

BMJ Open Strategies used in managing conversations about prostate-specific antigen (PSA) testing among family physicians (FPs): a qualitative study

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ABSTRACT

Objectives Screening for prostate cancer in healthy asymptomatic men using the prostate-specific antigen (PSA) test is controversial due to conflicting recommendations from and a lack of strong evidence regarding the benefit of population-based screening. In Canada and internationally, there is variability in how family physicians (FPs) approach PSA testing in asymptomatic men. The purpose of our study was to explore how family FPs approach discussions with their male patients around PSA testing in Manitoba, Canada. **Design** Qualitative descriptive study. **Setting and participants** High-ordering and median-ordering FPs were invited to participate in an interview. In addition to exploring practice behaviours around PSA testing, participants were asked to elaborate on their typical discussion with asymptomatic men who request a PSA test or other tests and procedures that they do not feel are clinically warranted. Data were analysed inductively using a constant-comparison approach.

Results There were important variations between high-ordering and median-ordering FP's approaches to discussing PSA testing. Strategies to facilitate conversations were more frequently identified by median-ordering physicians and often included methods to facilitate assessing their patient's understanding and values. In addition to decision aids, median-ordering FPs used motivational interviewing to tailor a discussion, organised their practice structure and workflow habits in a way that enhanced patient-provider discussions and leveraged 'new' evidence and other aids to guide conversations with men.

Conclusion We found that high-ordering FPs tended to use the PSA test for screening asymptomatic men with limited shared decision-making. Median-ordering FPs used conversational strategies that emphasised uncertainty of benefit and potential risk and did not present the test as a recommendation.

INTRODUCTION

Screening for prostate cancer in healthy asymptomatic men using the prostate-specific antigen (PSA) test remains a controversial and debated topic. The results of randomised-controlled trials (RCTs) vary with some

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ Semistructured interviews elicit data specific to the experience and opinion of the family physician (FP) allowing an in-depth investigation of their experience and perspective.
- ⇒ Purposive sampling allows the examination of a targeted group of FPs to gain an understanding of their specific perspectives and challenges.
- ⇒ A variety of biases may have influenced the type of 'role-play' scenarios FPs shared (eg, biases of availability, consistency, positivity, recency, self-service or selectivity).
- ⇒ Social desirability bias may have influenced how FPs described their routine approach to managing prostate-specific antigen or other tests requested by patients as well as the depth of those conversations during the interview context.

showing small reductions in prostate-specific mortality when using screening with PSA while others do not.^{1,2} Systematic reviews and meta-analysis of these RCTs have not demonstrated reductions in overall mortality with PSA screening.^{1,2} Further, PSA's high false positive rate results in invasive investigations as well as subsequent treatments. This leads to harm in the form of increased morbidity related to known side effects such as impotence and incontinence.³⁻⁷ Consequently, recommendations for PSA screening vary among professional and government organisations. Many guidelines recommend using PSA testing selectively with men based on age, risk factors and life expectancy and only after engaging in a shared decision-making (SDM) process (a thorough dialogue of the risks and benefits and relevant values/preferences of the patient).⁸⁻¹² Medical organisations focused on preventative care offer 'weak' recommendations not to use the PSA test for screening of asymptomatic men at any age⁹ or recommend leaving the decision up

to the patient once the benefits and harms of screening are jointly discussed.¹⁰

Several studies have demonstrated that many family physicians (FPs) continue to use the PSA test as a screening tool and that patients are not always able to clearly articulate their value preferences.^{13–17} Canadian studies demonstrate that screening practices vary across FP demographic groups¹⁸ and that screening rates appear to be rising over time.^{19 20} A 2017 review of Manitoba provincial data revealed that out of a total of 121,729 PSA tests ordered that year, 50% (61,009) were ordered by only 133/1997 physicians, the majority of whom were FPs (108/133) (Manitoba Provincial Laboratory Data, provided by Shared Health Manitoba, October 2018). When data from previous years through to 2018 were examined, this trend was consistent. In 2019, a survey was sent to the top 50 highest-ordering FPs as part of an unpublished quality improvement project, where most respondents (34/38) reported using PSA tests as a screening tool 50%–100% of the time.

In the context of improving patient care, avoiding overdiagnosis of indolent cancers in cancer screening and addressing variation in care, several studies have attempted to better understand PSA testing patterns. Previous research has identified common factors^{13 21–23} that drive PSA ordering behaviour of FPs in asymptomatic men and subsequently divided and assigned those factors into categories of ordering behaviour.^{15 24–26} Fewer studies have sought to provide a more nuanced explanation of how and why FPs test the way they do in order to make sense of the variations in practice.^{27 28} Our objective was to obtain a greater understanding of how FPs approach discussions about PSA testing with asymptomatic men. Specifically, we contrasted the approaches taken by FPs identified as high orderers versus those identified as median orderers in order to identify the barriers and facilitators as well as the strategies they use in their conversations with men for consideration in knowledge translation and quality improvement strategies.

METHODS

We used a qualitative description methodology in this research. Qualitative description seeks to provide rich descriptions of experiences, particularly when the goal of the study is to understand individual approaches to, or experiences with, a particular phenomenon.^{29 30} Qualitative description has been used frequently in healthcare research and for studies that seek to develop or refine interventions.³¹ We followed the consolidated criteria for reporting qualitative research checklist in reporting our findings.³²

Study design

We conducted a qualitative study using semistructured telephone interviews. An interview guide was developed for the purpose of exploring the types of conversations FPs are having with their patients around the use of PSA

testing (online supplemental file). The guide opened with demographic questions and then moved to specific questions related to the barriers and facilitators to holding discussions with patients around the risks and benefits of PSA tests. Embedded in the interview guide were two ‘role-play’ questions that were designed to elicit details about how the participants would typically communicate with patients. We also explored, as appropriate through conversational prompts, issues or circumstances identified in earlier interviews with subsequent interviewees.

Sampling and recruitment

This study used a purposive sample of FPs identified through Manitoba provincial laboratory data as being (1) the top 50 ordering FPs and (2) median-ordering FPs in Manitoba, Canada (figure 1). The high-ordering FPs ranged from 369 to 872 tests per year, with an average of 479 and a median of 470 tests annually. As described in the Introduction section, the 50 high-ordering FPs were mailed a survey as part of a Choosing Wisely quality improvement initiative conducted prior to this study. A total of 38 FPs responded to this survey and 23 of them provided their email addresses for further communication. They were contacted and invited to participate in this study. From this sample, 12 high-ordering FPs participated in semistructured interviews. They ranged from 369 to 658 tests per years, with an average of 489 and a median of 490 tests per year.

To provide a comparative group, a total of 140 median-ordering FPs were contacted and invited to participate in this study. Median-ordering FPs were identified as FPs with a PSA order number that was the statistical median of all Manitoba FPs. From this sample, 10 median-ordering FPs agreed to participate in semistructured interviews. They ranged from 11 to 16 tests per year, with an average and a median of 13 tests per year.

High-ordering FPs tended to be older, with more years of practice and were all men in contrast to those in the median group who were younger, had fewer years of practice and of whom half were women (table 1).

Data collection

Interviews with high-ordering FPs took place between September and October 2018. Interviews with median-ordering FPs took place between February and March 2019. All interviews were conducted by telephone, by SMD (a trained qualitative researcher with more than 20 years’ experience), and were audio-recorded, deidentified, transcribed verbatim and audio-verified for accuracy. Interviews with high-ordering physicians were on average 20 min ranging from 11 to 30 min. Interviews with median-ordering physicians were on average 20 min ranging from 9 to 31 min.

Patient and public involvement

This study did not include patient or public involvement.

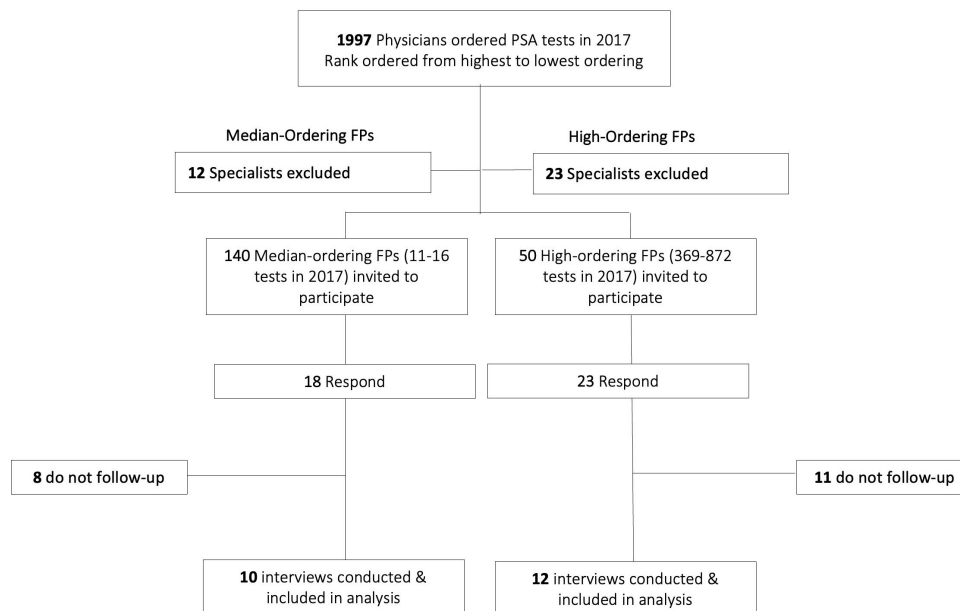


Figure 1 Sampling method. This figure describes how high-ordering and median-ordering FPs were first identified and later invited to participate in the study. FPs, family physicians; PSA, prostate-specific antigen.

Data analysis

Immediately following each interview, SMD documented detailed notes of impressions and early analysis of content from the interview. These notes informed the early analysis stage as well as identifying important areas for further exploration with subsequent participants. Audio-verified transcripts were imported into NVivo V.12 for analysis using a constant-comparative inductive coding process.³³ The qualitative team (SMD and RM) reviewed a subset of transcripts to develop a codebook before applying it to the transcripts. Coding categories focused initially on

surface descriptive content in order to organise similar types of comments across the interviews. These descriptively coded data were grouped into themes and data were explored for differences or similarities that arose from comments made by high-ordering or median-ordering FPs. Theme and result comparisons based on ordering behaviour were discussed by the broader research team consisting of FPs and clinician scientists with the aim to challenge any underlying assumptions, protect against premature closure of the coding process and assess overall agreement with how well results reflected clinical practice realities. A summary of key findings was shared back with participants with an opportunity to provide feedback to the research team. In these ways we ensured rigour in our analysis.^{34 35}

Table 1 Descriptive characteristics of participants

Variable	FP ordering patterns	
	High	Median
Gender		
Male	12	5
Female	0	5
Age (years)		
25–34	0	4
35–44	1	4
45–54	4	0
55–64	5	2
65+	2	0
Years of Practice		
<5	0	3
5–14	1	5
15–24	4	0
25+	7	2

FP, family physician.

RESULTS

Most FPs said that male patients regularly ask about the PSA test during routine visits. Likewise, most reported that they engaged their patients in some degree of discussion about the risks and benefits of PSA testing with time reported as the most frequent barrier. Other common barriers identified included men being primed for a PSA test by advertising from prostate cancer advocacy groups or news media attention, as well as if men had recent experience with someone being diagnosed with cancer. When asked about facilitators to having conversations with patients, FPs knowledge and experience were most frequently identified. Few FPs reported using infographics (eg, 1000 men) or decision aids as facilitators for these conversations. However, the discussion during the role-play provided important cues to better understand practice variation. We briefly describe how high-ordering and median-ordering FPs varied in their conversations



about the risks and benefits of PSA testing. We follow this with important strategies used by median-ordering physicians that could be used to help shift high-ordering behaviours toward PSA testing in a way that does not stigmatise or blame FPs.

Role-play scenario—the conversational spectrum

Seven median-ordering FPs and two of the high-ordering FPs engaged in comprehensive conversations with their patients about the risks and benefits of PSA testing, although high-ordering FPs placed less emphasis on risks and benefits and had minimal discussion about the efficacy of the PSA test. Higher-ordering FPs also tended to present the PSA test as something they routinely do as part of preventative healthcare, even if it is imperfect.

Usually, I tell them I'm going to be doing the PSA test on you. There's quite a bit of controversy about the PSA test, where most of the urologists don't feel that it's a really good screening test and the recommendation is that we don't do it, but I still do it. It's not a very good test, but, if it's elevated it obligates us to take a closer look at this to follow it, and it may or may not lead to biopsies. And with biopsies you run a slight risk of complications with that. Most people still choose to do the PSA test, even after I talk to them. (High-ordering FP, 25+ years of experience)

The median-ordering FP's conversation generally provided a review of the risks and the potential consequences of diagnostics and treatment processes that could follow a PSA test. While decisions to test were ultimately left with the patient, median-ordering FPs reported that most asymptomatic patients opted not to proceed with it. Median-ordering FPs tended to assess a patient's readiness for a conversation before launching into it. A conversation would then outline the implications and harms associated with different decision pathways following a test result.

I'd like to talk about prostate cancer screening, which is fairly controversial in medicine so if you're okay with it, I'd just like to talk about what the risks and benefits of us doing a PSA screening test are. If the PSA result is normal, it is reassuring. The problem is, if it's elevated [...] I would refer you on to a urologist who would assess if you need a biopsy of your prostate. There is a small number of men that benefit from a biopsy because we catch the very occasional cancer that we could have prevented, but we also know more men will be harmed by this test. For this reason, the Canadian Task Force and the American Task Force recommends against this test, and they recommend a conversation reviewing the risks and benefits. So, if you do [need] a biopsy there's some risk of infection, ICU stay and even death. And we also know that most men will die without ever knowing they had prostate cancer, but there are unfortunately some men that do develop prostate cancer and they do die from their

prostate cancer. [...] I don't have a crystal ball but knowing that we harm more men by doing this test, I do recommend against this test but [...] ultimately, it's your decision. If we don't decide to do it today, we can always do it in the future. (Median-ordering FP, 5–14 years' experience)

Three high-ordering FPs explicitly stated that they had no discussion about PSA testing at the ordering phase—with one saying that they only attempted a brief discussion if the patient was younger (~40 years). Two of these FPs specifically preferred to wait until the results of the PSA testing were in hand before having a discussion. They reported that it is easier to have conversations about risks and benefits when they have the results to anchor the discussion.

If they are in the 55 age category, I probably order it [...] even though I know there's a lot of false positives and overdiagnosis, it's still better to have those discussions after we know the non-invasive test results. (High-ordering FP, 15–24 years of experience)

Strategies for effective conversations: decision aids (DAs), assessing patient values, practice structure, leveraging evidence and other aids

While our interview guide was designed to inquire about common strategies (eg, DAs), many of the median-ordering FPs described other strategies without prompting and often included strategies to facilitate assessing their patient's understanding and values. In addition to DAs, these strategies included motivational interviewing to assess patient values, changing the practice structure (ie, initially scheduling longer appointments, deciding as a practice group a consistent approach to certain tests) and leveraging 'new' evidence and other aids to guide conversations with men. Table 2 summarises the strategies used to manage conversations about PSA testing between high-ordering and median-ordering FPs.

Decision aids (DAs)

Only one high-ordering FP reported using DAs to facilitate discussion, while another said they "usually hand it to patients". The remaining ten high-ordering FPs reported they did not use DAs, did not find them easy to use, did not know of relevant DAs to use, used their own knowledge instead of a DA or said that they wanted something like a DA they could give to or review with their patients. Another reported not using DAs because the guidelines "seem to keep changing", so did not see the benefit.

Median-ordering FPs reported that their conversations were helped with the use of DAs that exist specifically for talking about PSA testing/screening. Several median-ordering FPs mentioned the Canadian Task Force on Preventive Health Care's 1000-man graph³⁶ as helpful for communicating complex information around risk-benefits of PSA testing. One FP had it accessible on their computer to call up and show men during the discussion; its routine use was evident in how it was called up during

Table 2 Strategies used to manage conversations about PSA testing between high-ordering and median-ordering FPs

High-ordering FPs	Median-ordering FPs
Rarely use DAs	Frequently use DAs
Used the PSA test as screening tool and engaged in discussion if results required follow-up	Used motivational interviewing to better understand their patient's level of knowledge of the PSA test, risk tolerance and fear
Used their experience to guide testing strategies and the fact that no better test exists for prostate cancer detection	Leveraged other supports such as practice structure to enhance conversations (longer initial appointments, consistent approach between FPs in the same practice) and macros in the EMR to prompt future discussion
Relayed instances of potentially missed or delayed diagnoses based on their extensive experience	Used their recent experience to provide 'newest evidence' on the effectiveness of PSA tests

DAs, decision aids; EMR, electronic medical record; FPs, family physicians; PSA, prostate-specific antigen.

the interview for the role-play discussion. Not all median-ordering FPs used DAs. Two indicated their awareness of 'good' DAs for PSA testing, but they did not use them to facilitate discussions. Two others admitted that they were unaware of DAs or handouts they could offer their patients, with one noting that they did not have time to search out such DAs.

Motivational interviewing to assess patient values

Patient values were important to both high-ordering and median-ordering FPs, although they used different approaches to assess these. High-ordering FPs were less likely to explicitly assess patient values. They were more likely to be influenced by a patient's anxiety about prostate cancer and more likely to respond to this anxiety by ordering a test. Their perception of their patients' potential receptivity influenced the degree to which they engaged in risk-benefit discussions, or if they attempt it at all. High-ordering FPs viewed respecting a patient's wishes as a means to keep the patient at the centre of the clinical experience.

If the patient is either very anxious and, traditionally, sort of knows a lot from Google or had a friend who passed away from prostate cancer and is sure that they want the PSA then I think that me discussing it with him and trying to talk him out of it would not be very fruitful. So, I would probably just be more inclined to go with it' [order the PSA test]. (High-ordering FP, 15–24 years of experience)

Median-ordering FPs were more likely to explicitly inquire about the patient's perspectives of PSA testing which included assessing a patient's level of knowledge about the PSA test, previous experience, expectations, risk tolerances, fears and concerns. One FP shared that they use an approach of 'motivated questioning' to elicit patient values.

I review with them their worries. So, what are they looking to get out of the PSA? Will it help them sleep better at night? What are the questions? Do they have a relative or someone close to them who's been diagnosed with it, and they're really concerned about the outcomes? So, we review that a little bit and we discuss it [...] If they truly believe that it is something that they want and we've had the discussion, I order it. (Median-ordering FP, 5–14 years of experience)

Practice structure, leveraging evidence and other aids

FPs in the high-ordering group anchored their decisions on personal experiences of having 'been burned' in the past after missing a diagnosis or their approach was supported by experiences of detecting cancer in advance by using PSA screening. While aware that the PSA test is not perfect, they pointed to the fact that no better test exists and ordering the PSA test is inexpensive and simple to include as part of routine blood work. Median-ordering FPs, who tended to be younger, and in several cases, had recently joined a practice where they were replacing a retiring FP, reported introducing certain changes and workflow habits that supported them in discouraging PSA testing while still engaging in meaningful SDM with patients. These strategies were identified by individual FPs as opposed to being a set of strategies that were identified through data saturation. Table 3 provides some expanded context for these strategies which are listed below:

1. Longer initial appointments to allow for more discussion time (Q1).
2. Developing a consistent approach to routine testing and screening between physicians within a clinic to reduce variation in practice and enhance trust (Q1).
3. Leveraging status as a recent graduate to talk about the 'newest evidence and guidance' to gain trust and stimulate discussion (Q2).
4. The use of macros in the electronic medical record to prompt future discussion with patients who insist on regular testing.
5. Relying on supportive visual aids, like Choosing Wisely posters (Q3).

DISCUSSION

This qualitative exploration of how high-ordering and median-ordering FPs approach discussions about PSA testing with asymptomatic men found important variation in their approaches. While both groups of FPs left the final decision to test up to the patient, median-ordering FPs tended to have a conversation with their patients about

**Table 3** Strategies described by median-ordering FPs to manage conversations with patients

Strategy	Participant quotes
Practice structure: deciding as a group a consistent approach to testing, setting up longer <i>initial</i> appointments	(Q1): So I've come into a practice, all of us are new grads, the baton has been handed to us from fellows who were here for almost 60 years. You know, [patients have] had the same doctors for a long, long time who were from an older school who tended to say, "We'll, do this test" or "We don't do that one" and people just said, "Okay." And so, they're getting used to a new way of doing things and one of the things that we do is make people partners in their own health care by giving them the information that we're using to make these decisions. So that they can see that it makes sense, that we're not just throwing out an old test cause we're newbies, we've got a reason for this. So, they tend to respond fairly well because I'm giving them all the information, I'm not being authoritative and trying to get them on side. Sometimes they'll say things like, "Wow, no one's ever sat down and explained what these tests are for to me, thanks."[...] Because it is a closed/monopoly practice for the community, we came up with a common plan for approaching certain issues so that patients couldn't play physician against physician. Probably the biggest facilitator I think is just making the internal decision to do a thing a certain way and to do it that way every time even when it's inconvenient. So, I mean, I'm, again, I'm only in my first four years of practice, I have ideas of how things ought to be done and so I do them that way even when it puts me behind [...] that's why I'm still booking 20-minute appointments exclusively [even for non-physicals] because these things just show up. And so, it's got to be the willingness to sit down and have these conversations ad nauseam. (Median-ordering FP, <5 years of experience)
Leveraging 'new evidence'	(Q2): I present it as sort of new information even though I don't think it's that new so that it kind of makes it feel like, in my context that I am a young doctor who's filled with the latest book knowledge and no harm or foul from their old doctor or the doctor that retired, just things are different or there's new medical information that they might not have been aware of. And so that, I think, makes it feel like nobody's done any harm, nobody's done anything wrong we're just doing something different now because we have different information. And I think that helps patients not feel like, "Oh, it's this new doctor vs my old doctor" or it's this opinion vs that opinion. It's kind of like a, this is a, something that changed recently. And so, I think patients understand that change happens and so that's one of the ways that kind of I'm able to help us, help them appreciate their old provider and, but still move onto a new practice. (Median-ordering FP, <5 years of experience)
Other aids (eg, Choosing Wisely)	(Q3): "I have on my wall the four questions are from choosing wisely. Do I really need this test? What are the down sides? Are there simpler, safer options? What happens if I do nothing?" So just pointing out that even if we have a test for something that they wanted, it may not show what we want, it may show some incidental illness. And for the vast majority of time, at the end, they're like, "Yeah, okay, I get it. Maybe that isn't what we need at this point." And the beauty of being a family physician is you can say, "Well, we can do other things for now. We can just watch and wait and see how things goes." And keep that discussion open for the follow up appointment. (Median-ordering FP, 5–14 years of experience)

FPs, family physicians.

the risks and benefits of PSA testing. High-ordering FPs tended to present testing as something that was routine and overall reported less use of SDM approaches when deciding to test or not. Viewed through the lens of SDM principles,³⁷ patients of high-ordering FPs did not appear to receive the same amount of information exchange. In terms of an SDM approach to assessing values, both high-ordering and median-ordering FPs spoke of ways they assessed patient dispositions and preferences, whether through 'motivated questioning', reading patient cues or recalling a patient's past inclinations. Differences emerged in how that knowledge of patient worries influenced PSA screening discussions—where participating median-ordering FPs would respond with further discussion about the risks and benefits of PSA testing, while high-ordering FPs were more likely to default to ordering a PSA test to appease an anxious patient.

While there was variability in use of SDM principles, providers in both groups appeared to be using some of these types of strategies. Median-ordering FPs noted that their patients often positively received risk/benefit information and felt more confident about their decision, even if they still wanted a PSA test. The variability in discussion behaviour between FPs in high-ordering and

median-ordering groups supports evidence that many FPs have yet to adopt an SDM approach to screening with PSA,^{16 17} while use of SDM is becoming more common in recent years.³⁸ The use of DAs is another interesting difference between median-ordering and high-ordering groups. Median-ordering FPs were more aware of PSA-related DAs that exist and used them to facilitate screening discussions. FPs who used DAs appreciated how they translated complex abstract information into more meaningful usable knowledge for the patient—a process of knowledge exchange that has been confirmed elsewhere.^{39 40} High-ordering FPs used DAs less consistently and some were unfamiliar with the DAs that do exist.

Median-ordering FPs discussed other strategies to discourage PSA testing, such as agreement within the practice group around testing and screening, longer appointments and leveraging 'new' evidence that could be used by FPs regardless of age or years of practice experience. In these ways, changes in PSA testing behaviours can be positioned as 'new knowledge based on evidence', where the prior behaviour of an FP (eg, routinely ordering a PSA test for an asymptomatic man) could be acknowledged as appropriate for the time and that the 'new' recommendation (eg, against PSA as a screening test) is

the current best practice, particularly when supported by SDM process.

Variation in the way FPs approach to PSA testing has been identified by others and work has been done to better understand this variation through qualitative study.^{13 15 17 24–28} Pickles *et al*²⁷ systematically examined the relationship between FP's reasoning and behaviour in relation to PSA testing. They identified four heuristics to describe FP preference for and approaches to PSA testing and overdiagnosis and use these categories to help describe how and why FPs test the way they do. Pickles *et al*²⁵ also identified primary goals of FPs for sharing information with men about PSA. Building on this work, rather than further categorising FP behaviour and information goals, this study sought to examine the specific strategies high-ordering versus median-ordering FPs use to guide conversations about the use of PSA as a screening tool. This work contributes to the literature by comparing the specific approaches both high and median orderers use to approach PSA testing providing important insights that can guide the development of resources and knowledge translation strategies targeted specifically to high-ordering FPs.

This study has several strengths and limitations. Semi-structured interviews with 12 high-ordering and 10 median-ordering FPs allowed us to reach data saturation and provided us with rich data about the experience and perspective of these specific groups of FPs. To increase reliability in the research process, the data analysis involved input from FPs and the FP participants in the study were given an opportunity to comment and provide input into the results. Despite these strengths, the artificial nature of the interview setting could have contributed to social desirability bias where FPs, especially younger and more recent graduates, wanted to appear more comprehensive in their approach. It is uncertain if the specific sample used in our study is representative of all top and median-ordering FPs. Further, our sample was limited to the experiences of a small number of high-ordering and median-ordering FPs in a discrete geographical area (Manitoba, Canada) in a publicly funded health system which may limit generalisability. However, the ordering practices of our participant sample were influenced by many of the same factors identified in previous research including physician characteristics such as age and number of years of practice,^{21 22} the influence of past experience,^{21 22 27} the lack of alternative options for prostate cancer detection¹⁵ and anxious/insistent patients.^{14 21 23} Finally, we cannot exclude the possibility that some of the providers in the high-ordering group had more eligible patients. However, the responses from the survey and the interviews seem to confirm that the differences were more reflective of their approach rather than practice composition.

The results of this study and others^{25 27} point to the importance of recognising and understanding the significant variation in approaches that FPs are taking toward PSA screening in order to tailor solutions that support

evidence-based medicine. The principles of evidence-based medicine embrace a recognition of the patient's values, clinical judgement and relevant scientific evidence.⁴¹ Given the importance of DAs to guide discussions with patients within the median-ordering FPs, future research should continue to explore the tandem use and complementarity of SDM approaches and DA tools. In addition, implementation studies could examine the effectiveness of scaling up some of the approaches identified in this study in reducing potentially unnecessary care.

CONCLUSION

Examining the way high-ordering and median-ordering FPs approach discussions with patients offers several important insights to guide initiatives aimed at reducing PSA testing and potentially other types of screening. We found that high-ordering FPs tended to use the PSA test for screening asymptomatic men as their routine practice with less consistent application of SDM. Median-ordering FPs used conversational strategies that emphasised uncertainty of benefit and potential risk and did not present the test as recommended.

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Ethics approval This study involves human participants and was approved by the Health Research Ethics Board at the University of Manitoba (File No. HS21984(H2018:288)) on 6 July 2018 and amended on 18 October 2018. Participants gave informed consent to participate in the study before taking part.

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Data availability statement Data are available upon reasonable request. Data for this study consist of qualitative interview and focus group discussion transcripts. Uploading all transcripts for open availability would compromise our ability to fully mask participant details. However, it is possible to share anonymised portions of these transcripts upon reasonable request.

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