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Exploring general practitioners' perception of the value of natural history information and their awareness and use of guidelines' resources to support antibiotic prescribing for self-limiting infections: a qualitative study in Australian general practice

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ABSTRACT

Background. The newest version of the Therapeutic Guidelines' antibiotic chapter introduced patient- and clinician-facing resources to support decision-making about antibiotic use for selflimiting infections. It is unclear whether general practitioners (GPs) are aware of and use these resources, including the natural history information they contain. We explored GPs' perceptions of the value and their use of natural history information, and their use of the Therapeutic Guidelines' resources (summary table, discussion boxes, decision aids) to support antibiotic decision-making. Methods. Semi-structured interviews with 21 Australian GPs were conducted. Interviews were recorded, transcribed and thematically analysed by two independent researchers. Results. Four themes emerged: (1) GPs perceive natural history information as valuable in consultations for self-limiting conditions and use it for a range of purposes, but desire specific information for infectious and non-infectious conditions; (2) GPs' reasons for using patient-facing resources were manifold, including managing patients' expectations for antibiotics, legitimising the decision not to provide antibiotics and as a prescription substitute; (3) the guidelines are a useful and important educational resource, but typically not consulted at the time of deciding whether to prescribe antibiotics; and (4) experience and attitude towards shared decision-making and looking up information during consultations influenced whether GPs involved patients in decision-making and used a decision aid. Conclusions. GPs perceived natural history information to be valuable in discussions about antibiotic use for self-limiting conditions. Patient and clinician resources were generally perceived as useful, although reasons for use varied, and a few barriers to use were reported.

Keywords: antibiotic prescribing, clinical practice guidelines, decision support techniques, general practice, natural history, primary care, qualitative study, self-limiting acute infections.

Background

Inappropriate antibiotic use is a global public health problem and a major contributor to antibiotic resistance (World Health Organization 2015). Antibiotics are prescribed at unacceptably high levels for many acute infections in primary care, even though, for some, they make no to little clinical difference (Llor and Bjerrum 2014; Spinks *et al.* 2021). Compared with similar high-income countries, Australian general practitioners (GPs) are high prescribers of antibiotics, particularly for acute respiratory tract infections (McCullough *et al.* 2017). In 2019, 40% of the Australian population had at least one antibiotic dispensed (Australian Commission on Safety and Quality in Health Care 2021).

Strategies that can help GPs to reduce antibiotic prescribing, include delayed prescribing – where a prescription is provided, but the patient is advised not to fill it unless symptoms do not improve (Spurling *et al.* 2017) – and shared decision-making – where the benefits and harms of using and not using antibiotics are discussed, and a decision is made collaboratively

with the patient (Coxeter *et al.* 2015). Both require GPs to be aware of the likely illness course without antibiotics. Sharing natural history information with patients may help to counter patients' misperceptions about antibiotics' necessity and how much illness duration is reduced (Coxeter *et al.* 2017). Incorporating natural history information into patient and clinician resources may facilitate access to such information.

The Therapeutic Guideline is Australia's most widely used guideline (Therapeutic Guidelines 2023). The most recent version of its antibiotic chapter introduced patient- and clinician-facing resources to support decision-making about antibiotic use (Therapeutic Guidelines 2019). The resources include a summary table of antibiotic use for 17 conditions, shared decision-making discussion boxes and patient decision aids for common infections. The resources also contain details about the natural history information for some self-limiting infections. It is unknown whether GPs are accessing these resources, and if the natural history information is valued and used. This study aimed to explore GPs': (1) awareness and views about using natural history information when consulting about self-limiting infections, and (2) perceptions and use of the antibiotic chapter resources.

Methods

Participants and procedure

In this qualitative study, a sample of GPs (n = 21) was recruited from practices in the Gold Coast and Brisbane, Australia, from September 2021 to April 2022, using the recruitment strategy outlined in Supplementary file 1. Briefly, we approached practice managers in 237 practices by email, and followed up with a phone call to explain the study and ascertain interest. Consenting GPs were sent a digital or printed copy of the resources (antibiotic summary table, shared decision-making boxes, decision aids; Supplementary files 2-4) before the interview to ensure they had a chance to see/use them. During the interview, GPs were shown a modified version of the antibiotic summary table with natural history information (from the guidelines) added as a separate column. GPs were provided with a AUD\$100 gift voucher and a 1-year guideline subscription or extension. Practices were eligible if they had at least two GPs practicing at the time of recruitment. Practices were excluded if they were currently participating in, or had been involved in the past 2 years, in a study aimed at reducing antibiotic prescribing.

One author conducted the interviews with consented GPs, either in person or via videoconferencing. GPs were invited to discuss their: (1) awareness of patient-focused strategies to inform antibiotic prescribing decisions; (2) use, and reasons for using/not using, of the Therapeutic Guidelines' antibiotic chapter and its resources; (3) feedback on the resources; and (4) views on natural history information for self-limiting conditions. The questions (Supplementary file 5) were piloted with two GPs eligible for, but not recruited into, the study.

Data analysis

Interviews were audio-recorded, transcribed verbatim and thematically analysed independently by two authors (KBP and MB), guided by the process for thematic analysis outlined by Braun and Clarke (Braun and Clarke 2006). After familiarising themselves with the transcripts, the authors independently coded three transcripts manually to identify pertinent concepts, then independently generated overarching themes and subthemes. They compared and discussed their themes and analyses with the input of another author (TH). All authors agreed to the themes and illustrative quotes.

Ethics approval

The study was approved by the Bond University Human Research Ethics Committee: (Approval reference number: MB02587). All participants in this study provided informed consent.

Results

Participant characteristics

We approached 237 practices, with 11 consenting to participate. The main reason given for non-participation (n = 226) was time constraints due to the pandemic. We interviewed 22 GPs, with one interview excluded because of a corrupt audio file, leaving 21 interviews. Data saturation was achieved after 21 interviews, and further recruitment was not necessary. Most interviews (n = 15) were conducted via Zoom video conference. The most frequent age bracket of GPs was 18–39 years. The mean interview duration was 33 min (Table 1).

Themes

Four themes emerged and are presented below and supported by illustrative quotes.

1. GPs perceive natural history information as valuable in consultations for self-limiting conditions and use it for a range of purposes, but desire specific information for various infectious and non-infectious conditions.

Most GPs reported they are broadly aware of the natural history of acute infections, predominantly because they are common. However, many stated they were uncertain of the typical duration of specific illnesses and would value knowing that:

... some were a bit of a surprise. The fact that kids really only have their middle ear infection for two to three days (GP06, \geq 15 years' experience)

Yeah, so definitely with the acute rhinosinusitis, \dots pharyngitis, tonsillitis. (GP19, \geq 15 years' experience)

Characteristic	n (%)
Age group (years)	
18–39	11 (52.3)
40–59	9 (42.9)
>59	l (4.8)
Sex	
Female	14 (66.7)
Male	7 (33.3)
Type of interview	
Face-to-face	6 (29.0)
Zoom	15 (71.0)
Years of practice	
<5 years	8 (38.1)
5–9 years	4 (19.1)
10–14 years	3 (14.3)
≥15 years	6 (28.6)
Years of therapeutic guideline use	
<5 years	4 (19.1)
5–9 years	5 (23.8)
10–14 years	7 (33.3)
\geq 15 years	5 (23.8)
Frequency of therapeutic guideline use	
Rarely	l (4.8)
Sometimes	2 (9.5)
Frequently	4 (19.1)
Very frequently	14 (66.7)
Frequency of antibiotic chapter access	
Rarely	2 (9.5)
Sometimes	2 (9.5)
Frequently	4 (19.1)
Very frequently	13 (61.9)

Table I. Participant characteristics.

Nearly all expressed a belief that incorporating details about natural history into resources that could be used in conversations with patients would be useful:

If it's something that I don't know very much about and would not know off the top of my head roughly how long something's going to stick around for, it is so good to be able to pull it up and have a look and go, okay, I know now roughly how long this is going to linger around for and I can talk to you about it. (GP01, 5–9 years' experience)

GPs who incorporated natural history information into consultations described doing so for various reasons. This included reassuring patients their infection was likely to resolve on its own, to justify not prescribing antibiotics and/or as part of delayed prescribing, helping to manage patients' expectations of when they would likely feel better and explaining to patients when to reconsult:

I think knowing the natural history of everything, particularly things that don't need treatment and just need ... time, it's really important that we know that, because then it also helps with red flags, because it's a red flag if it goes outside that timeframe and stuff. (GP08, <5 years' experience)

It's a really good way to go tell someone, listen, we don't need to treat acute otitis media, and says here from the Therapeutic Guidelines, which is what we get our medication information from, that 80 percent of cases spontaneously resolve. So, it's reassuring the patient, to go hang on, what I'm doing is actually right and not negligent. (GP13, <5 years' experience)

They come in, they've got ear pain, the parent says, I think she needs antibiotics she's got ear pain. Then you say, well, look, you're right, there is otitis media on that side, but I said, this is only the first 24 hours. Then you say, look, the natural history is that it settles down in two or three days with anti-inflammatories, and sometimes parents still are not reassured. Then, I give them an antibiotic script, but I say, look the first two or three days just have some ibuprofen, and if they're better, then don't take the antibiotics. (GP18, 10–14 years' experience)

There were a few concerns about challenges in using natural history information, including that some patients have poor awareness that some infections get better without antibiotics:

I think patients don't usually believe me when I tell them this ... people have it in their mind ... if it's a bacterial thing, if you don't have an antibiotic, you're going to die. (GP12, 10–14 years' experience)

Another concern was that consultation time constraints would preclude explaining the natural history:

Because we're time-poor, we've got 10-, 15-minute sessions, basically, I go straight to the point and I'll take out whatever the problem is. (GP17, 5–9 years' experience)

Beyond infections, which were the interviews' focus, some GPs volunteered they would like to be able to communicate about the natural history of other self-limiting conditions, such as gastroenteritis and musculoskeletal conditions like low back pain:

I never give antibiotics for gastro anyway, because I'm like, that will probably cause more diarrhea ... Knowing, the natural history of a viral gastro would be useful. (GP08, <5 years' experience)

The one thing we deal with all the time is lower back pain, so that might be one. (GP14, <5 years' experience)

2. GPs' reasons for using patient-facing resources were manifold, including managing patients' expectations for antibiotics, legitimising the decision not to provide antibiotics and as a prescription substitute.

Most GPs highlighted that managing patients' expectations, even while using a decision aid, is challenging, reporting that many believe that antibiotics are always needed, and they attend with a pre-determined goal of attaining antibiotics:

... a constant uphill battle getting patients onboard, because often, we're going against what their previous experiences have been over decades and so having the official things here definitely helps (GP18, 10–14 years' experience)

... they've got a real expectation that this is what I've come in for. Why wouldn't you just give me a script? This is why I came. So, I think it is actually a lot more challenging than people sometimes give it credit for, but it's important, it absolutely is. (GP01, 5–9 years' experience)

Of the GPs that used patient-facing resources, such as decision aids, many reported doing so as a way to manage patients' expectations:

Yeah, 100 percent, ... especially when it [decision aid] gives you things like set realistic expectations about, so timeframes and so like if you can – yeah. I mean, if you didn't already know this, to be able to tell them that the cough lasts on average two to three weeks, and 90 percent, they'll usually be resolved by four, then that helps set expectations. Yeah, because I think so many patients, they feel like if they've been unwell for more than a week, they're dying, or they need antibiotics. (GP14, <5 years' experience)

... in terms of convincing people, they don't need antibiotics, and sending them away with useful information beyond oh, the doctor didn't give me antibiotics. So, give them a little bit of a sense of value in the consultation, their confidence, informing them and getting them a bit empowered into actually what's going on for them and making them feel good about the kind of riding it through choice. Yeah, so that [aid] looks really nice. (GP18, 10–14 years' experience)

When antibiotics were not prescribed, the resources were described as a way of legitimising and supporting the GPs' decision not to prescribe:

 \ldots I find that if I tell people, I don't think you need antibiotics, they keep fighting me about it, unless I can

show them some evidence to support me, because they don't trust me. (GP08, <5 years' experience)

... it is also helpful to have this resource to be able to show patients as part of shared decision-making. When you can show them that, it's not just me saying it's going to get better. When you can pull it up in black and white and go, well, have a look at this resource and you can see that it's probably going to get better. It is really handy in that regard ... (GP01, 5–9 years' experience)

... I can show the mothers or the fathers, that look, I know he's got an infection, but look at the ... Australian Guidelines. You can hold back, because he doesn't have those symptoms. It's just not for me as well, but for the parents as well. To give them a bit more confidence why the GP is not giving the antibiotics at this time. (GP17, 5–9 years' experience)

Some GPs expressed that an advantage of using a patient decision aid was that it served as a substitute instead of providing a prescription:

I like to give them, okay, this is – instead of an antibiotic script, here's an action plan for something – people like to walk away with something. (GP07, <5 years' experience)

3. The guidelines are a useful and important educational resource, but are typically not consulted at the time of deciding whether to prescribe antibiotics.

Two major reasons for accessing the guidelines and its clinician-facing resources (antibiotic summary table, discussion boxes) were described. One was consulting the guidelines after the decision to prescribe antibiotics had been made and for obtaining practical information, such as the dose or the firstor second-line antibiotic:

Because [in] 10 minutes, you're diagnosing the patient, making a clinical decision and then you're like, okay, I want to give this guy antibiotics, I have decided what I want to do. Then when you open up the eTG. (GP17, 5–9 years' experience)

... we're usually going fairly straight to those blue highlighted sections of what the antibiotic is, how long we are using it for, is it first line (GP07, <5 years' experience)

Among those aware of the antibiotic summary table, they reported using it when they wanted a reminder about key information:

It's my sort of go-to for when I don't need a whole lot of information, I just want to quickly have a look. (GP01, 5–9 years' experience)

The second reason for accessing the guidelines was for educational purposes and to keep up-to-date about prescribing:

I do check it frequently, because there are changes \dots and I like to be on top of those \dots (GP07, <5 years' experience)

Whereas this [decision box] I think is useful as – if you were studying, if you wanted to update yourself, an educational type of thing, but ... day-to-day realistically you're probably not going to ... (GP12, 10–14 years' experience)

Most were unaware of the clinician-facing resources in the guidelines, particularly the decision boxes, and had not used them prior to our study. Some GPs perceived these would be most useful for junior doctors and when learning how to have a shared decision-making conversation:

... in my more junior registrar years ..., because I wasn't as familiar with shared decision-making, how to talk to patients about it. You're obviously much more apprehensive making decisions about anything as a junior registrar. So, it really helps having something that you can go okay, I've got this pro-forma, I can use this to talk to patients. (GP01, 5–9 years' experience)

Someone coming into general practice training – this would be really handy as to how they can I guess verbalise the pros and cons of being on antibiotics. (GP20, 5–9 years' experience)

4. Experience and attitude towards shared decisionmaking and looking up information during consultations influenced whether GPs involved patients in decisionmaking and used a decision aid.

GPs' confidence and familiarity with shared decisionmaking influenced whether they thought that using a resource (such as a patient decision aid) was necessary. Some expressed they had their spiel and others stated they could reach a shared decision without aids:

I've got kind of my own spiel, which kind of covers a lot of these things about giving antibiotics to patients ... (GP20, 5–9 years' experience)

I probably would look at this and use it as the basis to guide the conversation. But, I mean, this is a very common conversation I already have with patients. (GP16, <5 years' experience)

A few indicated a paternalistic approach, and stated that in their opinion, patients do not want to be involved in the decision-making process and want doctors to make the decision: They don't like – it's almost that uncertainty. They almost – it causes them more anxiety. They just want to be told what to do. (GP12, 10–14 years' experience)

Other reasons for not using decision aids included that patients would not understand the information and insufficient time:

I think they're too involved. I think if I pulled one of these out, I'd have to either stop halfway or sit with the patient for a good 30, 40 minutes. (GP21, 5–9 years' experience)

Some were reluctant to check guidelines for information or use resources during consultations due to a concern that patients would negatively judge them and think they did not know how to treat the condition:

... as soon as you pull out a decision aid, I find they actually will often lose confidence in you. ... was telling me that she and her friend group, ... were absolutely horrified, because one of them had type two diabetes, and a GP had pulled out a decision aid flowchart to explain why they wanted to start a new treatment. Every person in her friend group thought it was absolutely appalling that this doctor needed that flowchart and shame on him for not knowing anything. (GP10, <5 years' experience)

 \dots if the patient's right there with you, you're not going to be able to sit there and read all of that \dots because otherwise, I think they're going to be looking out what the hell you're doing. (GP14, <5 years' experience).

Discussion

Summary of main findings

This study explored GPs' views about consultations for selfresolving infections, the value and use of natural history information, and resources to support decision-making. Most GPs expressed benefit in discussing the self-resolving nature of these conditions, and many conveyed a desire to have specific information, such as illness duration, for infectious and non-infectious conditions. Guideline resources were variably used to assist with managing antibiotic expectations, legitimising GPs' decision to not provide antibiotics and as a prescription substitute. GPs' attitudes towards looking up information and their experience influenced whether they engaged in collaborative decision-making.

Comparison with existing studies

To the best of our knowledge, this is the first study that has explored GPs' perceptions about using natural history information for acute self-limiting infections. However, some of our findings can be compared with a qualitative study in the UK that explored GPs' use of delayed prescribing for respiratory tract infections (Ryves *et al.* 2016). Many GPs in that study reported using natural history information to support their position not to prescribe antibiotics for selfresolving infections and to counteract perceived patient demand for antibiotics (Ryves *et al.* 2016). Similarly to our study, some GPs described having insufficient time to discuss delayed prescribing and alternatives to prescribing antibiotics (Ryves *et al.* 2016).

A common reason given by GPs in our study for using patient-facing resources was to manage perceived patient expectations for antibiotics, which has been previously identified in a randomised trial of decision aids in Australian general practice (Hoffmann et al. 2022). Although some patients do expect antibiotics, for others, the perceived desire is misconstrued, with patients actually seeking reassurance, symptomatic treatment and illness legitimation (Stivers et al. 2003; Driel et al. 2006). A mixed method study in Australia that explored 20 GPs' and 50 parents' perspectives on antibiotic prescribing for young children with respiratory tract infections reported that one-third of the parents wanted a diagnosis, management advice and/or reassurance, rather than antibiotics (Biezen et al. 2019a). Another reason for decision aid use was as a prescription substitute, so that patients had 'something' to leave the consultation with. A study in the UK found that patients valued and accepted information leaflets as a suitable alternative to no antibiotic prescribing for self-limiting infections (Elev et al. 2020). Despite the generally positive attitude towards decision aid use, a few GPs in our study felt that using a decision aid would undermine them and cause patients to lose trust in them. Randomised trials of decision aids have typically found a positive effect on clinician-patient communication and patient satisfaction with the decision-making process (Stacey et al. 2017), so further investigation into this concern is warranted.

Some of the reasons reported by GPs in our study for not using shared decision-making align with the frequently reported barrier of time constraints (Wilcock *et al.* 2015; Hoffmann *et al.* 2022) and the misperception that patients do not want to be involved in decision-making – both of which have been disputed (Hoffmann *et al.* 2014). In a Cochrane systematic review that evaluated the impact of decision aids, the median effect of decision aid use on consultation length was only 2.6 min (Stacey *et al.* 2017). Another systematic review that examined the impact of decision aids on clinician outcomes and consultation length concluded that they improve clinician satisfaction with decision-making and provide useful information without impacting consultation length (Dobler *et al.* 2019).

Our findings that if GPs consulted guidelines about antibiotic prescribing, they typically did so after deciding to prescribe, is similar to the finding of an Australian qualitative study that explored how GPs access and use guidelines and electronic medical records. That study reported that experienced GPs mostly did not refer to guidelines (Biezen *et al.* 2019*b*).

Implications for practice

GPs in our study had a positive perception of the value of natural history information and reported that they use it for a variety of reasons in the management of acute infections. Strategies, such as delayed prescribing and shared decisionmaking, which use natural history information, may help to reduce primary care antibiotic use for acute infections. Our findings, thus, highlight the importance of including natural history information in resources that are readily available to GPs. Although Therapeutic Guidelines provide natural history information for some of the conditions that it covers, it is one of the few guidelines that contains such information, according to a recent systematic review (Boaitey et al. 2022). Similarly, many patient decision aids, which address problems and decision-making for which a 'no active intervention' option is appropriate, do not contain natural history information (Hoffmann et al. 2021). Our findings provide the impetus for developers of guidelines and patient decision aids to provide specific and accessible natural history information, especially for self-resolving conditions. This may facilitate informed conversations in the process of shared decisionmaking and help patients to develop appropriate expectations of illness duration and course.

Implications for research

As GPs were generally supportive of incorporating natural history information into their conversations with patients, research is needed to explore optimal ways of presenting this information, including identifying when a visual presentation of the information may assist. Evidence-based syntheses of studies that contain natural history information for conditions commonly seen in primary care would facilitate access to this information by developers of guidelines and other clinical resources.

Limitations

Only a small number of GPs had used the resources before their interview, which may have limited their comments about using them. Participants were recruited from one region, so the sample may not be representative of GPs in other regions, including rural areas.

Conclusion

The GPs interviewed generally perceived natural history information to be valuable and helpful in discussions about

antibiotic use with patients who have self-limiting conditions. Formalising clinical practice guidelines and patient-facing resources to include natural history information for such conditions may help to disseminate this information to clinicians and facilitate conversations with patients about antibiotic use.

Supplementary material

Supplementary material is available online.

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Data availability. All data generated and analysed during this study are included in this published article (and its supplementary information files).

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