigenous populations [7–10]. Hearing loss

associated with middle ear pathology is similarly higher in Indigenous versus non-Indigenous populations across the world [1,3,11].

The sequelae of childhood ear infections include long-term hearing loss [12], and delays in speech development, which in turn have been found to be strongly associated with reduced socialisation, learning difficulties and poor academic outcomes [13–16]; the consequences of childhood ear, nose and throat (ENT) infections can greatly reduce an individual's potential [14,17].

Early intervention for otitis media can effectively restore hearing to adequate levels with medical management [18]; however, when otitis media has not responded to medical treatment ENT surgery may be considered to improve hearing outcomes [19]. Standard surgical procedures that address otitis media associated hearing loss include tympanostomy tubes (“grommets”), with or without adenoidectomy, and tympanic membrane repair [11,19–21], can improve hearing sufficiently to avoid the need for hearing aids in most cases [19].

1.1. Setting

The Torres Strait and Cape York region, an area of 130,300 square kilometres includes the Torres Strait Islands, Fig. 1, support a population of approximately 25,000 people, of whom 68.2% identify as Aboriginal or Torres Strait Islander [22]. Presently, there are no published rates of ear disease or hearing loss available for this area, so often national rates of disease, are presented in lieu of more accurate information [1]. Unpublished data collected between 2012 and 2013 from five remote Cape York communities, indicate high rates of ear disease and associated hearing loss in this population. These data, obtained from routine school screening from 401 Indigenous children in 2012 and 384 Indigenous children in 2013, identified otitis media (OM) associated ear perforations (in one or both ears) in 7% (standard deviation (sd): 5%) of children during both 2012 and 2013. Currently discharging ears were reported in 4% (sd: 3%) during 2012 and 4% (sd: 4%) during 2013 (Tregenza, 2017, Apunipima Cape York Health Council, unpublished data). Furthermore, hearing loss reported from this unpublished data as pure tone average hearing thresholds in one or both ears ≥ 30 dB were identified in 18% (sd: 10%) of children during 2012 and 14% (sd: 10%) during 2013; with ≥ 35 dB hearing threshold in one or both ears identified in 12% (sd: 7%) of children during 2012 and 10% (sd: 3%) during 2013.

Standard processes for management of ear pathology, with associated hearing loss across this remote region, include access to an ENT specialist review provided by the closest referral hospital. However, increasing delays and blockages at the referral centre resulted in wait times exceeding three years for elective ENT surgery, such that during 2016 several safety concerns were raised and Patient Related Incident Management System (PRIME) clinical incidents were reported for investigation, indicating a failure of the current system to deliver appropriate care according to state health recommended guidelines [24].

In response to these reported clinical incidents, the regional Health and Hospital Service (HHS) sought to mitigate patient risks associated with long wait times for ENT surgery by undertaking an innovative approach to surgical access for remote living children. This innovative approach, which was co-funded and co-coordinated by a partnership across several health organisations, delivered surgery to a group of 16 children through the private health system. This short term solution addressed an acute elective surgery backlog crisis within the public hospital system and mitigated escalating patient clinical incident risks.

We sought to review this innovative service provision model and present findings alongside the clinical and hearing outcomes of patients, as a quality assurance process to inform the development

of improved ENT services within the region. Findings may be applicable to other Health services faced with a backlog of elective surgical waitlists that routinely place patients at increased risk.

2. Material and methods

2.1. Processes

This innovative approach addressing excessive elective surgery wait times involved a co-funding partnership between Torres and Cape HHS and CheckUP Australia, a not-for-profit organisation funded through the Commonwealth Department of Health, and Apunipima CYHC, to deliver ENT surgery through the Private health care system. Patient surgery and travel were largely funded by CheckUP, through the Eye and Ear Surgical Services program, a federally funded service aimed to reduce hearing loss associated with ear pathology. CheckUP funding covered costs associated with theatre and hospital bed time, anaesthetics and surgeon fees for 16 children within the private health care system. Travel included airplane charter for patients plus their escort carers to travel distances of over 800 km. The coordination and planning of all processes was led by Torres and Cape Hospital and Health Service, who shortlisted patients, flew to remote communities to meet patients and their escorts and provided logistical coordination for ground connections and essential health assessments. This building of relationships and establishing trust between health service providers and patient escorts was essential to process success. Apunipima CYHC supported surgery with an Indigenous Health worker to support family communication.

Surgery was conducted on 20–21st September 2016 at two private hospitals in Cairns as same-day procedures. Standard patient consent processes and hospital admission processes were adhered throughout. Patients were clinically reviewed one day pre-surgery, post-surgery, and then again six weeks after surgery at their home community Health Centre using TeleHealth Flexican Otoscope or the Welch Allyn USB Otoscope. Post op audiology was performed at least 6 weeks post-operatively in their home communities by Apunipima audiologist.

2.2. Patient selection

All long term Category (Cat) 2 (90 day) ENT surgical waitlisted children, 0–15 years, by community, were reviewed from referral data submitted to the regional referral hospital. Each record was individually clinically assessed (authors KM, AR & DN) for inclusion suitability in this surgical cohort. Inclusion criteria were defined by Queensland Health's Clinical Prioritisation Criteria for on-going ear ill-health, such as Otitis Media with Effusion (OME) or dry ear perforation, removal of foreign bodies, adenoidectomy or mastoidectomy associated with moderate to severe hearing loss, with pure tone average hearing thresholds ($35 +$ dB) [24,25]. Thus the primary aim of this ENT surgery was to facilitate hearing, although it is noted that breathing benefits may be gained by successful surgery for ear conditions.

Patients were prioritised according to need and the availability of recent clinical (patient record) information. The majority of patients had attended an ENT appointment within the last 18 months; one patient, known to the ENT surgeon who had conducted tympanic membrane repair on one ear previously, had missed several ENT appointments due to boarding school attendance; this child was retained on the list as recent contact verified he still warranted surgery. Some patients required recent audiology testing (less than 12 months old), and this was coordinated prior to ENT surgery with the Apunipima outreach audiologist.

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