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Clinical practice guidelines for Indigenous peoples with middle ear disease in Australia: a systematic scoping review

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ABSTRACT

Objective. This study aimed to identify practitioner awareness of and adherence to clinical practice guidelines for Indigenous peoples with otitis media in Australia. **Methods.** Database searches were conducted in Medline, Embase, APA PsychInfo, Scopus, Web of Science Core Collection, Academic Search Premier, and CINAHL. Studies were eligible for inclusion if they reported on practitioner awareness of or adherence to clinical practice guidelines for otitis media management for Indigenous peoples in Australia. Search terms included 'Indigenous peoples', 'otitis media', and 'guidelines'. **Results.** Four peer-reviewed studies published between 2007 and 2020 met eligibility for inclusion. This review identified three key concepts: (1) practitioner awareness rates for the Therapeutic Guidelines were significantly higher than for the 2001 OM Guidelines, (2) practitioners self-reported higher adherence to the Therapeutic Guidelines compared with the 2001 OM Guidelines, and (3) antibiotic prescriptions for Indigenous children varied, possibly due to use of different guidelines and adherence criteria, as well as variations in geographical areas and settings. **Conclusions.** Practitioner adherence to clinical practice guidelines specific for Indigenous peoples with otitis media is critical to ensuring a consistent impact and, by extension, closing the gap in related life outcomes for Indigenous peoples in Australia. It is important to evaluate guideline impact through establishing current practitioner adherence rates. Furthermore, increasing awareness of culturally appropriate research approaches and availability of evaluation tools, such as the Aboriginal and Torres Strait Islander Quality Appraisal Tool, should improve the conduct of future Indigenous research.

Keywords: Aboriginal and Torres Strait Islander peoples, Australia, clinical practice guidelines, guideline adherence, guideline awareness, healthcare, hearing loss, Indigenous peoples, middle ear disease, otitis media, primary care.

Introduction

Clinical practice guidelines (CPGs) aim to support practitioners in clinical decision-making and improve patient care.[1,2] Many CPGs for otitis media management exist, yet continued reporting of disease severity and chronicity[3] for Indigenous children indicates limited or inconsistent impact. Otitis media (middle ear disease) is associated with upper respiratory tract infections[4] and eustachian tube dysfunction.[5] Otitis media is most common in children during the first 6–12 months of life, and 23% of children experience ≥1 episode of acute otitis media (AOM) by 12 months.[6] While otitis media outcomes are generally favourable in the wider community, Indigenous children experience the highest recorded prevalence rates of chronic suppurative otitis media (CSOM) in the world,[7] as well as increased severity, chronicity, and complication risk.[3]

Children with CSOM are at increased risk of hearing loss[8,9] which, in turn, can impact communication and cognitive development,[10] as well as connection to family and culture. This may impact life trajectories and outcomes, including education,[11,12]

employment, and socioeconomic status.[13,14] It is challenging to address complex social and historical drivers of prevalence rates,[15] however, effective management may reduce disease severity and chronicity. By extension, this may prevent or lessen related hearing loss impacts, thereby contributing to closing the gap in life outcomes for Indigenous peoples.[16]

Consistent adherence to CPGs is critical for effective management of Indigenous peoples with otitis media and reducing impacts on life outcomes. Therefore, this review aimed to identify practitioner awareness of and adherence to CPGs for Indigenous peoples with otitis media in Australia.

Methods

The author team comprises Indigenous (KN, CP, MF) and non-Indigenous researchers (RM, YD, CM), embodying cultural knowledge, lived experience, and expertise in Indigenous health and policy. This review is guided by Joanna Briggs Institute (JBI) methodology and reported using the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist.[17]

Eligibility criteria

Peer-reviewed studies were eligible for inclusion if they were available in the English language and described primary data on practitioner awareness of and adherence to CPGs for Indigenous peoples with otitis media in Australia.

Information sources

Formal database searches were conducted in June 2023. The search strategy included MeSH terms and keyword phrases such as 'Indigenous peoples', 'otitis media', and 'guidelines'. Formal databases were searched: Medline, Embase, APA PsychInfo, Scopus, Web of Science Core Collection, Academic Search Premier, and CINAHL. Citation searches of included studies were conducted to identify additional studies.

Search

The Medline search strategy was modified as required and used as the basis for the other database searches (Table 1).

Study selection

An initial database search was conducted to obtain a preliminary scope of the literature. Two independent reviewers (KN, YD) screened studies by title/abstract and full text. Additional reviewers (RM, CM) were consulted throughout this process of study selection.

Data charting and synthesis

Data extraction included the following items: aim, JBI study design, method, population of interest, guidelines, practitioners, settings/locations, guideline adherence and awareness, and other key findings. Data extraction was conducted by KN, and RM and CM were consulted during this process. Study data were reported using the above-listed items for descriptive and narrative synthesis.

Table 1. Medline search strategy.

No.	Terms
1	Indigenous Peoples/
2	'Native Hawaiian or Other Pacific Islander'/[A]
3	Australia/
4	(Indigenous or aborigin* or Torres Strait Island* or First nation* or First people* or Australia*).mp.
5	Deafness/or Persons with Hearing Impairments/
6	Hearing loss/
7	Hearing Disorders/
8	Otitis Media/
9	Hearing/
10	(hearing or hear or audi* or aural* or ear) adj3 (impair* or loss* or disab* or dysfunct* or problem* or surgic* or surger*)).mp.
11	Policy Making/or Policy/or Health Policy/or Public Policy/
12	(Public polic* or Health polic* or govern* or institution* or polit* or polic* or legislat* or framework* or strateg* or practice* or roadmap* or recommend* or procedure* or guideline* or act or regulation* or scheme* or schedule* or order* or require* or instrument* or standard* or plan* or implementation plan* or action plan*).mp.
13	Legislation/
14	Federal Government/or Government Publication/or Local Government/or Government/or Government Regulation/or State Government/
15	1 or 2 or 3 or 4
16	5 or 6 or 7 or 8 or 9 or 10
17	11 or 12 or 13 or 14
18	15 and 16 and 17

[A]This MeSH is used in Medline to index articles about Indigenous peoples from Australia.

Quality assessment

Studies were appraised using the JBI Critical Appraisal Tool to assess methodological quality and to determine to what extent the potential for bias in design, conduct, and analysis was addressed.[18] Indigenous research should be underpinned by Indigenous values and principles of ethical research as described by the Aboriginal and Torres Strait Islander quality appraisal tool (QAT).[19] Therefore, the QAT was used to appraise research quality through an Indigenous lens.[19] Two independent Indigenous reviewers (KN, MF) conducted the quality assessments, and additional reviewers (RM, CM) were consulted throughout this process. The JBI

Critical Appraisal Tool involves marking questions 'yes', 'no', 'unclear', or 'not applicable', and the QAT involves marking questions 'yes', 'no', 'partially', or 'unclear'.

Content analysis

A content analysis was conducted to identify key concepts surrounding practitioner awareness of and adherence to CPGs for Indigenous peoples with otitis media.

Results

Study selection

The search identified 3025 records. Following duplication removal, 2454 records were screened by abstract/title. Thirty records were screened by full text, and 26 of these were removed with stated reasons. Four studies were eligible for inclusion. Study selection was captured in a PRISMA flow chart (Fig. 1), and study reporting was guided by the PRISMA-ScR Checklist items (Supplementary material, file S1).

Study characteristics

Peer-reviewed studies (n = 4) were published between August 2007 and April 2020.[20–23] Studies were categorised as analytical cross-sectional studies according to the JBI study type classifications. Study descriptions are reported below, and additional study details are captured in Supplementary material, file S2.

Population of interest

Eligibility for the current review included all age ranges; however, the included studies reported on children. One study reported on practitioners' self-reported management of Indigenous and non-Indigenous children (12 months).[23] One study reported on non-Indigenous (n = 116,647) and

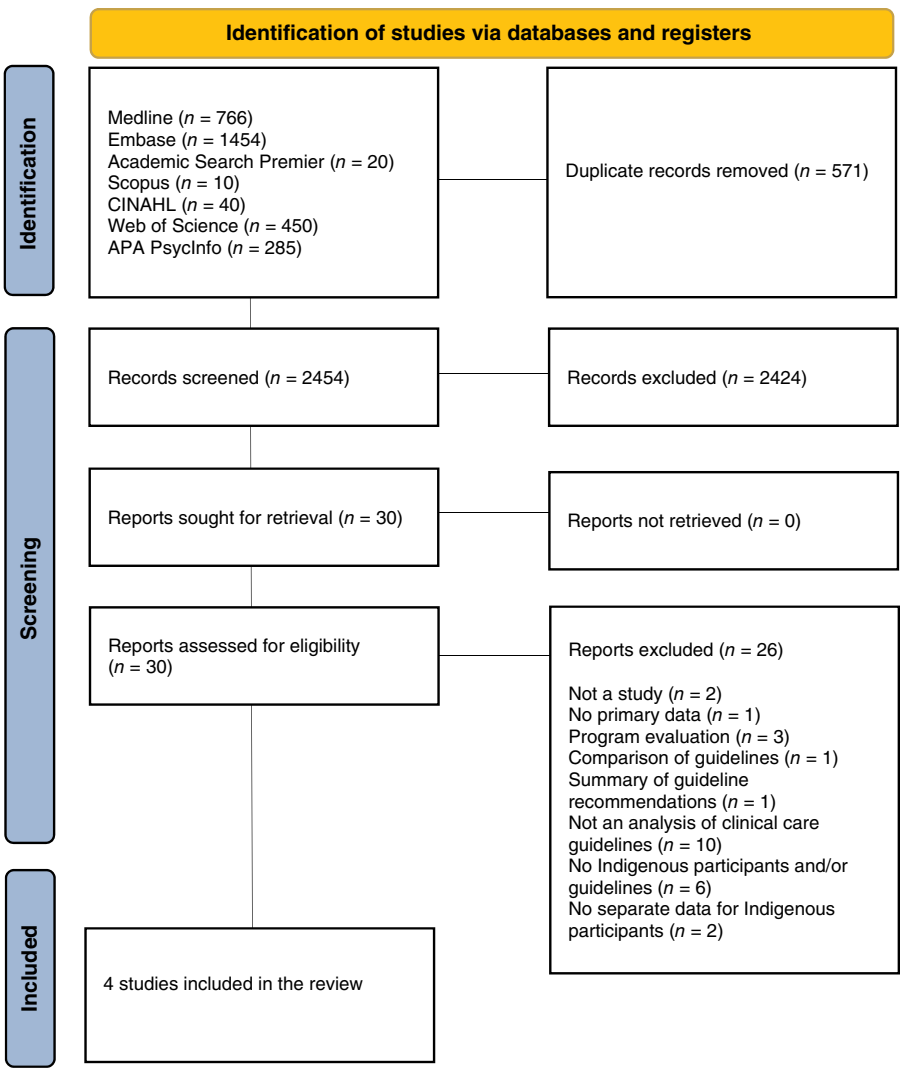

Fig. 1. PRISMA flow chart.

Indigenous children (n = 2856) and stated that 48% of Indigenous children were <5 years.[22] One study reported on children (n = 1063), including Indigenous children, who were aged <1 year to 15 years.[21] One study reported on Indigenous children (n = 124) and stated that children were eligible to participate if they were born between 1 January 2010 and 31 July 2014.[20]

Practitioners, settings, and locations

Two national studies reported on medical practitioners (n = 131) working in Aboriginal Medical Services (AMS)[23] and practitioners in primary healthcare (n = 7991).[22] One study reported on medical records of children managed by health professionals in inpatient and ambulatory healthcare (e.g. general practice) settings in South Australia, New South Wales, and Queensland.[21] One study reported on medical records of children managed by remote health practitioners in primary healthcare centres in the Katherine East region in the Northern Territory.[20]

Guidelines

Studies reported on the 2010 OM Guidelines (n = 1),[21] 2001 OM Guidelines (n = 2),[22,23] Therapeutic Guidelines (version 13) (n = 2),[22,23] and the seventh edition of the Central Australian Remote Practitioners Association (CARPA) Standard Treatment Manual (n = 1).[20]

Guideline awareness

Gunasekera *et al.* identified that 99% of practitioners in AMS self-reported awareness of the Therapeutic Guidelines, and 54% self-reported awareness of the 2001 OM Guidelines.[23]

Guideline adherence rates

Therapeutic Guidelines

Gunasekera *et al.* identified that 75% of practitioners in AMS self-reported using the Therapeutic Guidelines 'often' or 'always' for Indigenous children.[23]

OM Guidelines

Clay-Williams *et al.* reported that guideline adherence for the indicator of Indigenous children with AOM being prescribed an antibiotic was 96.7%. This study reported that cases were considered to adhere to the 2010 OM Guidelines if amoxicillin 50 mg/kg/day was prescribed for 7 days, and only 13.1% of cases were consistent with this adherence criteria.[21] Gunasekera *et al.* identified that 22% of practitioners self-reported using the 2001 OM Guidelines 'often' or 'always'.[23]

CARPA Standard Treatment Manual

Howarth *et al.* used the CARPA Standard Treatment Manual recommendations to determine whether antibiotic use was provided as indicated for AOM. They reported that 98% and 88% of antibiotic prescriptions for Indigenous children with AOM and CSOM, respectively, were considered appropriate.[20]

Management practices

Gunasekera *et al.* reported that there were no significance differences between Indigenous and non-Indigenous children regarding antibiotic prescription rates, ear syringing, or referral rates to otolaryngologists and audiologists. Management was reported to be inconsistent with national guidelines, but it was unclear whether this referred to the Therapeutic Guidelines and/or the 2001 OM Guidelines.[22]

Gunasekera *et al.* found that practitioners reported that they were more likely to prescribe antibiotics and to use longer antibiotic courses for Indigenous children compared with non-Indigenous children. As reported above, this study found low self-reported practitioner awareness of and adherence to the 2001 OM Guidelines, however, aggressive treatment approaches were consistent with these guidelines.[23]

Content analysis

Three key concepts surrounding practitioner awareness of and adherence to CPGs for Indigenous children with otitis media were identified (Table 2).

Quality assessment

The studies were appraised using the JBI Critical Appraisal Tool for analytical cross-sectional studies.[18] Studies were categorised as analytical cross-sectional studies according to JBI study type classifications.[20–23] Studies were marked 'unclear' for questions 5 and 6, and 'yes' for questions 1–4, 7, and 8 (Table 3).[20–23]

The studies were assessed for quality from an Indigenous lens using the QAT.[19] One study was marked 'no' for questions 1–3, 5–10, 13, and 14, 'yes' for question 4, and 'unclear' for questions 11, and 12.[23] Two studies were marked 'no' for questions 1–10, 13, and 14, and 'unclear' for questions 11 and 12.[21,22] One study was marked 'no' for questions 9, 10, and 14, 'unclear' for questions 1, 4, 6–8, and 11–13, 'partially' for question 2, and 'yes' for questions 3 and 5 (Table 4).[20]

Discussion

This review aimed to identify practitioner awareness of and adherence to CPGs for Indigenous peoples with otitis media in Australia. Three key concepts were identified: (1) practitioner awareness rates for the Therapeutic Guidelines were significantly higher than for the 2001 OM Guidelines, (2) practitioners self-reported higher adherence to the Therapeutic Guidelines compared with the 2001 OM Guidelines, and (3) antibiotic prescriptions for Indigenous

Table 2. Key concepts.

Concept	Description
1. Practitioner awareness rates for population-based guidelines were significantly higher than for guidelines specific for Indigenous peoples	Population-based guidelines (national): • 99% of practitioners in Aboriginal Medical Services were aware of the Therapeutic Guidelines[23] Guidelines specific for Indigenous peoples (national): • 54% of practitioners in Aboriginal Medical Services were aware of the 2001 OM Guidelines[23]
2. Practitioners self-reported higher adherence to population-based guidelines compared with guidelines specific for Indigenous peoples	Population-based guidelines (national): • 75% of practitioners in Aboriginal Medical Services self-reported adherence to the Therapeutic Guidelines[23] Guidelines specific for Indigenous peoples (national): • 22% of practitioners in Aboriginal Medical Services self-reported adherence to the 2001 OM Guidelines[23]
3. Antibiotic prescriptions for Indigenous children varied, possibly due to use of different guidelines and adherence criteria, as well as variations in geographical areas and settings	Inpatient and ambulatory healthcare (South Australia, Queensland, New South Wales): • 96.7% of Indigenous children with acute otitis media were prescribed an antibiotic, however, only 13.1% were prescribed amoxicillin 50 mg/kg/day for 7 days as recommended by the 2010 OM Guidelines[21] Remote primary healthcare (Northern Territory): • 98% of antibiotic prescriptions for Indigenous children with acute otitis media were considered appropriate and aligned with the CARPA Standard Treatment Manual[20] • 88% of antibiotic prescriptions for Indigenous children with chronic suppurative otitis media were considered appropriate and aligned with the CARPA Standard Treatment Manual[20] Primary healthcare (national): • There were no significant differences in antibiotic prescription rates between Indigenous children (72%) and non-Indigenous children (76%) with otitis media. This was reported to be inconsistent with national guidelines[22] Aboriginal Medical Services (national): • Practitioners were more likely to prescribe antibiotics to treat Indigenous children (92%) than for non-Indigenous children (49%) with acute otitis media. Practitioners were more likely to use longer antibiotic courses (i.e. >7 days) for Indigenous children (25%) with acute otitis media compared with non-Indigenous children (14%). Aggressive treatment approaches were reported to be consistent with national guidelines[23]

Table 3. Quality assessment using the JBI Critical Appraisal Tool for analytical cross-sectional studies.

Question	First author, year			
	Gunasekera (2009)	Gunasekera (2007)	Clay-Williams (2020)	Howarth (2020)
1. Were the criteria for inclusion in the sample clearly defined?	Yes	Yes	Yes	Yes
2. Were the study subjects and the setting described in detail?	Yes	Yes	Yes	Yes
3. Was the exposure measured in a valid and reliable way?	Yes	Yes	Yes	Yes
4. Were objective, standard criteria used for measurement of the condition?	Yes	Yes	Yes	Yes
5. Were confounding factors identified?	Unclear	Unclear	Unclear	Unclear
6. Were strategies to deal with confounding factors stated?	Unclear	Unclear	Unclear	Unclear
7. Were the outcomes measured in a valid and reliable way?	Yes	Yes	Yes	Yes
8. Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes

children varied, possibly due to use of different guidelines and adherence criteria, as well as variations in geographical areas and settings. These findings suggest inconsistent management of Indigenous children with otitis media, which may result in limited impact on disease severity and chronicity. Furthermore, the quality assessment indicated that included studies scored well for Anglo-Western definitions of methodological rigour, yet studies frequently did not report on or adhere to Indigenous values and principles of ethical research.

Table 4. Quality assessment using the Aboriginal and Torres Strait Islander Quality Appraisal Tool.

Question	First author, year			
	Gunasekera (2009)	Gunasekera (2007)	Clay-Williams (2020)	Howarth (2020)
1. Did the research respond to a need or priority determined by the community?	No	No	No	Unclear
2. Was community consultation and engagement appropriately inclusive?	No	No	No	Partially
3. Did the research have Aboriginal and Torres Strait Islander research leadership?	No	No	No	Yes
4. Did the research have Aboriginal and Torres Strait Islander governance?	Yes	No	No	Unclear
5. Were local community protocols respected and followed?	No	No	No	Yes
6. Did the researchers negotiate agreements in regards to rights of access to Aboriginal and Torres Strait Islander peoples' existing intellectual and cultural property?	No	No	No	Unclear
7. Did the researchers negotiate agreements to protect Aboriginal and Torres Strait Islander peoples' ownership of intellectual and cultural property created through the research?	No	No	No	Unclear
8. Did Aboriginal and Torres Strait Islander peoples and communities have control over the collection and management of research materials?	No	No	No	Unclear
9. Was the research guided by an Indigenous research paradigm?	No	No	No	No
10. Does the research take a strengths-based approach, acknowledging and moving beyond practices that have harmed Aboriginal and Torres Strait peoples in the past?	No	No	No	No
11. Did the researchers plan and translate the findings into sustainable changes in policy and/or practice?	Unclear	Unclear	Unclear	Unclear
12. Did the research benefit the participants and Aboriginal and Torres Strait Islander communities?	Unclear	Unclear	Unclear	Unclear
13. Did the research demonstrate capacity strengthening for Aboriginal and Torres Strait Islander individuals?	No	No	No	Unclear
14. Did everyone involved in the research have opportunities to learn from each other?	No	No	No	No

Practitioner awareness of and adherence to clinical practice guidelines

Higher awareness of and adherence to the Therapeutic Guidelines indicate that practitioners are more likely to adopt population-based guidelines rather than guidelines specific for Indigenous peoples.[23] Population-based guidelines are relevant to the wider community; however, the OM Guidelines provide best-practice recommendations specifically for management of otitis media in Indigenous children. Moreover, the use of different guidelines for otitis media management may cause practitioner confusion and, by extension, inconsistent management practices. In 2020, the OM Guidelines were refreshed to provide updated evidence.[24] In response to low uptake of the previous guidelines,[23] there have been efforts to increase visibility of and access to the 2020 OM Guidelines. For example, the Otitis Media Guidelines App was developed,[25] and recent Therapeutic Guidelines link practitioners to the 2020 OM Guidelines.[26] These initiatives may support increased uptake. Future research should investigate adherence rates to the current guidelines. This is key to identifying guideline impact; however, measuring adherence is a challenging process, and difficulties may arise from limitations in patient data and recall bias in self-report methods.[27,28]

Low guideline adherence is not limited to otitis media management. Rather, adherence to CPGs for a range of health issues and conditions varies. For example, practitioner adherence rates to CPGs for the treatment of adults with traumatic brain injury range from 18 to 100%.[29] Many factors, including practitioners' knowledge and organisational constraints, contribute to poor implementation;[30] however, a growing body of research seeks to improve implementation through strategies such as audit and feedback.[31]

Antibiotic prescriptions for Indigenous children

Adherence rates for antibiotic prescriptions were reported by one study as low,[21] whereas another study reported high adherence rates.[20] Inconsistent with national guidelines, one study reported that prescription rates between Indigenous and non-Indigenous children did not significantly differ.[22] However, consistent with national guidelines, another study found that practitioners were more likely to prescribe antibiotics and to use longer antibiotic courses for Indigenous children compared with non-Indigenous children.[23] Prescribing trends in the wider community are often not aligned with national guidelines. A national study found that antibiotics are prescribed in 89% of AOM cases, which exceeds recommended prescription rates (20–31%),[32] and a cohort study found that children with AOM in emergency departments are prescribed antibiotics inappropriately.[33] This research further demonstrates a wider concern about antibiotic prescription practices for otitis media treatment.

Prescription variations may be due to study differences. Studies reported on different guidelines, which may have variations in scope and intended use. For example, the 2010 OM Guidelines are national,[34] whereas the CARPA Standard Treatment Manual was designed for use in remote and Indigenous health services in central and northern Australia.[35] Studies reported on antibiotic prescriptions using different adherence criteria[20,21] or reported on whether antibiotic prescriptions were consistent with national guidelines.[22,23] Finally, geographical areas and settings varied across studies. In AMS, antibiotic prescriptions are consistent with the 2001 OM Guidelines,[23] whereas antibiotic prescriptions in mainstream healthcare settings are inconsistent with national guidelines. [21,22] Given that AMS specifically provide holistic and culturally safe services, it follows that prescriptions in these settings are aligned with guidelines specific for Indigenous peoples. Seventy-five percent of Indigenous peoples in very remote areas access care from an AMS or community clinic, yet only 15% of Indigenous peoples in major cities access these services.[36] This highlights the need for Indigenous specific management approaches to be applied in both AMS and mainstream healthcare settings.

Quality assessment

Most included studies scored high for Anglo-Western definitions of methodological rigour as described by the JBI Critical Appraisal Tool,[18] yet achieved low scores for the QAT,[19] either because these elements were not adhered to or not reported. Culturally safe practices and decolonised methodologies, although previously not commonplace in the literature, are an emerging strength within recent research.[37,38] The QAT provides a best-practice template for how research involving Indigenous peoples should seek to describe how the research aligns with Indigenous values and principles.[19]

Study implications

Practitioner adherence to guidelines specific for Indigenous peoples with otitis media is critical to ensuring consistent impact. Low self-reported adherence rates[23] and inconsistencies between antibiotic prescriptions and national guidelines[21,22] suggest inconsistent management approaches, which may result in limited or inconsistent impact. This is further evidenced by continued reporting of disease severity and chronicity.[3] Moreover, recent research found less than one in four Indigenous children with otitis media requiring immediate treatment and follow-up as per local guideline recommendations who attend remote clinics managed by the Northern Territory Government receive treatment or follow-up within 14 days.[39] Ultimately, although guideline accessibility and visibility are important, further measures such as audit and feedback[31] may be necessary to achieve consistent guideline uptake.

Limitations

This systematic scoping review identified a paucity of literature on practitioner awareness of and adherence to CPGs

for Indigenous peoples with otitis media. Furthermore, the studies assessed previous versions of CPGs, which highlights the need for future research to evaluate the impact of current CPGs.

Conclusion

Practitioner adherence to guidelines specific for Indigenous peoples with otitis media is critical to ensuring consistent impact and, by extension, closing the gap in related life outcomes for Indigenous peoples.[16] It is important to evaluate guideline impact through establishing current practitioner adherence rates. Furthermore, increasing awareness of culturally appropriate research approaches and the availability of evaluation tools, such as the QAT, should improve the conduct of future Indigenous research.

Supplementary material

Supplementary material is available online.

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