Health Policy 123 (2019) 333–337

Contents lists available at ScienceDirect

Health Policy

journal homepage: www.elsevier.com/locate/healthpol

Reducing ear, nose and throat (ENT) waitlists: Implications of a referral audit

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ARTICLE INFO

Article history:
Received 20 June 2018
Received in revised form
21 December 2018
Accepted 25 December 2018

Keywords:
Indigenous
Otits media
Medical audit
Guideline adherence
Hospital referrals
Otolaryngology

ABSTRACT

Introduction: Many specialist waitlists in Australian hospitals are long. One reason anecdotally reported for this is poor alignment of referrals with current recommended guidelines. This paper reports the findings of an audit undertaken in 2017 for ear, nose and throat (ENT) surgeon referrals submitted by primary health centres within Cape York, Australia.

Materials and methods: 54 long-wait ENT referrals were reviewed against referral criteria for ENT presentations using the Clinical Prioritization Criteria (CPC) and two routinely applied clinical primary health care guidelines; with findings reported alongside patient demography.

Results: All of the long wait ENT referrals in the sample were for remote living Indigenous Australians, most were children (93%). One fifth of referrals fulfilled all referral criteria and were appropriate (22%); one third required further informaiton to support the referral, either audiology or clinical history (30%); and half were inappropriate referrals (48%).

Conclusion: Although many referral submissions did not adhere to CPC or routine guidelines, this audit enabled the identification of improvements to the referral system including the development of a checklist and flow-chart, plus patient information resources aimed at improving patient adherence. A case can be made for a new service delivery model that provides ongoing primary health education and facilitates improved ENT access. These strategies may improve ENT referral quality and decongest current ENT specialist waitlists, while offering improved primary health care management of ear presentations.
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1. Introduction

Health care delivery in rural and remote communities in Australia has entrenched difficulties. In addition to extensive distances with poorer and often expensive transport options, residents of small rural and remote communities face significant health disadvantage [1,2]. In Queensland, population 4.9 million (2017) (3) over one-third of the state's population (approximately 1.8 million) reside in regional, rural or remote locations, with limited access to specialist health services [4]. Although clinical presentations for ear pathology are known to be greater in rural and remote locations [5,6], residents living in these locations frequently report poorer access to ear and hearing services, with longer wait lists for ear and hearing health services than their urban counterparts [7]. Poor health literacy and a recognised communication gap between health professionals and remote living Indigenous patients may also contribute to poorer access to health services in these settings [8].

Cape York, Queensland, covers an area of 113,023 square kilometres – a similar size to Arizona, USA. Within this region reside approximately 11,000 people of whom 58% are Aboriginal or Torres Strait Islander [3]. This region reports high rates of otitis media (OM), with associated hearing loss. Despite these high rates of OM and associated hearing loss, there remains poor access to ENT surgical review for Indigenous and non-Indigenous persons across the region. School screening from 2012 to 2013 indicated ear perforations in 7% children (one or both ears) and 12% of children had hearing loss over 35 decibels in one or both ears [9]. Morris [6] similarly reports high rates of OM in rural and remote populations; and, despite good evidence based guidelines [10] clinical practice continues to vary [6]. Despite these high rates of OM and associ-

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https://doi.org/10.1016/j.healthpol.2018.12.007
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ated hearing loss, there remains poor access to ENT services for Indigenous and non-Indigenous persons across the region. Previously published from this same region, elective surgery wait times averaged 1.2 year [11]. Within this remote setting, poor health literacy is well recognised and has been previously documented [8]. This poor health literacy often results in low demand for specialist health services, and may also contribute to high "Do not attend rate" presentations for appointments [5,12],

Across this region audiology services are routinely provided by Apunipima Cape York Health Council (Apunipima- an Aboriginal medical service), who provide services in schools and primary health care centres in 11 Cape York remote communities. While, to access specialist ENT surgeon review, Cape York residents are required to travel up to 800 km to the closest referral hospital in the same state. Appointments at this referral hospital are only offered as face-to-face appointments; (although TeleHealth or TeleMedicine is available, it is not currently offered by the referral hospital for ENT specialist review (12)), outreach services are not offered by ENT specialists nor TeleHealth review. The majority of primary health centres (PHC) within this region only have access to paper-based medical records, thus the information provided on the referral or submitted alongside, is likely to be the only information available to the ENT surgeon when categorising patients for review. Recently the referral hospital reported excessively long wait times for ENT surgeon outpatient clinics with breaches to categorisation times in over 82% of referrals (unpublished Queensland Health data 2017). One reason anecdotally reported for long waiting lists is poor alignment of referrals with current recommended guidelines. As yet, the scale of poorly aligned ENT referrals, especially in remote settings, has not been explored. In response to these long wait lists and wait times, we sought to assess current referral practices as a quality improvement exercise. We therefore audited a sample of ENT surgical referrals and assessed them against state hospital referral criteria and two clinical guidelines. The outcomes of this audit may inform improvements aimed at tightening future ENT specialist waitlists.

2. Materials and methods

All health records for long wait-listed ENT (over 3 months) Cape York residents (Indigenous and non-Indigenous), as recorded since November 2016, were extracted from the referral hospital's clinical information system (HBCIS) on 17th January 2017. For each referral all available hospital medical histories (previous ENT reviews) and all available (uploaded) primary health care records, including correspondence to and from the primary health care centre, and audiology findings were reviewed as sourced on the integrated electronic medical record (ieMR).

By mid- February 2017, two investigators (a project manager/epidemiologist and Advanced Indigenous Health worker,); reviewed these 54 patient records, community by community, against the state based referral hospital Clinical Prioritisation Criteria (CPC) (The CPC are clinical decision support tools that will help ensure patients referred for public specialist outpatient services in Queensland are assessed in order of clinical urgency) [11,13,14], and two clinical care guidelines used within the region: Primary Clinical Care Manual (PCCM) [15] and Recommendations for clinical care guidelines on the management of Otitis Media in Aboriginal and Torres Strait Islander populations, updated 2010 [10]. Each of these guidelines were selected as the Cape York region is serviced by two primary health service providers and each applies their own guideline. The PCCM is legislated for use by Queensland Health staff (PCCM) [15], while the OM guidelines are utilised by Apunipima, an Aboriginal Community Controlled Health Organisation operating within the region. The review was crosschecked with a third reviewer (KM), at two further sessions, manually assessing each patient's referral and supporting documentation (submitted alongside the referral) against the criteria. We report patient demography: sex, age, children, Indigenous status, remote location, and presenting ear condition: as reported on the referral. The remoteness classification was later calculated from patient location by applying the Modified Monash Model (MMM) [16].

Table 1
Criteria for assessment.

1. Appropriate referral- meets referral criteria	Has documented evidence of Ear and Hearing Problems >3 Months with any of the following; • recurrent AOM (3 episodes in last 6 months, or 4 episodes in 12 months); • CSOM- persistent for more than 3 months–despite compliance with topical antibiotics–with hearing loss >45 dB (better ear); • dry perforation for more than 3 months–with hearing loss >25 dB; • persistent OME–bilateral for more than 3 months–with hearing loss >25 dB; • clearance for Hearing Aid fitting ([17]).
2. Inadequate referral- need further information or work-up to meet criteria for ENT surgeon review	• needs audiology; • or further clinical information; • or clinical history.
3. Inappropriate referral- does not meet referral criteria	• hearing normal in context of above listed ear pathology (according to CPC and guideline thresholds); • referrals specifying 'Grommets' in patients • <3 years; • referral requesting myringoplasty for dry perforation in child <6 years; • no documented ear pathology; • previously reviewed by ENT and not following treatment plan (such as not wearing fitted hearing aids); • or minor ear associated treatment (wax removal) (A PHC managed condition).

2.1. Summary of referral criteria for ear and hearing conditions

All sources (CPC and two guidelines) recommended referral to ENT surgeon review for unsafe ear conditions: significant damage to the tympanic membrane in the presence of physical structural abnormalities such as cleft palate, craniofacial abnormalities, severe retraction, cholesteatoma; or on-going pain, unusual ear condition [11,13,14,10,15]. For Otitis Media with Effusion (OME), Chronic Suppurative OM (CSOM), and dry perforation; the referral guidelines required persistent symptoms for >3 months (despite active primary health management) and audiological confirmed hearing loss of >20–45 dB in the better ear [11,13,14,10,15]. If dry perforation, with consideration for tympanic membrane repair (myringoplasty), the ear was required to be dry for >6mths and patients were required to be over the age of 6 years [10,15]. For persistent OME with bilateral hearing loss of >25 dB and considering myringotomy (+/− grommet insertion and adenoidectomy) patients were required to be older than 3 years [10,15]. Guidelines recommended that hearing-aid assessments should be directed to Australian Hearing for comprehensive assessment and fitting [10,15].

Referrals for ENT surgery were assessed against these guidelines and were classified as follows outlined, Table 1. Each referral

Table 2
Demography of referral audit patients.

	Number	percentage
Gender		
Male	32	59.3%
Female	22	40.7%
Location		
Remote Indigenous community	54	100.0%
MMM classification of 7 (very remote)	54	100%
Indigenous status		
Indigenous	54	100%
Age years (n = 53) (mean and range)	10.7	1.6–65.3, sd-9.9
Age Median (n = 53) (interquartile range)	10.0	4.9–12.4
Child (under 18 years)	50	92.6%
Referral reason (ear condition)		
OME	21	38.8%
CSOM	6	11.1%
Wax	2	3.7%
Dry perforated Tympanic Membrane	10	18.5%
Suspicion of cholesteatoma	1	1.9%
For hearing aids	1	1.9%
No specific condition described in referral just words to the effect "for ENT review"	13	14.8%
Audiologist recommendation- as submitted alongside ENT referral		
Hearing within normal range	3	5.6%
Recommend wear previously fitted hearing aids	7	13.0%

was coded as 1, 2 or 3 by reviewers, and only when findings were incongruent were the raw notes/data re-examined.

2.2. Data analysis

The statistical methods applied included means and medians for age, with interquartile range. Data were collated and stored in Microsoft Excel (version) and all analyses were conducted using STATA version 15.0 (STATA Corp, Texas, USA).

2.3. Ethics

This study was reviewed by the Far North Queensland Human Research Ethics Committee and granted an exemption from full ethical review as it meets criteria as a quality improvement activity; reference number HREC/17/QCH/3-1111 QA.

3. Results

Although all Cape York communities were included, there were only long waitlisted patients from six Cape York communities (however, two communities had access to a visiting ENT specialist program provided by Queensland Health and were therefore not included in this review). The remaining referrals were reviewed, totalling 54 referrals were included from four Cape York communities.

Patient demography and community location remoteness indicator are presented in Table 2. Age was missing on one patient, so only 53 are presented. One adult was aged 65 years old and three others were over 18 years. The mean age was 10.7 years, Median age was 10.0 years (interquartile range 4.7–12.4). Most referrals had a stated ear condition, with the majority for OME, followed by dry perforation of the tympanic membrane, with the next largest category (14.8%) being for 'no information' on condition. In many cases little or no clinical history was provided: the referral contained words to the effect "for ENT review".

The review of a sample of referrals identified high levels of inconsistency in clinical referrals, with poor adherence to referral guidelines and criteria when making ENT referrals. Examples of inadequate referrals were those without audiololgy testing prior, or failing to submit audiology findings alongside the referral request; referrals which failed to provide a suspected or possible diagnosis of the presenting condition, or a sufficient clinical history which indicated the duration of the condition, or any treatments undertaken. Examples of inappropriate referrals were; wax removal (a PHC managed condition) referral for ENT review unsupported by the recommendations on the audiology report, OM in the presense of normal hearing and normal speech development, referrals for dry perforation myringpplasty in children under the age of 6 years, referrals for myringotomy (+grommet insertion) surgery in patients under the age of 3 years, and referrals for hearing aids.

Table 3
Audit findings assessed against referral criteira.

Criteria	Number	Proportion (sd: 95%CI)
1. Appropriate referral- meets referral criteria	12	22% (42%: 12–36%)
2. Inadequate referral- does not meet criteria for ENT referral- criteria, requires further testing (audiology) or further clinical information to meet criteria	16	30% (46%: 18–44%)
3. Inapproriate referral- does not meet referral criteria	26	48% (50%: 34–62%)

Findings from the audit of referrals from four Cape York communities, Table 3. Only 22% of referrals in this sample were considered appropriate when compared against recommended guidelines and CPC. (classifiction 1). About one third (30%) needed further information to meet referral criteria (classifiction 2), and almost half (48%) did not meet referral criteria (classifiction 3); the majority of these referrals were for ear conditions requiring community (primary health service level) management.

4. Discussion

This ENT referral audit reports that few referrals included sufficient information as based on the existing clinical guidelines and CPC. As the prioritising ENT surgeon rarely has access to the full medical record (due to paper based medical record use in this region), referrals that offered inadequate clinical information may take longer to review and may not contain sufficient information from which to base the specialist assessment criteria. Many of the referrals were unclear in terms of expectation of specialist care opinion, and as written, indicate that primary health care management may not have been exhausted, or even attempted to manage the presenting ear condition prior to ENT referral. The large number of inappropriate referrals indicate that many ear pathology referrals appear to be escalated to specialist review prematurely, when primary health management is the first and often best line of treatment.

This high level of unnecessary referrals due to more appropriate care available within the primary health setting, is similar to findings reported from other locations internationally [17–19], including from HealthPathways developers from New Zealand [20,19]. HealthPathways grew out of the Health Ministry's drive in 2006 to cut waiting times. Initially 5000 patients who had been removed from waiting lists were audited; only one third were found to require a referral based on existing referral criteria they went back into the system (waiting lists), one third were managed within the primary health system, including by allied health professions. One third did not need to be seen [at the hospital] at all [21].

Although only 11% of referrals in this audit were for CSOM, Couzos et al. [22], demonstrated that clinical recovery for CSOM was demonstrated in 76% cases when managed in the community with ciprofloxacin drops coupled with strict adherence to dry mopping protocol [22]. The majority of CSOM related referrals in this audit, required primary health level management and none

warranted ENT surgical management (according to CPC and two recommended guidelines).

In an attempt to answer the question 'do guidelines for referral by primary care practitioners for adults for elective surgical assessment improve appropriateness of referral or health outcomes?' a systematic review from the UK assessed 24 international studies (including for ENT) and concluded that 'Guidelines for elective surgical referral can improve appropriateness of care by improving pre-referral investigation and treatment' [18]. Furthermore, another article from Wales applied peer-review to General practitioner (GP) referrals, in an attempt to reduce variation in treatment and to assess if referrals could be more appropriately redirected to lower technology services [23]. Findings from this GP peer review intervention indicated successes in reducing variation and numbers of referrals: the median referral rate fell from 5.5 to 4.3 per 1000 patients per quarter [23]. Another audit from Ireland identified that of 100 ENT referrals received after the introduction of a new template, which was developed in conjunction with the Irish College of General Practitioners (ICGP), only one referral submitted used the template, all other referrals were hand-written letters. Furthermore, only 34% of the reported paediatric ENT referrals contained sufficient clinical information from which the tertiary hospital specialists could assess the referral [17].

Extended patient wait times for elective surgery are a great source of patient and staff dissatisfaction, nationally and internationally [24–27]. To improve the timeliness of services and to reduce the likelihood of potential delays to services access, many health systems have introduced policies that address wait times, with some reported successes. Recently, across Queensland, hospitals have reduced waiting lists by requesting that long-waiting patients respond to a request that they return to their GP for a more recent referral (to assess if their condition still exists) else they are removed from the waiting list [28]. In 2009, 6885 patients were contacted, and 633 patients responded [28]. While this process looked like it delivered optimal results for reducing patient waitlists, it merely restarted the clock for many patients from low socio-economic backgrounds, who have poor health literacy and therefore did not appropriately reply to a letter [8].

There have been many studies reporting reduced wait-times associated with specific improvements to referral systems or outreach service delivery. Here we present some of their findings. One community initiative specifically trained health workers and nurses in ear disease detection and treatment. After one year only 28% of the Aboriginal children and 3% of non-Aboriginal children suffered from active ear disease, and only 3% of Aboriginal children had significant hearing loss [29]. A Queensland Telehealth scoping study identified that face to face consultations for ENT consultations could be reduced by 89% if Telehealth were used appropriately [30]. Patients also benefit when wait times are reduced when Store & Forward TeleMedicine is used. One study from remote Alaska reported routine wait times reduced by 31% to 2.9 months and only 3% of patients were required to wait 5 months or longer [31]. Another Alanskan study on over 16 years of ENT data compared standard face to face consultation wait times verses store and forward wait times Wait times from 5 months to 2.1 months [31].

This study has numerous policy implications: as improving childhood development underpins a range of government initiatives, strategies and programs. In general, audits aim to improve quality of care through systematic assessment of practice against a defined standard or criteria [32]. The outcomes of the audit process provide recommendations for improvement to local policies or procedures to improve the flow of health system operations [33]. This audit has identified that referral practices could be improved with additional local resources. The resources developed aid to clarify what level of clinical involvement is required at each point of care, so as to deliver the most appropriate ear and hearing health service at the right time for the patient, and not over supply expensive specialist services when primary health services are needed. One further outcome and policy recommendation of this audit is that national health policies prioritise investment in community primary health, especially in remote areas, and this should in-turn reduce the burden to specialty wait times in hospitals.

This audit evaluated a sample of ENT surgeon referrals as an exercise in continuous quality improvement. One limitation of this study was that it was not designed to audit existing primary health care guidelines or individual medical officer ear and hearing health practises. Further research that interviewed health practitioners may be able to better examine individual practices. Although this study did not examine changes to wait-times, follow-up research could be undertaken to obtain these results.

Findings from this audit have identified potential improvements to the system, which were made as a consequence of this study. We developed a suite of tools on a publicly available web page [34] to assist primary health clinicians write ENT referrals clearly and according to the guidelines [35]: a one-page referral flow chart for all ear conditions, a checklist for minimum referral criteria with pre-referral workup and minimum information requirements, an Ear Health Assessment Form to document PHC assessments (available in digital format for use in the electronic medical record currently under development) [36], and patient information packs "Healthy Ears: Better Hearing" developed to assist clinicians guide patients on the management and prevention of ear conditions and to promote adherence [37]. It is hoped that by providing local management strategies to enhance clinical knowledge of ear and hearing conditions management and assist clinicians approach low patient adherence with treatment recommendations in this region, ENT referrals will be tighter and thus wait-lists in time will become shorter.

To further improve ENT primary health management and reduce excessive ENT referrals, a further case can be made for the introduction of a non-specialist outreach ENT team, who provide primary health providers with education, ear health management advice and review complex patients. Furthermore, using a digital otoscope, this team can record tympanic membrane images and submit these images alongside the ENT referral (as TeleHealth Store & forward) to expedite the categorisation process. When combined, the new suite of tools to guide primary health care providers, alongside the introduction of a new ENT primary health outreach team, will enable ENT specialist lists to be less congested. Tighter and more appropriate ENT waiting lists will in-turn improve patient access to these services, the outcomes of which will ultimately provide remote living residents with improved ENT surgery access. Over time, this improved access to ENT surgery review and improved ENT community management should deliver improvements to hearing, learning and speech development, which will provide remote living children with a more optimistic life trajectory, which may have otherwise been hindered by significant hearing loss.

5. Conclusion

This process of auditing referrals has identified underlying issues, which caused blockages and delays to current ENT specialist service delivery. This audit process has informed numerous recommendations for simplified referral guidelines. Similar guidelines and checklists may be created by others wishing to improve referral quality, although each would need to be tailored to their national or regional referral criteria policies. This study highlights the importance of conducting audits to maintain quality service delivery by utilising existing data sources to examine approaches to patient care, without the need for additional research, which

could have placed patients at risk of harm. The use of an audit as a tool for quality improvement may be adopted by other health services considering service redesign or revision to improve patient outcomes.

Author contribution statement

Both authors made a significant contribution to this manuscript. SJ conceived the idea of the study and lead the study. SJ collated the data which was audited by both authors (SJ & KM). SJ produced the first manuscript draft. KM reviewed the manuscript.

Conflicts of interest

The authors have no conflicts of interest to declare. No funding was received for the production of this publication.

Acknowledgements

We wish to acknowledge Denise Newman (DN), Advanced Indigenous Health Worker, for assisting with the ENT referral audit, and we would also like to thank the Clinical Excellence Division of Queensland Health Future's Project for supporting a new ENT service delivery Program across Cape York.

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