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General Practitioner and Practice Manager Perspectives on an Integrated Antimicrobial Stewardship Program in Primary Care: A Qualitative Exploration

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Abstract

Background/Objectives: Antimicrobials are regularly prescribed in general practice, yet the infrastructure to support routine review of prescribing in this setting remains limited. Integrated antimicrobial stewardship (AMS) interventions combining automated auditing of routine prescribing data with an educational component are a promising approach to addressing this gap. This qualitative study aimed to explore general practitioner (GP) and practice manager (PM) perspectives on the acceptability, feasibility, and perceived effectiveness of such an intervention implemented across 31 general practices and 97 GPs in Victoria, Australia. It also explored implementation considerations relevant to future scaling of the intervention. This is one of the first studies of GP and PM perspectives on this type of integrated program. **Methods**: Semi-structured interviews were conducted with 17 GPs and 5 PMs and analyzed using both inductive and deductive thematic analysis. The Theoretical Domains Framework (TDF) informed interview guide development and deductive coding; themes were generated inductively and final themes mapped to the Capability, Opportunity, Motivation–Behavior (COM-B) model for presentation. **Results**: Four themes were identified: (1) trust, validity, and value of audit and feedback; (2) clinical judgement and patient factors in prescribing complexity; (3) social, organizational, and professional contexts of learning and behavior change; and (4) effort, usability, and workflow in engagement with the intervention. **Conclusions**: Participants valued AMS activities that supported reflective practice without undermining professional autonomy. Trust in the systems managing prescribing data was a precondition for engagement with the data itself. Engagement also depended on fit with existing workflows, individualized reporting, and contextualized feedback. The social conditions under which learning occurred, such as peer interaction, moderated discussion, and collaborative reflection, mattered as much as the technical components of a program.

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Academic Editor: Mihai Sava

Received: 17 September 2026
Revised: 16 October 2026
Accepted: 19 October 2026
Published: 22 October 2026

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Keywords: antimicrobial stewardship; general practice; family medicine; primary care; theoretical domains framework; electronic medical record; EMR; EHR; qualitative

1. Introduction

Antimicrobial stewardship (AMS) comprises a coordinated set of interventions designed to optimize the use of antimicrobials [1]. AMS programs encompass a broad range of activities, including prescriber education, clinical decision support, guideline development, formulary management, targeted clinical interventions, surveillance of antimicrobial use, and audit and feedback [2–4]. Inappropriate antimicrobial prescribing contributes to patient harm, preventable complications, and the acceleration of antimicrobial resistance (AMR), each carrying substantial clinical and economic costs. AMS therefore plays a critical role in improving patient outcomes and is central to national and international efforts to contain AMR.

In Australia, primary care encompasses general practice, community pharmacy, and other allied health services that people access as their first point of contact with the healthcare system [5]. Within primary care, general practice is the principal setting for community antimicrobial prescribing, and general practitioners (GPs) are responsible for most antibiotics prescribed in human healthcare. Australia has high rates of antimicrobial prescribing in general practice compared with other developed nations [6–8], making effective AMS implementation in this setting particularly important. Despite national recommendations for AMS activities in primary care [9,10], translating these into everyday practice remains a significant challenge. Current efforts are limited by underdeveloped implementation infrastructure, including gaps in prescribing monitoring and feedback and sustained practice-level capacity [11]. Surveillance of community antimicrobial use in Australia draws on two main sources, the Pharmaceutical Benefits Scheme (PBS) [12] and MedicineInsight [13] data. PBS data capture dispensing volume nationally but exclude prescriptions not subsidized under the scheme and are not linked to the clinical context in which the antimicrobial was prescribed. The MedicineInsight program reports concordance with national guidelines using routinely collected electronic medical records (EMRs) from a voluntary subset of general practices; however, this reflects only whether the antimicrobial prescribed matched a recommendation, not whether the dose or frequency did, since these data are not captured. These sources therefore offer limited insight into prescribing quality, and what is reported as guideline concordance captures only part of it. Reporting at population level also provides little basis for feedback to individual prescribers. The absence of AMS as a priority within general practice accreditation processes represents a further structural barrier.

EMR data have been used internationally to support a range of AMS activities [14]. Building on this potential, researchers at the University of Melbourne developed the Antibiotic Prescribing Excellence in Primary Care (APEX-PC) program in collaboration with Safer Care Victoria. APEX-PC is an integrated AMS intervention in which algorithms applied to de-identified EMR data assess the antimicrobial prescribed together with its dose and frequency, generating individualized feedback reports returned to GPs alongside an educational component comprising webinars, clinical resources and free access to national guidelines (Therapeutic Guidelines). The program was delivered by a multidisciplinary team and implemented across 31 general practices and 97 GPs in Victoria, Australia, between June 2024 and December 2025.

Understanding how GPs and practice managers (PMs) perceive and engage with such integrated interventions is critical to successful implementation and scaling. This qualitative

exploration examined how GPs and PMs experienced the APEX-PC program, focusing on the acceptability of its components and the barriers to and enablers of engagement. We further sought to identify implementation considerations relevant to future scaling of APEX-PC, as well as potential extensions to its scope not included in the current program such as national benchmarking and integration with accreditation processes.

2. Results

A total of 22 interviews were conducted between July 2025 and November 2025 with 17 GPs and 5 PMs, recruited from 17 practices across metropolitan (9 GPs, 2 PMs), regional (5 GPs, 1 PM), and rural (3 GPs, 2 PMs) areas. Three practices each contributed both a GP and a PM, and some practices contributed more than one GP. Participant characteristics are summarized in Table 1. GP interviews lasted an average of 48 min (range 33 to 64 min), while PM interviews averaged 28 min (range 15 to 58 min).

Table 1. Participant characteristics.

Characteristic		Number	Percent
Gender (all, *N* = 22)	Female	13	59
	Male	9	41
Age group, years (GPs, *n* = 17)	21–30	1	6
	31–40	4	24
	41–50	2	12
	51–60	4	24
	61–70	5	29
	71–80	1	6
Role (all, *N* = 22)	GP—practice owner	6	
	GP—contractor *	10	
	GP—practice owner and contractor *	1	
	PM	5	
Years of experience in general practice (all, *N* = 22)			
GP (*n* = 17)	Mean	23	
	Range	1 to 45	
PM (*n* = 5)	Mean	20	
	Range	7 to 44	

* Contractors provide services to the practice and bill patients directly, paying the practice a percentage for use of its facilities and staff. They are not entitled to employee benefits such as paid leave [15].

2.1. Interview Findings

Analysis of the interview transcripts using the Theoretical Domains Framework (TDF) [16], followed by topic grouping and thematic analysis, generated four distinct themes:

1. Trust, validity, and value of audit and feedback;
2. Clinical judgement and patient factors in prescribing complexity;
3. Social, organizational, and professional contexts of learning and behavior change;
4. Effort, usability, and workflow in engagement with the intervention.

Table 2 summarizes these themes, the behavioral determinants identified within each, and their mapping to the Capability, Opportunity, Motivation–Behavior (COM-B) model [17]. The evidence for each determinant is presented in the sections that follow.

Table 2. Mapping of themes to COM-B.

Theme	COM-B Domain	Behavioral Determinant	Behavioral Impact
2.1.1. Trust, validity, and value of audit and feedback	Capability	Audit and feedback supporting reflection and critical appraisal of prescribing.	Enables justification of prescribing decisions and supports ongoing practice review.
		Documentation practices such as free text used as clinical handover.	Reduces the prescribing detail captured in structured fields, limiting what can be extracted for auditing.
	Opportunity	Active, educational engagement (webinars, discussion) accompanying feedback.	Prompts interpretation and sustained engagement beyond the sessions that passive dissemination does not.
		Association of intervention programs with trusted or familiar organizations.	Increases acceptance and willingness to engage, on the assumption that appropriate oversight and ethical checks are in place.
		Clear and transparent data governance (data access and consent processes).	Increases acceptance of, and willingness to engage with, the program.
		Clinician involvement in the design of audit programs and reporting.	Supports trust and acceptability, particularly for wider or scaled reporting.
		Controlled dissemination of results and inclusion of caveats on data limitations.	Increases confidence in the safety and appropriateness of data use.
		Lack of patient- and prescriber-level detail in aggregated audit data.	Limits ability to interrogate apparent non-concordance at the patient and prescriber level.
		Prescribing data as a proxy for use (no visibility of dispensing or adherence).	Limits confidence that prescribing reflects actual antimicrobial use.
		Time pressure in complex consultations, and records kept for clinical rather than audit purposes.	Reduces completeness and accuracy of the data available for auditing.
		Trust conditional on the scale of data use for reporting; comfort where reports are returned only to contributing practices does not automatically extend to a scaled or national system.	Willingness to engage at scale persists only where governance safeguards are in place, as the threshold for trust rises with wider sharing.
	Motivation	Benchmarking against peers.	Promotes reflection and self-assessment, though it may foster complacency where performance is perceived as adequate.
		Concerns about privacy, unauthorized access, or punitive/commercial use of data.	Reduces willingness to share prescribing data.
		Intentional omission of data due to patient sensitivity.	Selective data recording, reducing completeness of the data used for auditing.
		Perceived value of audit feedback in improving documentation.	Increases awareness of data quality and can lead to improved data entry.
		Preference for individualized feedback.	Increases perceived relevance and strengthens accountability.

Table 2. *Cont.*

Theme	COM-B Domain	Behavioral Determinant	Behavioral Impact
2.1.2. Clinical judgement and patient factors in prescribing complexity	Capability	Clinical judgement required for complex, overlapping, or uncertain presentations.	Limits the extent to which prescribing decisions can be assessed by algorithms using existing data.
	Opportunity	Electronic prescribing alerts highlighting rare but serious adverse effects.	May discourage use of guideline-recommended treatments.
		Patient cost and socioeconomic circumstances.	Influences treatment selection and adherence to guideline-recommended antibiotics, especially in lower-socioeconomic status settings.
		Patient expectations and the need to maintain rapport.	Conflicts with guidelines and may increase likelihood of unnecessary prescribing, or prompt strategies such as delayed prescribing to manage expectation without immediate prescribing.
		Variation in patient expectation by socioeconomic setting.	Perceived greater pressure to prescribe in higher-socioeconomic status settings, independent of cost-related influences on treatment choice.
	Motivation	Belief that guidelines are not universally applicable and require flexible interpretation.	Leads to flexible, individualized application of guidelines rather than strict adherence.
		Ingrained prescribing routines and habits.	Impedes adoption of new practices despite awareness and cognitive agreement with new recommendations.
2.1.3. Social, organizational, and professional contexts of learning and behavior change	Capability	Structured exposure to new or updated guideline content through audit and feedback.	Prompts review and, where indicated, revision of practice in line with updated guidelines.
	Opportunity	Availability of organizational structures supporting clinical discussion.	Facilitates discussion, reflection, and integration of learning into practice.
		Practice culture and whether the practice prioritizes teaching and learning.	Shapes whether learning activities are supported and taken up, independent of individual GPs' willingness.
		Moderated discussion format of learning sessions (e.g., webinars) relative to large, formal settings.	Supports participation, questioning, and confidence to engage, which larger formal settings can inhibit.
	Motivation	Professional norms and openness to feedback.	Influences how audit feedback is received and acted upon.
		Value placed on peer interaction and collaborative learning.	Supports discussion, comparison of practice, and reduces professional isolation.

Table 2. *Cont.*

Theme	COM-B Domain	Behavioral Determinant	Behavioral Impact
2.1.4. Effort, usability, and workflow in engagement with the intervention	Opportunity	Availability of resources on the desktop or within clinical systems.	Increases likelihood of timely access and use during consultations.
		Formatting and design of materials (clarity, conciseness, visual structure).	Influences engagement and interpretation; preference for formats supporting rapid comprehension.
		High volume of communications and reliance on email distribution.	Triage of information by relevance and urgency, with less urgent materials overlooked; email nonetheless useful for re-surfacing the intervention after it has faded from attention.
		Low-effort, single-goal, automated intervention design.	Increases acceptability relative to resource-intensive programs.
		Scheduling of live educational sessions outside consulting hours.	Competes with other commitments; some PMs suggested GPs would prefer delivery within existing in-hours meetings.
		Time-limited consultations and limited capacity for non-routine tasks.	Reduces engagement when participation is perceived to require additional effort.
	Motivation	Anticipation of increased workload.	Reflexive resistance to engagement prior to consideration of potential benefits.
		Dependence on meaningful incentives to justify engagement, including linkage to accreditation or continuing professional development requirements.	Engagement contingent on incentives despite otherwise positive perceptions; linkage to accreditation acceptable where reporting is automated and requires little manual input.
		Personal investment of PMs in the subject matter.	Positions PMs not only as gatekeepers to participation but as motivated drivers, supporting active championing and implementation within practices.

2.1.1. Trust, Validity, and Value of Audit and Feedback

While the program overall was well received, acceptance of the feedback was conditional. Acceptance was affected by GPs' trust in how their data were governed, their confidence in the validity of the underlying data, and the extent to which feedback could be translated into practice.

Within APEX-PC, GPs were willing to share their prescribing data with the program where these were de-identified and reports returned only to the contributing practices. This willingness rested substantially on the credibility of the University of Melbourne as the organization running the program and the assurance of appropriate ethical oversight. Many were also open to a larger, scaled model, such as a national database with wider reporting, but their support here was more conditional. GPs raised concerns about privacy breaches, unauthorized access, and the prospect of data being used beyond its intended purpose in punitive, regulatory, or funding-related ways. For such a system to be acceptable, they felt that clinician and practice anonymity, transparent data governance and consent processes, clinician involvement in design, independent oversight, clear caveats about data limitations, and controlled dissemination of results would be needed to mitigate these concerns and the risk of reputational harm.

> *"The research that comes out of [large databases] is… really important… as long as it stays de-identified… ideally not being used for profit… it's a really good thing." (GP17, male)*

> *"There'll be some anxieties out there that…you're going to get picked up for over-prescribing antibiotics and then get in trouble with AHPRA (Australian Health Practitioner Regulation Agency)." (GP11, male)*

> *"Clinician involvement in design is crucial… the [sensitivity of the] report needs to be different depending on audience (practice vs. GPs)… [it is] important that data is not used to reflect badly on individual practitioners… and that any potentially sensitive data is truly reliable and accurate." (GP14, male)*

GPs found the audit results credible, while recognizing that the record did not always represent the consultation as it occurred. The potential reasons for prescribing, or indication, are extracted from the EMR, where information is recorded for clinical care rather than for auditing and is sometimes entered as free text rather than structured codes. Prescribing reasons could therefore be present in the record yet be missed or misclassified on extraction. GPs attributed this to the realities of clinical workflow rather than a lack of care, and some valued free text specifically because it functioned as a form of more detailed clinical handover, offering flexibility that rigid coding could not. Under time pressure, GPs described entering nonspecific placeholders rather than itemizing every problem in a long consultation, so the field was populated but conveyed little about the indication. Other potentially relevant clinical data were also sometimes absent altogether, omitted as a matter of clinical judgement where recording was felt to risk harm to the patient.

> *"…when I'm closing the file and it comes up with 'what diagnosis do you want to put in?', there are occasions when they've [patients have] had 7 or 8 things they want to talk about…I don't have time to write 8 different things, so I just put 'multiple'…it's the classic rubbish in, rubbish out." (GP12, male)*

> *"In my practice, I often don't weigh children, because I'm very conscious of body image and sensitivities around that." (GP14, male)*

A separate issue was that GPs felt prescribing data served only as a proxy for antimicrobial use, since the audit could not indicate whether a prescription was dispensed or whether it was ultimately taken. They also noted that differences in patients' individual needs and complexity made comparisons between practices unreliable unless these were accounted for. The aggregated reporting format at the level of the practice was perceived to compound this; while GPs valued benchmarking, they felt it removed the patient- and prescriber-level detail needed to make sense of apparent prescribing non-concordance. Individualized feedback was therefore valued as more actionable and better suited to challenging persistent outliers.

> *"…if they're not matching it [prescribing data] with actual dispensing information …you can be telling them [patients] and thinking that they're…finishing their antibiotic script, and they're really not." (GP3, female)*

> *"If you actually give an individualized report… [and] if you've got consistently poor performance, you need to have a way of challenging that. Not necessarily penalizing, but…ask, "why are you still doing what you do when it's so different from everybody else?"" (GP9, male)*

Audit and feedback were also widely valued as a stimulus for reflection, prompting GPs to examine their prescribing and review their practice against current guidelines and peer performance. PMs, however, cautioned that identifying practices as "higher

performing" could unintentionally breed complacency, dampening motivation for further improvement.

> *"It's really good to know how…you're performing compared to your peers, if you're underperforming, it's…a motivator… to review the guidelines… [and] the way that you practice." (GP7, female)*

> *"I don't know if there could be a bit of complacency… I think they [GPs] get this false sense of security that they're doing okay, whereas they could be doing better." (PM1, male)*

This program was viewed as an engaging AMS intervention; while the audit reports were disseminated passively by email, there was active engagement with GPs in the webinars that followed each audit reporting period. GPs contrasted this with the passive dissemination of information alone, such as an emailed notice of updated guidelines, which was easily overlooked in a busy practice. The webinars and accompanying discussion guided GPs through the findings and the resources provided, clarifying where guidelines had changed and why, and this was valued for helping GPs to interpret their results and accept guideline changes. Such engagement was reported to extend beyond the sessions, prompting further discussion among colleagues, subsequent reflection and, in some cases, changes in practice. The process heightened GPs' awareness of documentation quality, with some reporting more consistent recording after seeing how their data were represented.

> *"It was even not just what you presented, but the group discussion about it … it is difficult for, some of us older ones just to go, 'oh yeah, fine, we can just do that.'" (GP2, female)*

2.1.2. Clinical Judgement and Patient Factors in Prescribing Complexity

Participants also described reasoning behind prescribing that could not be captured in structured data. Decisions were influenced by clinical judgement and individual patient circumstances that they felt lay outside what any record could represent. While they deemed the audit results acceptable overall, they noted that a minority of apparently non-concordant results could reflect sound reasoning in complex cases rather than genuine deviation.

> *"Medicine's an art, not just a science, and I think you've got to take those things that aren't able to be easily extracted from data." (GP2, female)*

> *"The doctors seemed to be okay with some of the reports, even though they're a little bit different, particularly with the UTI (urinary tract infection) figures, because they felt that the circumstances of the patients… took into account some other considerations." (PM5, female)*

GPs viewed guidelines as a resource for informing prescribing; however, prescribing could diverge from guideline recommendations as guidelines do not always account for some patient circumstances.

> *"Guidelines are really helpful and important, but…it's important that we keep very much in mind that guidelines are guidelines. They're not… the be-all and end-all, and they're not universally applicable." (GP14, male)*

The cost of guideline-recommended antimicrobials could also be a reason why GPs diverge from guideline recommendations. GPs would adapt their prescribing choices to what patients could afford, especially in lower socioeconomic settings. GPs described these as attempts to make treatment work for the individual patient rather than departures from good clinical practice.

> *"I've got… two different groups… really wealthy… so they spend on their health… then I've got… really poor… cost is a significant issue for them… [I] tend to select a little bit according to what I know the patient can or can't afford." (GP8, male)*

Patient expectations were a further influence on adherence to guideline recommendations. GPs described the need to preserve rapport with patients who anticipated a prescription, even where they would have preferred not to prescribe. Expectation was perceived to vary by setting, with some GPs describing greater pressure to prescribe in higher socioeconomic areas. GPs described strategies for managing these expectations without prescribing immediately, including delayed prescribing, which was valued for maintaining patient satisfaction in ways the guidelines do not address.

> *"…otitis media…do you give antibiotics? … I don't find it's an easy consult at all, because I'm always trying not to give antibiotics for a lot of these things… it's the [patient's] expectation [to have an antibiotic prescribed]." (GP10, female)*

> *"If you're in a- high SES (socioeconomic status) kind of area, you're probably more likely to prescribe, so that patients feel like they've got something from something… I'm aware that patients will just go and get the antibiotic filled and take it, no matter what you say." (GP12, male)*

> *"Delayed prescribing… is a pretty key part of private practice, because obviously you want to keep patients happy… [that] is another part of the equation that obviously is not reflected in the guidelines." (GP17, male)*

Prescribing alerts were a further influence on treatment choice. Prominently displayed safety alerts for rare but serious adverse effects discouraged some GPs from prescribing guideline-recommended treatments. Established prescribing routines could be difficult to change, even when GPs acknowledged that change was warranted.

> *"…when you bring it up… it actually says… 'caution, pulmonary fibrosis'… I don't think many of us are going to go past a big caution box… when you try to prescribe nitrofurantoin… it doesn't happen… with any other antibiotics." (GP3, female)*

> *"…sometimes you just need that extra shove and push… to actually change prescribing habits… [I've] done things…one way for the whole time… [despite the fact that] I know [antimicrobial] resistance is an issue." (GP2, female)*

2.1.3. Social, Organizational, and Professional Contexts of Learning and Behavior Change

How GPs engaged with the intervention's learning components was influenced by their wider social, organizational, and professional context, including the availability of structured learning opportunities, the nature of peer interaction, and professional norms around clinical autonomy and acceptance of feedback.

GPs described the broader organizational context in which learning takes place; where practices held regular clinical meetings, these offered an appropriate place to discuss prescribing. In some practices, however, such meetings had lapsed or were largely focused on billing and administrative concerns, lacking formal opportunities for some to engage colleagues in shared learning. In the absence of formal structures, learning happened informally instead, through ad hoc conversations and small-group discussion.

> *"We run things like clinical risk meetings every two months, and that would be a very good topic to bring up then, about appropriate antibiotic prescribing, then having some real-world, real data around that would be, I think, quite powerful as well." (GP11, male)*

> *"I discussed it with [colleagues]… as… [a] coffee thing… when we're sitting and talking together… we [also] discussed it as a group, but not all in one meeting" (GP6, female)*

Discussion during the webinars was well received. GPs valued the opportunity to hear from others, reflect on their own prescribing, and compare practice. The moderated discussion format was described as making it easier to ask questions than larger, more formal educational settings.

> *"There were… GPs on that webinar, …and everybody was telling his [their] own experience…that was good to compare with others." (GP13, male)*

> *"It was nice… to… see other GPs having questions about things. I just spent the last 3 days at… [a] conference. There was really very little opportunity for interaction and question asking when it was… 300 people in lecture…it was too big for someone like me to feel confident to stand up and ask a question." (GP3, female)*

How feedback was received by GPs was guided by the broader culture of general practice and of medicine more generally. Some participants characterized this as a culture in which clinical decisions are not readily open to challenge, which could affect how willingly external feedback was accepted. Individual practice culture was also relevant, with PMs contrasting practices that made time for teaching with those that did not. Even so, where new information was presented in an acceptable way, as with the guideline changes delivered through the intervention's audit and feedback, some GPs were prompted to review and change their prescribing.

> *"I think, a lot of it depends on practice culture. You know, if you're a churn and burn practice and you don't teach, then you're just not going to do it." (PM2, female)*

> *"Yeah, it was good… particularly the urinary tract ones … I went back and reviewed that and double-checked. So that was good." (GP8, male)*

2.1.4. Effort, Usability, and Workflow in Engagement with the Intervention

The effort the intervention required, the usability of its components, and their fit with routine clinical work also influenced engagement. These included how easily materials could be accessed, interpreted, recalled, and acted on in practice. GPs generally reached for resources that fit the flow of a consultation, drawing on a range of digital guidelines and choosing between them according to the clinical context. The Therapeutic Guidelines subscription was used readily, valued in particular for being available directly on the desktop. The accompanying folder of information resources, however, was used far less, being held separately in a location GPs often could not recall.

> *"I love Therapeutic Guidelines… it was fantastic having it on desktop, because previously I'd had to go through the RACGP kind of channel… it's a bit clunky… getting to it." (GP16, female)*

> *"That was… the hardest thing… accessing those [information resources], because you… have to store them somewhere, and then you can't remember [where you stored them]. It's like putting your keys in a safe spot… you can't quite remember that spot you put them." (GP4, female)*

Engagement with the audit feedback report depended on how it competed for attention and how it was presented. Against a high volume of emails, the reports were easily triaged as non-urgent and overlooked, since they did not concern immediate patient care. Where reports were read, the format mattered. GPs appreciated the concise, visual summaries. At the same time, email served a useful purpose, prompting GPs to re-engage after the intervention had faded into the background.

> *"When you have over 100 emails coming through… [you are just] making sure that you don't miss the… important ones… sometimes with those report[s]… it's not… acute day-to-day stuff." (GP4, female)*

> *"I found it all very useful… the way it was set out… it wasn't… 50 pages I had to read through… [it was] summarized in a table… a little pie chart, that's perfect." (GP12, male)*

> *"Because it [the intervention]. . . works in the background, there are times where you do forget about it. . . and then when you get an email, you're going, 'oh, there we go'." (PM4, female)*

Effort and workload influenced engagement throughout, though the intervention compared favorably with other programs because it made fewer demands, with one GP contrasting its single, focused aim with programs that were more time-consuming and complex. Effort was most relevant for the more time-dependent components. The webinars were scheduled outside consulting hours and competed with other commitments, and attendance varied across practices. Some PMs suggested that GPs would prefer future sessions to be delivered within existing in-hours meetings, such as a regular clinical staff meeting. PMs also described encouraging participation where GPs were reluctant to take on further commitments, reflecting their own view of the program's value.

> *"Other programs. . . [required] too much time. . . there was a lot of. . . PDSAs (Plan–Do–Study–Act cycles), they were never. . . specific enough. . . what I liked about this. . . it was one goal. . . to prescribe according to the most current guidelines and to update your knowledge." (GP7, female)*

> *"I think anything that adds workload to the GP, you will immediately find. . . 'no thank you', push back, without appreciating. . . what benefits there might well be with that." (GP9, male)*

> *"If there was a presentation. . .through a Teams meeting. . . during a clinical staff meeting. . . lunchtime." (PM3, female)*

> *"But at the end of the day, the doctor said to me, 'can you stop enrolling us in things [research projects]'? We don't want to do it, we're too overworked'. But I thought the antimicrobial one would be really good." (PM2, female)*

Even where effort was low, engagement still depended on whether participation felt worthwhile. One GP felt that useful educational resources were not, on their own, a sufficient incentive to participate, and that something more compelling would be needed to motivate wider uptake among GPs. They suggested that linking participation to harder-to-obtain continuing professional development hours, such as the "reviewing performance" and "measuring outcomes" categories, would appeal to colleagues. Linking such activity to accreditation would similarly be acceptable where the process was automated and required little manual input. PMs described their own reasons for supporting participation. Where a PM was personally invested in the topic, this conviction translated into active championing of the program within their practice, suggesting they acted not only as gatekeepers but as motivated drivers of participation.

> *"Should be incentivized. . . a lot of my GP colleagues have expressed that they want to get those. . . harder-to-get continuing professional development hours, like 'reviewing performance', 'measuring outcomes'. . . I love Therapeutic Guidelines, but it's just not a tasty incentive for a lot of GPs to participate." (GP15, female)*

> *"Accreditation is a complete nightmare. . . it's just the worst. . . it puts so much pressure and so much strain on the clinic, it's just unbelievable. . . but. . . I guess if there's an automated process. . . [that produces reports on guideline concordance and]. . . show[s] that we're reasonably concordant, and then that ticks off a box on accreditation. That would be good." (GP8, male)*

> *"I don't always put forward all the requests to the doctors, but in this case, I did. I personally think, understanding the use of antibiotics is very important in healthcare." (PM3, female)*

3. Discussion

The findings of this study offer important insights into the factors shaping GP engagement with an integrated AMS intervention combining automated antimicrobial prescribing audits, provision of resources including paid subscription to national guidelines, and webinars in primary care. Rather than treating engagement as a matter of clinician willingness, this study identified the specific capabilities, opportunities, and motivations that influence whether such programs are adopted in routine practice and how prescribing behavior is shaped, using the COM-B model as a framework [17]. Many of these determinants clustered within the opportunity domain, encompassing data governance, clinical workflow, organizational structures for learning, and prescribing alerts within clinical software. This indicates that engagement cannot be determined by motivation alone; the structural and environmental conditions in which prescribing and learning occur are important. By mapping these determinants to behavioral mechanisms, the study identified modifiable factors that support translation of such initiatives into sustainable practice, rather than simply documenting barriers.

Time pressures, competing clinical priorities, and heavy workload were often identified as barriers to engagement with stewardship and quality improvement in general practice [18–20]. Professional isolation [21], a recognized feature in general practice that may be compounded where GPs work as contractors across multiple practices with unremunerated non-clinical time, may further limit opportunities for peer engagement and shared reflection that stewardship requires. This AMS program provided opportunities for GPs to interact with peers, both through moderated discussion during webinars and through subsequent discussion within practices, providing a mechanism for reflection and collaborative interpretation of audit findings. Interventions incorporating peer discussion of prescribing have been associated with improved guideline adherence and reduced antimicrobial consumption [22].

While no participant explicitly described AMS as low priority, behaviors such as triaging audit reports as non-urgent, perceiving it as an additional workload, and limited perceived incentive to engage suggest that AMS occupied a relatively peripheral position within the competing demands of everyday practice. This is unsurprising given that AMS remains poorly embedded in this setting [23], and even where stewardship is valued in principle, it is readily deprioritized when practices are under operational pressure [24]. Uptake depends on how well a program fits existing workflows and decision-making processes [19,25], and programs perceived as poorly fitted to context tend to generate skepticism [19]. Consistent with this, the timing of the webinars was raised as a consideration for future delivery, with sessions held outside consulting hours.

Participants identified incentives that might raise the priority of stewardship activity in general practice, including linkage to harder-to-obtain continuing professional development categories and to accreditation. AMS is not currently part of general practice accreditation standards, and automated auditing offers a means by which prescribing quality could be assessed at the scale accreditation would require, without adding substantially to practice workload.

The conditions under which audit data were collected, managed, and disseminated emerged as a foundational determinant of engagement. Within this program, GPs accepted the audit and feedback process and were willing to share their prescribing data, reflecting confidence in the delivering organization and its ethical oversight. This acceptance rested on clear governance structures, transparent data-use processes, and confidence that their data would not be used punitively. This is consistent with findings that clinicians resist audit and feedback perceived as judgmental or punitive [26,27], and that transparent oversight, clinician involvement, and explicit protection against secondary use of prescribing data are

prerequisites for acceptable programs [27]. Trust in the system managing the data must precede trust in the data itself. This was also scale-dependent; comfort with sharing data within this program did not extend to the prospect of a national benchmarking system, for which GPs set a markedly higher bar. Extending beyond this would therefore require governance arrangements to be renegotiated rather than carried over, making scaling as much a governance challenge as a technical one.

The acceptability of audit findings depended on how feedback reporting was handled; its interpretation, the educational support around it, and its personalization. GPs acknowledged that prescribing data cannot fully capture the complexity of clinical reasoning or the contextual factors behind individual decisions, yet still valued audit and feedback as tools for reflective practice. This is consistent with evidence that audit and feedback is most effective when shaped by design and delivery, with local interpretability and alignment with clinical context key to engagement [27]. Feedback that acknowledged the complexity of prescribing decisions, and that was accompanied by discussion, was more readily accepted.

Educational support was also central to how feedback was received. The distinguishing feature of this intervention was the active engagement that accompanied the feedback reports, and GPs who took part valued this as prompting reflection in a way that passive dissemination did not. Broader evidence suggests feedback must be contextualized and easily digestible, and that interactive, locally embedded approaches support translation into practice [22,28,29]. This input was delivered across successive audit cycles rather than a single session, consistent with evidence that single educational interventions are unlikely to consolidate prescribing improvements over the long term [30].

Structural limitations of existing clinical data infrastructure were also highlighted as a further challenge. GPs described the absence of linkage between prescribing and dispensing data as reducing the interpretability and perceived validity of audit findings, reflecting broader interoperability challenges well documented in Australian general practice. The sector operates across highly fragmented commercial EMR systems with inconsistent coding standards and data architecture [14,31], and national health interoperability planning has explicitly identified disconnected GP, hospital, and pharmacy systems as a significant barrier to seamless data exchange [32]. Some data limitations raised, however, reflected legitimate clinical practice rather than poor record-keeping; free text was valued as a form of documentation to enable clinical handover, and records were at times intentionally left incomplete through considered clinical judgement. Audit systems drawing on routine records must therefore accommodate how clinicians legitimately document care rather than treat it as error by default. GPs also noted that prominent on-screen alerts for rare but serious adverse effects could deter prescribing of specific guideline-recommended agents, indicating that prescribing alerts within clinical software can influence stewardship.

A recurring theme shaping engagement was the relationship between stewardship activities and professional autonomy. GPs expressed a clear preference for individualized decision-making over rigid adherence to prescribing targets, framing guideline recommendations as requiring flexible interpretation within the realities of clinical practice. Such flexibility was not always a matter of clinical preference alone; GPs described the expense of guideline-recommended antibiotics as influencing concordance in lower socioeconomic settings, indicating that some departures from guidelines reflected efforts to preserve access and adherence rather than disregard for best practice. Established prescribing routines were a further influence; even clinicians aware of stewardship recommendations described difficulty departing from longstanding habits, highlighting that awareness alone does not readily translate into changed behavior. This is consistent with evidence that AMS engagement improves when stewardship is embedded within practice culture rather than experienced as an externally imposed compliance requirement [33,34].

Feedback format also determined engagement. Individualized, clinician-level feedback was perceived as more meaningful than aggregated data and valued for supporting accountability, giving clinicians a basis to review their own prescribing where it diverged from peers, consistent with evidence that individualized audit feedback outperforms generic or team-level data [35]. This complements the earlier observation that peer-based approaches may be more effective for translating feedback into behavior change [22], suggesting that optimal stewardship design requires both individualized data for personal reflection and peer-based formats for collaborative interpretation. This reinforces that clinician involvement in co-designing stewardship indicators is important for maintaining professional trust and sustained engagement [27].

This study has several strengths; at the time of writing, it is one of the first to examine GPs' acceptance and perceptions of using automated auditing to assess antibiotic prescribing with timely reporting. The study drew on a diverse range of respondents, spanning differences in gender, clinical experience, and practice setting (including metropolitan, regional, and rural locations within Victoria), which strengthens the breadth of perspectives captured. A further strength was the inclusion of PMs, who act as gatekeepers to practice involvement and play a central role in supporting engagement and successful implementation [19]. Furthermore, some PMs appeared personally invested in the subject matter, and this commitment seemed to translate into active championing of the program within their practices, suggesting that they may function not only as facilitators of access but as motivated drivers of implementation. This is consistent with prior recommendations that PMs be involved in the planning and development of future quality improvement programs to help mitigate the challenges identified [19].

Several limitations should also be acknowledged. The voluntary nature of participation may have introduced selection bias, with respondents potentially more engaged with, or favorably disposed toward, stewardship than the broader GP population, and positive accounts of the webinars in particular came only from those able to attend. Members of the research team, including R.B. (who recruited participants, co-conducted interviews, and adjudicated coding discrepancies) and R.C. (who conducted the GP interviews), were also involved in program delivery, which may have influenced how openly some participants discussed aspects of the program. However, neither coder had existing relationships with participants prior to the program. APEX-PC was conducted only in the state of Victoria, and other implementation factors may be important in other states, although the sample did capture a range of metropolitan, regional, and rural settings, providing some variation in practice context.

4. Materials and Methods

4.1. Study Design

A qualitative exploration using semi-structured interviews was conducted from July 2025 to November 2025, overlapping with the final program webinar in November 2025; some participants were therefore interviewed before the last session took place. Participants were GPs and PMs in Victoria, Australia, who had taken part in the APEX-PC intervention; the latter were included to provide complementary administrative and organizational perspectives on AMS implementation.

Participants were recruited by R.B., a Senior Research Fellow (PhD) in primary care research, with a background in microbiology, at the University of Melbourne. All GPs and PMs from participating practices were invited to take part by email, with a further verbal invitation made during the second of the three program webinars. Interviews were scheduled with respondents as replies were received, with an initial target of 15 GP interviews. Two further GP interviews were conducted to confirm that no new themes

were emerging, and some GP respondents were not interviewed once this point had been reached. All PMs who responded were interviewed, yielding a final sample of 17 GPs and 5 PMs.

Prior to each interview, participants were provided with a plain language statement and given the opportunity to ask questions before proceeding. Participants were informed of their right to withdraw at any point without consequence. Interviews were conducted via videoconference (Zoom Video Communications, Inc., San Jose, CA, USA) and scheduled for approximately 60 min.

GP interviews were conducted by R.C., an AMS pharmacist and PhD candidate, and R.B.; PM interviews were conducted by K.S., a primary care research assistant, and R.B. R.B. has experience in qualitative primary care research; R.C. has training in qualitative methods; and K.S. has training in qualitative interviewing and analysis. All interviews were video- and audio-recorded with participant consent. Each interview was transcribed verbatim by R.C. and K.S. Written informed consent was obtained from all participants prior to data collection, including consent to collect demographic information. Demographic data were collected at the start of the interview as part of the interview schedule for all participants (gender, role, years of experience), with age range collected for GPs only.

4.2. The APEX-PC Intervention

APEX-PC combined automated auditing of antimicrobial prescribing using clinician-developed algorithms against EMR data with an educational component. Ninety-seven GPs from 31 general practices across Victoria participated in the program. Audits were conducted over three 3-month periods (July–September 2024, January–March 2025, and July–September 2025), assessing prescribing for cystitis, tonsillitis, otitis media, and dental conditions against Therapeutic Guidelines recommendations. Individualized feedback reports were distributed by email to participating GPs before each webinar. Education webinars with moderated discussion were delivered online in November 2024, June 2025, and November 2025, scheduled outside consulting hours and recorded for later viewing, an approach with learning outcomes comparable to in-person for-mats and greater scalability [36]. Participating GPs also received a paid subscription to Therapeutic Guidelines and a folder of information resources. The program was delivered by a multidisciplinary team comprising GPs (J.-A.M.-N., M.S.), a pharmacist (R.C.), infectious disease physicians (K.B., K.T.), a dentist (L.T.), and a primary care researcher (R.B.).

4.3. Theoretical Approach

This study was informed by behavioral theory. The TDF [16] guided the development of the interview guide, ensuring systematic and comprehensive exploration of the individual, social, and environmental determinants of behavior relevant to antimicrobial prescribing in general practice. The TDF was also used to support coding during analysis, given its granularity and established utility in organizing qualitative data relating to behavioral determinants in clinical contexts, including antibiotic prescribing in primary care [37–41]. While the TDF is well-suited to the depth of coding required in qualitative analysis, its fourteen domains are less conducive to presenting findings to a clinical audience.

We combined this deductive coding with inductive theme development, generating themes from the coded data before mapping these themes to the Capability, Opportunity, Motivation–Behavior (COM-B) model [17] for presentation. This hybrid inductive–deductive approach used the TDF as a coding scaffold while allowing themes to emerge from participants' accounts rather than being pre-determined by the framework.

4.4. Interview Process

For the interviews with the GPs, a guide was developed a priori based on the TDF and piloted by the researchers (R.C. and R.B.) with two GPs to ensure clarity and consistency. This comprised open-ended questions, allowing flexibility to explore participant perspectives in depth. Interview topics covered participants' overall experience of the program, the audit and feedback process and feedback report, the education webinars, and the information resources and Therapeutic Guidelines provided. Participants were also asked about their attitudes towards the automated system used to assess prescribing against guidelines, including preferences for manual versus automated approaches, the program's influence on their prescribing, and whether antibiotic prescribing audit and feedback should form part of accreditation. The full interview guide is provided in Appendix A.1.

A separate interview guide was developed in parallel for PMs. Topics covered the PM's role in the practice's decision to participate, their involvement in supporting GP engagement and recruitment, how the program fitted within practice workflow, and the strategies they found effective in supporting implementation. The PM guide was not separately piloted, but was adapted from a similar guide used in a previous evaluation of a pilot quality improvement program for antimicrobial prescribing in general practice [19]. The full interview guide is provided in Appendix A.2.

All interviews were conversational in nature, with the schedule used flexibly to allow participants to elaborate on issues of relevance to their practice context. Prompts were used where necessary to elicit detail on specific aspects of implementation experience. At the close of each interview, participants were invited to raise any additional observations or recommendations not captured by the structured questions. PM interviews were conducted concurrently with the GP interviews to capture complementary perspectives.

4.5. Data Analysis

R.C. and K.S. independently coded all transcripts using NVivo (QSR International, Burlington, MA, USA, version 15), mapping emergent data to relevant TDF domains. Discrepancies were resolved through discussion, with adjudication by a third researcher (R.B.) where consensus could not be reached.

Themes were then developed inductively through constant comparison across transcripts and refined through team discussion (R.C., R.B., and K.S.). Once finalized, themes were mapped to the COM-B model to classify behavioral determinants and support interpretation of findings. Data adequacy was assessed through team discussion rather than by counting new codes; by the final interviews, participants were describing experiences already well represented in the coded data, and no new themes were being developed.

4.6. Ethics Approval

Ethics approval for the study was obtained from the University of Melbourne Human Research Ethics Committee (Ethics ID: 2025-29044-65936-11).

5. Conclusions

Integrated AMS programs combining automated prescribing audits and timely feedback, with educational support, hold genuine promise for improving antimicrobial prescribing in general practice. Clinician engagement and acceptability appear achievable where key conditions are met. Trust in data governance, compatibility with clinical workflows, sensitivity to professional autonomy, and opportunities for collaborative reflection each emerged as important determinants of engagement. Future programs should therefore treat these not as secondary implementation considerations but as core design requirements, with co-design, sustained educational support, and careful attention to the operational

realities of general practice likely to be as important to program success as the clinical evidence supporting the intervention itself.

Author Contributions: Conceptualization, R.C., L.S., J.-A.M.-N., and R.B.; methodology, R.C. and R.B.; data curation, validation, investigation, formal analysis, writing—original draft preparation, and project administration, R.C., K.S., and R.B.; writing—review and editing, R.C., K.S., K.T., K.B., M.S., L.T., L.S., J.-A.M.-N., and R.B.; supervision, K.T., J.-A.M.-N., and R.B.; funding acquisition, K.T., K.B., J.-A.M.-N., and R.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Safer Care Victoria (State Government of Victoria) through the Antibiotic Prescribing Excellence in Primary Care (APEX-PC) project, a priority initiative under the Safer Together Program. The project was delivered in partnership with the University of Melbourne's Department of General Practice and Primary Care, National Centre for Antimicrobial Stewardship, and Therapeutic Guidelines. L.T. is funded by a National Health and Medical Research Council Investigator grant (ID: 2016647).

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Institutional Review Board (Human Research Ethics Committee) of the University of Melbourne (protocol code 2025-29044-65936-11 and date of approval 30 April 2025).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study. Written informed consent has been obtained from all participants.

Data Availability Statement: The data presented in this study contain sensitive information and are not publicly available due to ethical and privacy restrictions. Data are available upon request from the corresponding author with appropriate ethical approval and data sharing agreements in place.

Acknowledgments: We gratefully acknowledge all general practitioners and practice staff who participated in this study. During the preparation of this manuscript, the authors used Claude Opus 4 and 5 (Anthropic) to assist with editing, formatting, and refining the presentation of content. All authors have reviewed and edited all output and take full responsibility for the content of this publication.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design, data collection, analyses, interpretation of data, and in the writing of the manuscript.

Abbreviations

The following abbreviations are used in this manuscript:

AHPRA	Australian Health Practitioner Regulation Agency
AMR	Antimicrobial Resistance
AMS	Antimicrobial Stewardship
APEX-PC	Antibiotic Prescribing Excellence in Primary Care
COM-B	Capability, Opportunity, Motivation–Behavior
EMR	Electronic Medical Record
GP	General Practitioner
PBS	Pharmaceutical Benefits Scheme
PDSA	Plan–Do–Study–Act
PM	Practice Manager
RACGP	Royal Australian College of General Practitioners
SES	Socioeconomic Status
TDF	Theoretical Domains Framework
UTI	Urinary Tract Infection

Appendix A

Appendix A.1. GP Interview Schedule

Section	Script
Introduction	Thank you for taking the time to speak with us today and for completing the consent form. I'd love to hear about your experience participating in the Safer Care Victoria Antimicrobial Stewardship program. I'm particularly interested in any challenges you faced, what worked well, suggestions for improvement, and any stories you'd like to share. If at any point you feel uncomfortable with a question, please let us know, and we can skip to the next one. You are also free to stop the interview at any time. Are you ok with me recording this? (If written consent not received, add: Do you consent to participate in this interview and to provide demographic information?) Thank you. Do you have any questions before we begin? Great—let's start with a little bit about yourself (collect demographic information below): Name, age, gender, years of experience, role in general practice, e.g., principal GP, GP, registrar, sole trader or contractor, and special interests.
Overall experience	To start off with, I would like to hear about your experience participating in the program. PROMPT: How would you describe your experience with the audit and feedback process?
Audit and feedback	What are your thoughts on the feedback report? PROMPT: Were the results what you expected? Why or why not? Can you tell me more about what results you were/were not expecting? PROMPT: What aspects of the GP audit report, if any, would you like to see changed or improved? Is there anything you would add or remove? PROMPT: There are some limitations associated with how the prescribing was reported; some of this was contained in your report. How important do you think it is that these are included in the report? PROMPT: Are there any other limitations to the data that was fed back to you that you think need to be acknowledged? PROMPT: How should this be communicated in the report and the feedback webinar? We have talked a bit about the feedback report that was sent to you before the webinar. Are there any other ways that you might like to receive this information, e.g., more regular e-mail, portal that you can log into, general information without your specific prescribing information? PROMPT: Was receiving the feedback report before the webinar helpful? PROMPT: Can you tell us other ways you would like to receive feedback about your prescribing, e.g., email summaries, quarterly personalized reports?
Education webinar	We ran webinars in November and June. Can you tell me if you attended those? What made you attend/not attend? PROMPT: If you were not able to attend, have you had a chance to listen to the recording? Can you tell us about your experience with the education webinar? PROMPT: Did you find the information presented at the webinar useful? PROMPT: What were the take home message(s) for you? PROMPT: Any other reflections?

Section	Script
Resources	At the end of audit period 1, we provided all GPs with the Therapeutic Guidelines as well as a folder of information resources such as those from the Australian Commission on Safety and Quality in Health Care that might help guide GPs and patients in their disease management. Did you use any of the resources provided? Were you familiar with these resources before the program? PROMPT if 'No': Can you tell me the reason for this? Have used them previously? Did your use of them change as a part of this program? What are your thoughts on the information resources provided? Did you use the information resources provided after the first webinar? Why/why not? PROMPT: Which information resources did you find most helpful or useful? (for patients, for GPs) PROMPT: What other information resources do you think could also be helpful?
Technology	In our previous studies involving audit and feedback, clinicians manually reviewed patient records to assess antibiotic prescribing. This required significant time and effort. In this project, we were able to develop algorithms that ran over the electronic medical record data to see if the prescriptions matched up with the Therapeutic Guidelines recommendations. This helped to automate aspects of the auditing process. We would now like to discuss some ideas about how this automation using technology might evolve and how acceptable and useful it could be for you and/or for general practice in general. Firstly, were you aware that your prescribing was assessed by an automated system for this audit? PROMPT: Do you have a preference for manual or automated audits? Why? What are your thoughts or impressions on the reliability of results generated by an automated system in general? PROMPT: How important is it for you to know whether the results of an audit on your prescribing were assessed automatically or manually? PROMPT: How comfortable are you with this process? How much clinician involvement do you think is necessary, e.g., clinician input into system design, validation of the algorithms? This audit focused on four major conditions—cystitis, tonsillitis, otitis media, and dental conditions. Looking ahead, are there other conditions or perhaps, medications, where automated auditing algorithms could be applied that you might find useful? In the context of 'trust' in the system, do you think feedback from algorithm-derived audit results should be limited to certain medications or conditions? PROMPT: Perhaps those that you consider 'low risk'? If so, which ones come to mind, and could you explain why? As you might already be aware, findings from this audit are limited to the GPs that participated in the study and are not shared externally with other practices or the public. In the future, if practices across the country contributed information, without identifying individual patients or the prescribing GP, this could provide a national picture of prescribing trends. What are your thoughts on having a national secure system that allows GPs to contribute to, and learn from, de-identified prescribing data? PROMPT: What do you think might be some of the challenges with this? PROMPT: Could the results be misunderstood or misused? PROMPT: How could this kind of information be shared in a way that is fair and useful? PROMPT: How would you like to see this implemented? PROMPT: What are your thoughts around the concept of benchmarking?

Section	Script
Conclusion and general feedback	Now I'd like to get back to the study. How, if at all, do you think this initiative has influenced your prescribing? PROMPT: Has this experience influenced your view on the importance of having (free) access to national guidelines? PROMPT: Of the interventions you have been provided, audit and feedback, webinar and information resources, which one do you feel—if any—influenced change(s) in your prescribing behavior? Is this audit and feedback of antibiotic prescribing activity something you would like to see as part of accreditation? PROMPT: Should this just be a voluntary exercise?
	Any other comments?

Appendix A.2. PM Interview Schedule

Thank you for agreeing to talk to me about the implementation of Safer Care Victoria Antibiotic Prescribing Excellence in Primary Care (APEX-PC) in your practice. Information about this study was provided in the plain language statement for this study. Do you have any questions about this part of the study before we get started?

This session will be audio-recorded. I might also take some written notes as we talk. If you would like to stop the interview at any stage, please let me know.

How many years have you been a practice manager/practice staff?
How long have you been in your current role at the practice?
Can you tell me a bit about your role at the practice?

1. To start with, have you or your practice been involved in an antimicrobial stewardship program before? If so, can you tell me a little about that? If not, what about other quality improvement programs? Can you tell me about that?
    - I would now like to understand how the webinar sessions and audit reports were implemented in your practice. What worked well and what didn't. Please feel free to tell me both positive and negative feedback, it'll be very helpful in evaluating our study.
2. Can you tell me about the involvement you have in the practice in relation to Safer Care Victoria APEX-PC?
    - Prompts:
        - How would you describe your experience with the project?
        - Can you tell me whether you were involved in the decision for the practice to participate? How was the decision made?
3. Can you tell me about engagement of the GPs in your practice?
    - Prompts:
        - What challenges, if any, did you face in getting your GPs on board with the study?
        - How did you ensure that your GPs responded to emails and requests for webinar participation, completing evaluation form, or any other activities? Did you prefer us contacting you via email or phone calls?
        - Did the GPs talk about their feedback report in a group meeting?
        - Did the GPs talk about the webinar (post-webinar)?
        - Do you think your GPs were genuinely interested in the study?

- (For practices with some GPs not involved in the study) How do you think we could engage those GPs who didn't participate in the study?

4. How well do you think the program fits in your practice workflow?
   - Prompts:
     - Did you organize the feedback reports to GPs, webinar session booking, eTG, etc.?
     - Can you describe the process of receiving information from our research team, including forwarding emails to the GPs, or helping them book their webinar times, etc.?
5. What strategies or approaches did you find effective in coordinating the study implementation in your practice?
   - Prompts:
     - Were there any specific aspects of the implementation process that worked particularly well? Any improvements you can think of?
     - Are there any incentives that you think would be important to optimize participation?
     - What kind of support and resources from us do you think would have been helpful in facilitating a smooth process for implementing the study in your practice? (i.e., more regular check-ins?)
     - Given your experience with the current study, would you be willing to participate in similar studies in future?

That is the end of my questions. Is there anything else you would like to add before we finish? Do you have any suggestions or recommendations for improving the process of the study currently?

Thank you for your time.

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