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Research

Patient and physician perspectives on shared decision-making for coronary procedures in people with chronic kidney disease: a patient-oriented qualitative study

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Abstract

Background: Patients with chronic kidney disease (CKD) and heart disease face challenging treatment decisions. We sought to explore the perceptions of patients and physicians about shared decision-making for coronary procedures for people with CKD, as well as opinions about strategies and tools to improve these decisions.

Methods: We partnered with 4 patients with CKD and 1 caregiver to design and conduct a qualitative descriptive study using semi-structured interviews and content analysis. Patient participants with CKD and either acute coronary syndrome or cardiac catheterization in the preceding year were recruited from a provincial cardiac registry, cardiology wards and clinics in Calgary between March and September 2018. Cardiologists from the region also participated in the study. Data analysis emphasized identifying, organizing and describing themes found within the data.

Results: Twenty patients with CKD and 10 cardiologists identified several complexities related to bidirectional information exchange needed for shared decision-making. Themes identified by both patients and physicians included challenges synthesizing best evidence, variable patient knowledge seeking, timeliness in the acute care setting and influence of roles on decision-making. Themes identified by physicians related to processes and tools to help support shared decision-making in this setting included personalization to reflect the variability of risks and heterogeneity of patient preferences as well as allowing for physicians to share their clinical judgment.

Interpretation: There are complexities related to bidirectional information exchange between patients with CKD and their physicians for shared decision-making about coronary procedures. Processes and tools to facilitate shared decision-making in this setting require personalization and need to be time sensitive.

Plain language summary: People with chronic kidney disease (CKD) often develop heart disease. Although heart procedures can improve outcomes of high-risk patients and reduce symptoms, patients and physicians must accept potential risks and weigh whether benefits are anticipated to exceed these risks. Shared decision-making is an approach in which clinicians and patients share best available evidence and work together to come to a decision informed by the clinician's expertise and the patient's values, goals, needs and preferences. In this study, we explore the perceptions about challenges to shared decision-making in this setting, as well as opinions about strategies and tools to improve these decisions. We partnered with 4 patients with CKD and 1 caregiver to design and conduct a qualitative descriptive study, analyzed thematically. Twenty patient participants with CKD and either acute coronary syndrome or cardiac catheterization and 10 cardiologists were recruited to participate. Patients and cardiologists both highlighted the complexity of information exchange, including the impact of variability in knowledge seeking and understanding by patients when discussing risks and benefits of procedures. Patients identified trust in the physician as key to their confidence in decision-making. Cardiologists identified the importance of their role in guiding patients towards evidence-informed medical decisions based on their clinical assessment of risks as well as patient values and preferences. Challenges and potential usefulness of decision aids were identified by both patients and cardiologists. Our findings suggest that processes and tools to support shared decision-making in this setting should be personalized to reflect variability of risks and patient preferences and allow for physicians to contribute their clinical judgment.

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Invasive management of coronary artery disease, including coronary angiography with percutaneous or surgical revascularization, can improve long-term outcomes of high-risk patients and reduce symptoms, but patients and physicians must accept potential procedural risks and weigh whether benefits are anticipated to exceed these risks.[1] The decision whether to pursue an invasive or medical approach to treatment for coronary disease may be particularly challenging for patients with chronic kidney disease (CKD) because, although rates of coronary events exceed 10 per 1000 person-years for people with CKD who are 50 years or older (i.e., high-risk status), these procedures may lead to worsening kidney function or precipitate a need for dialysis, and there is less certainty about treatment benefits.[2–6] As a result, treatment selection is substantially different for patients with CKD compared with other groups of high-risk patients. There is a 20% to 50% lower likelihood for patients with CKD to receive early (within 48 hours of admission) invasive management for non–ST elevation acute coronary syndrome (ACS)[7,8] when compared with similar patients without CKD.

Ideally, both patients and clinicians make important contributions to treatment decisions for ACS. Recent research on the decision-making preferences of patients admitted to hospital with myocardial infarction[9] reported that more than two-thirds of patients wanted to play an active role in decision-making, with most believing both patients and physicians share a role in arriving at treatment decisions. Despite this, patients have reported that they often experience challenges participating in acute care decision-making.[10] Shared decision-making is an approach in which clinicians and patients share best available evidence and work together to come to a decision informed by the physician's expertise and the patient's values and goals, needs and preferences, and risk tolerance.[11,12] Shared decision-making can result in treatment decisions that better reflect patients' goals, increase patient and physician satisfaction and improve outcomes.[11,12] It remains uncertain whether shared decision-making could be used to improve the decision quality and experiences of cardiac care for patients with CKD.

This qualitative study explored the perceptions of both patients and physicians about challenges to shared decision-making for coronary procedures in patients with CKD, as well as opinions about strategies and tools to improve these decisions.

Methods

To illuminate poorly understood aspects of experiences, we used qualitative descriptive methods[13] to conduct and analyze individual, semistructured interviews with patients with CKD who had experienced a non–ST elevation ACS or had undergone cardiac catheterization in the preceding year, and individual semistructured interviews with cardiologists experienced in ACS care.

Setting and participants

Patients were recruited from March to September 2018 from across Southern Alberta using the cardiac registry of the Alberta Provincial Project for Outcome Assessment in Coronary Heart Disease (www.approach.org), from the cardiology ward of a tertiary referral hospital (Foothills Medical Centre) and nephrology clinic (Sheldon M. Chumir Health Centre) in Calgary. Patients were eligible for inclusion if they had CKD with an estimated glomerular filtration rate (eGFR) of less than 45 mL/min/1.73m^2 before admission to hospital, and had been admitted to hospital with ACS or underwent cardiac catheterization within the preceding year. Purposive sampling, a type of nonprobability sampling, was used for the recruitment from CKD clinics intentionally to select some patients who had experienced acute kidney failure requiring dialysis after invasive coronary procedures for inclusion in the study.[14]

Patients who were 18 years of age or older and able to communicate in English participated in an in-person or telephone interview, including any family member or caregiver that they wished to include. Participating patients and family members or caregivers were provided an honorarium of $50.

Cardiologists were purposively sampled from the Cardiac Catheterization Lab at Foothills Medical Centre, Calgary, and invited via email to participate in an individual, semistructured interview. Physicians received no compensation for participating.

Sources of data

The interview guide (Appendix 1, available at www.cmajopen.ca/content/8/4/E860/suppl/DC1) was developed with input from patient partners, researchers and physicians (cardiologists and nephrologists) based on the Ottawa Hospital Research Institute needs assessment guideline.[15] Questions for patients explored reactions and decisions surrounding their cardiac care, including their perceptions regarding information provided to them at the time of the event and their role in decision-making. Cardiologists answered questions about their approach to decision-making for ACS care and coronary procedures of patients with CKD, and their own perceptions regarding practices, processes and tools for shared decision-making.

Interviews with patients or caregivers and cardiologists were 30 to 40 minutes in duration and conducted via telephone or in person at a location convenient for the participant. One research associate conducted all interviews to maintain consistency. All interviews were audio-recorded, transcribed verbatim and de-identified (except for patient or caregiver or cardiologist designation) before analysis. The data collection and analysis were iterative, and data analysis informed data saturation when no new descriptive themes emerged. Patient and cardiologist interviews ceased when saturation was achieved.

Patient engagement

Patient-oriented research engages patients as partners, focuses on patient-identified priorities and aims to apply the knowledge generated to enhance health care systems and practices.[16] Our study was supported by 4 patients with CKD and heart disease and 1 caregiver who met with other members of the research team on a recurring basis for the duration of the study and provided input to the program of research.

Patients partnered with us to inform the design of the study, study information material for patients and the interview questions for patients. Two patient partners (W.P. and C.C.) volunteered to participate in the analysis when invited to broaden the interpretation and credibility of the themes identified. Their perspectives were incorporated into interpretation of findings and they also contributed to coauthoring the manuscript and presenting at the Can-SOLVE CKD annual meeting (www.cansolveckd.ca).

Data analysis

Three research associates (J.F., P.A.J. and T.W.) inductively analyzed all 20 of the patient or caregiver and 10 cardiologist transcripts using qualitative content analysis.[17–19] Each research associate independently reviewed the transcripts word-by-word, highlighting the precise words that appeared to capture crucial concepts and then making notes of the main impressions and thoughts to develop codes using NVivo software. The research associates then met with the principal investigator (M.T.J.) on a monthly basis to discuss and reach consensus on emerging codes and grouping and to organize themes and create meaningful clusters. Research associates met after coding the first 5 transcripts to finalize the coding scheme, and the agreed upon codes and themes were systematically applied to all subsequent transcripts.[20,21] Themes, their descriptors and representative quotes were reviewed with patient partners (W.P. and C.C.) to ensure that their own experiences were reflected in the data.

Ethics approval

The University of Calgary Conjoint Health Research Ethics Board approved the research project (CHREB no. 150476).

Results

The demographic characteristics of 20 patient and 10 physician participants are provided in Table 1 and Table 2, respectively. The patients interviewed were 42 to 83 years old and included 5 (25%) women and 1 caregiver. Cardiologists interviewed had been practising from 3 to 37 years.

We categorized themes and subthemes according to current practices and perceptions of shared decision-making, and recommendations and challenges to be addressed for future development of decision aid tools (Figure 1). An overarching theme related to the complexity of bidirectional information exchange required to achieve shared decision-making in practice emerged from integration of both patients' and cardiologists' perceptions, whereas a second overarching theme about implementing processes and tools to support shared decision-making arose from cardiologists' perspectives. Exemplar quotes are provided in Table 3.

Complexity of bidirectional information exchange

Communicating best available evidence

Cardiologists identified the complexity of the information provided in the discussion about invasive versus medical management as a challenge to practising shared decision-making. In an attempt to reduce the density of information provided to patients, cardiologists described simplification of their presentation of risks as "high, medium or low risk" of requiring dialysis "acutely" and "long term". It was "often quite difficult for patients, particularly the elderly, to understand the risks." Patients, too, said their understanding of the risks and benefits was limited. For patients, what was important was that the problem be fixed; that the cardiologist should "do what you need to do."

Table 1: Characteristics of patients (n = 20) with acute coronary syndrome or cardiac catheterization in the preceding year*

Characteristic	No. (%) of patients†
Age, yr	
Mean ± SD	65.2 ± 11.4
Range	42–83
Sex	
Male	15 (75)
Female	5 (25)
Previous consults with a cardiologist	
Yes	16 (80)
No	4 (20)
Frequency of previous cardiology visits	
Not at all	4 (20)
Less than once per year	5 (25)
Once per year	7 (35)
More than once per year	4 (20)
Previous consult with a nephrologist	
Yes	14 (70)
No	6 (30)
Frequency of previous nephrology visits	
Not at all	6 (30)
Once per year	5 (25)
More than once per year	9 (45)
Years with kidney disease	
< 5	6 (30)
5–10	5 (25)
≥ 10	4 (20)
Not aware of kidney disease	5 (25)
Acute kidney injury requiring dialysis	
Yes	4 (20)
No	16 (80)

Note: SD = standard deviation.
*Four patients were recruited from a cardiology ward, 4 patients from a nephrology clinic and 12 patients from a cardiac registry. The characteristics of 1 patient was provided by a caregiver.
†Unless stated otherwise.

Variable patient knowledge seeking

Although the cardiologists emphasized the volume of information they felt they needed to provide patients for shared decision-making, patients varied in their levels of knowledge seeking and desire for this information. Many stated they had been given all the information they needed to make an informed decision and were satisfied with the explanations the cardiologists provided. For those patients who wanted more information before making a treatment decision, some cardiologists identified additional steps they would take to meet their patient's information needs, such as obtaining a consult from nephrology to discuss risk to kidney health.

Table 2: Characteristics of physicians (cardiologists) (*n* = 10)

Characteristic	No. (%) of physicians*
Sex	
Male	5 (50)
Female	5 (50)
Years in clinical practice	
Mean, range	14.4 (3–37)
Percent of time in clinical practice	
25–50	4 (40)
> 50	6 (60)

*Unless stated otherwise.

Some patients who reported worsening kidney function after angiography said they would have wanted more information on these possibilities and risks and to be made aware of the impact that being on dialysis would have on their lives.

Feasibility of shared decision-making in the acute care setting

Both patients who had experienced ACS and cardiologists spoke about the difficulty of practising shared decision-making in the face of a stressful, life-threatening acute condition. Cardiologists acknowledged the impact of patients needing more information and discussion time. They spoke of the possibility that delayed decision-making might increase the potential risk of adverse effects while the patient was trying to decide. Nonetheless, cardiologists described the importance of scaling information appropriately, giving patients the opportunity to ask questions, and proving sufficient time to digest information.

Patients, too, spoke about limitations in their own ability to process information, of being "pretty sure" they knew what was happening, but not "100%." Patients were aware time was a factor. Some patients perceived that decisions were

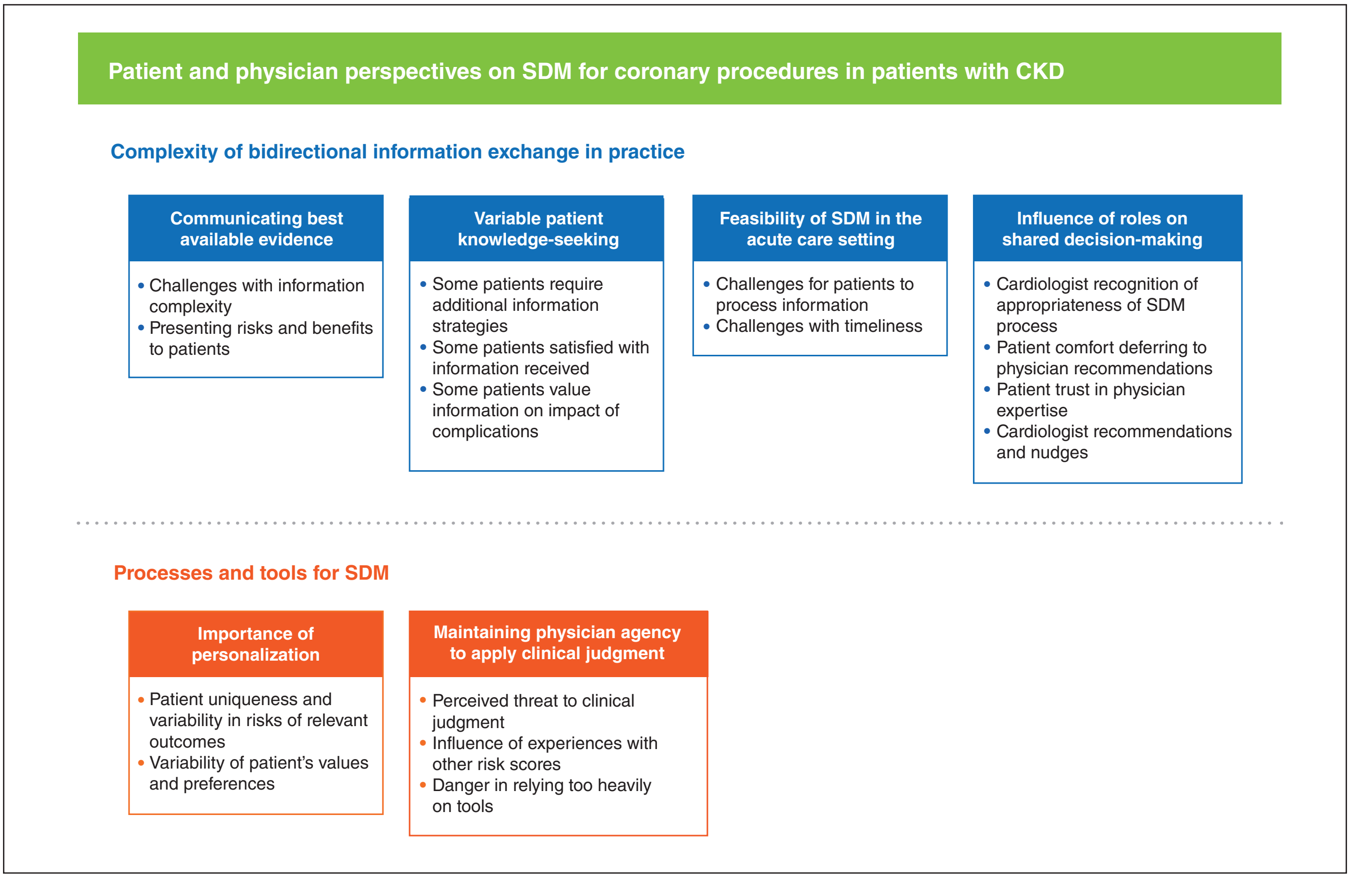

Figure 1: Major themes and subthemes identified from analysis of interviews with patients and physicians. Note: CKD = chronic kidney disease, SDM = shared decision-making.

primarily made by their care providers, but acknowledged they were still provided with information and explanations.

Influence of roles on shared decision-making

Several patients perceived that they "didn't really make the decision" or they "went along with" the cardiologist's recommendation. This was attributed to patient perceptions of the cardiologist as the expert and the comfort patients expressed in thinking "the doctor should decide." Patients spoke about trust in the expertise of the cardiologist, and confidence that any actions taken by the cardiologist would result in the best care.

Cardiologists acknowledged that they provided nudges in one direction or another, providing the patient with recommendations as to which option they felt would be most appropriate. Cardiologists described providing "a recommendation as to which one I feel would be medically the most appropriate," and in particular that "when you are at clear ends of the spectrum you tend to encourage." Nudges, however, did not eliminate the importance of a discussion, from the cardiologists' perspectives. Cardiologists were particularly open to patient input in situations of equipoise in the decision when "the patient's voice becomes much louder" and cardiologists endorsed a greater dependence on their patient's values and preferences.

Processes and tools for shared decision-making

Importance of personalization

Cardiologist emphasized potential value to improved processes and tools such as risk scores and decision aids to support shared decision-making. Importantly, they felt these should address patient uniqueness, based on different risk factors for relevant outcomes, and to help support a shared understanding of patient values and preferences.

Cardiologists spoke about each patient as a "complete individual," and of the many considerations that factor into their recommendations. Cardiologists considered a wide range of individual factors, including the patient's age, comorbidities, current level of kidney function, potential to benefit from revascularization and the patient's treatment preferences. Cardiologists reported they placed "particular importance on the patient's kidney disease," and whether the patient recognized that dialysis was a possible outcome.

Maintaining physician agency to apply clinical judgment

Cardiologists were concerned that implementing processes and tools to support shared decision-making could threaten their agency in using their clinical judgment when recommending a course of action with patients. This perspective was influenced by their experiences using other risk tools available to them in cardiology. They expressed preference to evaluate the situation by meeting each patient and determining whether tools would be helpful with that particular patient to determine their risk.

Cardiologists expressed caution against overreliance on tools. Cardiologists did not want "the decision completely taken out of their hands" and were concerned about the potential to depend on risk estimates and then not use their clinical judgment or "look at the patient as a whole."

Interpretation

Both patients with kidney disease and cardiologists recognize the desirability of shared decision-making when deciding whether or not to select invasive management for ACS or another cardiac indication.[7,8] However, cardiologists and patients identify several challenges in practice, particularly with respect to complexities of bidirectional information exchange in this acute context. This setting poses challenges for physicians in how they communicate risk information and for patients in their ability to process information quickly and under duress of illness, understand terminology regarding procedures, and understand the meaning of being at risk.[22,23] Despite some feeling that they had limited influence on the decision, patients identified trust in their physician, and respect for the cardiologist's expertise and guidance as key to their confidence in decision-making. Cardiologists indicated that processes developed to support shared decision-making in this setting need to allow for physician agency and clinical judgment, and that decision aids (tools to support shared decision-making) need to address the individualization of patients in assessment of risks and consideration of patient values and preferences.

Our findings add to evolving knowledge on the practice of shared decision-making in acute cardiac care. Three factors that determine the appropriateness of shared decision-making include clinical equipoise, the patient being capable of making a decision and that sufficient time is available.[24] We found that cardiologists placed greater value on their patient's voice when they were less certain about whether net benefits exceeded risk for their patients with CKD. This finding may reflect the challenges physicians face to individualize the risks and benefits to individuals with CKD in this setting. Better information strategies may be needed to apply knowledge in this setting,[4–6,8] as shared decision-making can be most valuable when the information needed to understand risks and benefits is available.[25] Additional tools such as decision aids were perceived as a potentially useful strategy to address these barriers by reducing the time it takes to determine and communicate risks and benefits, while increasing patient understanding, provided they support physician and patient agency over the final clinical decision.

Other studies exploring shared decision-making in emergency care settings have found that although patients place high value on the opinion and expertise of the physician, they either wanted some degree of involvement in decision-making, or would have benefited from involvement.[26,27] Our findings highlight similar needs to develop processes and tools that address individual patient values, ensure timeliness of decision-making and respect cardiologist expertise and judgment within the shared decision-making framework in this setting.

The findings of our study have implications for clinical practice of shared decision-making for ACS, and for future researchers and health policy-makers interested in developing processes and tools to support shared decision-making in this context. Our findings suggest that strategies and tools for shared decision-making in this setting should be tailored to patient uniqueness and variability in values and preferences, and

Table 3 (part 1 of 3): Selected exemplar quotes from patients and physicians

Theme or subtheme	Illustrative quotes
Complexities of bidirectional information exchange	
Communicating best available evidence	
Challenges with information complexity	The discussion about invasive versus medical management is a difficult discussion, and it's often quite difficult for the patients to understand why you would proceed with medical management as opposed to why would you just open up if there is a narrowing there? That is often hard to communicate to the patient. (Physician 1)
	I think it's important to involve the patient, but I think it may become overwhelming for the majority of my elderly patients in particular. (Physician 5)
	It's a really complex question because patients present in such a wide variety of situations, so a lot depends on the acuity with which they come in. (Physician 6)
	I was told at some point earlier, either I read it or I was told … that an angiogram would be destructive to my kidneys. … and I had a choice: fix my heart, kill my kidneys, and live; not fix my heart and not live. (Patient 4)
Presenting risks and benefits to patients	I don't usually give the patient numbers … you have an X percent chance of ending up on dialysis. I usually will quote them a high, medium, or low risk of both needing dialysis acutely, as well as acute or permanent injury to their kidney, and then another risk for their need for long-term dialysis. (Physician 5)
	In terms of patients with kidney disease, then the way I present it depends on what your GFR is before you go, but there is a risk. (Physician 8)
	I don't remember being told there would be any risks. It was just, my thought was just do what you need to do. I don't look at that as a risk or anything like that. Like you've got to know what's wrong with it in order to fix it. (Patient 2)
	It would have been more appropriate to have had that information from the cardiologist. I went through a bunch of tests and if at some point along that continuum, I had received a "you may need an angiogram and you have chronic kidney disease and here are the implications, be ready." (Patient 9)
Variable patient knowledge-seeking	
Some patients require additional information strategies	There would absolutely be people who would benefit from that, no question, and there will absolutely be people who won't benefit from that. It's not just about the information, right, it's about getting the desired information to the right frame. (Physician 7)
	The issue for me is I wasn't psychologically prepared for dialysis, so it came on, even though I intellectually knew it was going to happen someday, I wasn't anticipating it right away. (Patient 1)
	Because the psychological effect of going in there with all the follow-up appointments and all the issues that came up because of my kidney, I think it just makes sense to have all the information available before. You know, I was a tough case because you don't think it will happen to you, but it does and you have to live with it and, you know, I think I made the right decision. But being provided with more information is always better for everyone who's going through this issue. (Patient 18)
Some patients satisfied with information provided	I mean, I got all the information I needed and that pretty much ruled out everything … and then just went from there. (Patient 7)
	I can't think of anything that would have, I can't really think of anything that I needed to know that I didn't know. I was very satisfied with the explanations that were given to me. (Patient 15)
Some patients value more information on impact of complications	The only thing: more information on possibilities, the risks. (Patient 18)
	I would have loved to know if there was going to be any effects, specifically because it is such a serious procedure. I would have liked to know if there was going to be an impact. But no, I was not provided that information. (Patient 19)
	Maybe a pre-op meeting to discuss other instances of things that could go wrong in the procedure, and other things that could happen like kidney disease. I think it's really important to inform people on specifically what every possible situation that could come out from you having it. (Patient 16)
Feasibility of shared decision-making in the acute care setting	
Challenges for patients to process information	Inability to process the information. When you are presenting information in that setting, they may completely forget that it was ever offered to them or it may appear as a kind of barrier or a wall. … It has to be scaled right. (Physician 2)
	I mean it partly comes down to peoples' personalities. Some people need more time to digest stuff than other people. So you have to give the patients the opportunity to ask questions, and time to digest the information. (Physician 9)
	I guess I was sick, I don't remember. I assume they asked me about it and I told them to go ahead because if I needed a stent or something then they would do it at that time I guess — angioplasty or something. I don't know. I was so sick, I don't remember. (Patient 6)

Table 3 (part 2 of 3): Selected exemplar quotes from patients and physicians

Theme or subtheme	Illustrative quotes
Complexities of bidirectional information exchange	
Feasibility of shared decision-making in the acute care setting	
Challenges with timeliness	I can see that sometimes things are delayed … . And, if the patient needs more information and needs more discussion time … then that takes a lot more of your time … . But, it could also lead to them perceiving that things took a lot longer … . And then there is always the risk of an adverse event occurring while you are trying to decide whether or not you want to do something or not. (Physician 4)
	That decision was likely made by the emergency department attendants at the time. It wasn't made by me. … but I do recall him informing me of the situation, what was happening, and what their plan of attack was. It wasn't as though they just did it without any kind of consultation with me. (Patient 10)
	The situation was an emergency. There wasn't a lot of time to make decisions you know. You don't have the option or the luxury or the benefit of having a lot of time to make different decisions. (Patient 14)
Influence of roles on shared decision-making	
Cardiologist recognition of appropriateness of shared decision-making process	I will always come with what my preference is and sometimes it is a true 50/50, but ultimately the decision is the patient's to make. (Physician 4)
	I think information is power for the patients. (Physician 8)
Patient comfort deferring to physician recommendations	I didn't really make the decision, but the big thing is, wouldn't you do it if you knew you could live longer? Even though I was worried that my kidneys could get damaged. The possibility of extending my own life was a bigger priority. (Patient 8)
	So they more or less did what was necessary and I just went along with it. (Patient 12)
	All of a sudden I'm flying out to Calgary to take a look at my heart and going through the same thing I saw my dad go through … . I guess I'm relying on the doctors 100% and the nurses and all the medical staff. (Patient 16)
	Actually my doctor told me it is the best way to know and I just wanted the best care. (Patient 12)
Patient trust in physician expertise	In going through all of this process, and explaining these aspects, what it does is that it creates a situation of trust, I think, between the patient and the physician. So as you get to those grey areas that are really harder for the patient to understand, they are more willing to trust your interpretation. … And they are always judging your perception versus theirs and back and forth of testing that. And when you get to those grey areas … you want to first know that you can trust the guy who is giving you advice. (Physician 2)
	When you are having a heart attack or when you've had a heart attack and you are in the hospital, you trust the doctors and whatever the procedure they feel would be the way to go to help you; you know, you go along with it because you don't know any better … . when they decide that an angiogram was a good idea, well I just thought OK, let's do it. (Patient 16)
	Doctor's suggestion. I believe he's the expert and he knows better than me. (Patient 20)
Cardiologist recommendations and nudges	I think if there is a clear-cut benefit one side or the other then I would often try to talk to the patient about risk–benefits, and why we would think that one is of greater benefit than another approach. (Physician 2)
	After going through with the patient the situation and looking at all the various risks, I would have a conversation with them about the pros and cons of both strategies. I would generally have a recommendation as to which one I feel would be medically the most appropriate, but we would have a conversation about it. (Physician 4)
	I believe the situation is such that there will be a strong benefit from proceeding, I'm going to present it in that way … If I think the risk is very high, I'm going to present it that way. If there is some equipoise in the decision, well then the patient's voice becomes much louder. So when you are at clear ends of the spectrum, you tend to encourage. When you are in the middle, you say OK, what do you think about this? Then their feelings about it become much more important because my understanding of the benefit is less clear. (Physician 9)
	I always tell the patients, I'm going to give you the information, I'm also going to tell you what I think you should do … If I don't offer an opinion I'm not sure how useful I am to them. So I give them the information, I tell them what I think they should do based on the relative risks of the 2 options. (Physician 10)
	Well, he just explained that this was probably the best route to go or to at least to rule out some other things, whatever he thought and that was it. (Patient 5)
	Yeah, at that time from what I can recall, the doctor just basically said this is what the best procedure is to get the most accurate information from your heart and what it's doing and that was it. (Patient 13)

Table 3 (part 3 of 3): Selected exemplar quotes from patients and physicians

Theme or subtheme	Illustrative quotes
Processes and tools for shared decision-making	
Importance of personalization	
Patient uniqueness and variability in risks of relevant outcomes	Everybody comes in very uniquely and everyone's a complete individual. Like, there's not a cookbook recipe for everyone in general. (Physician 3)
	It's kind of multifactorial things that go into my head when I speak to these patients … it's not just one thing. (Physician 4)
	The things that factor into what I would recommend to a patient are the age of the patient … the comorbidities that patient has. (Physician 9)
	Having a sort of patient information material is often very helpful. Some patient educational materials that might help you frame the conversation might be very helpful. (Physician 6)
	It also changes depending how bad their renal function is, so obviously if their GFR is 50 I don't worry about it too much. Whereas if their GFR is near the line of requiring dialysis, I think about it more carefully and I also base that on what their wishes are from their goal of care, would their life be done if they ended up on dialysis and they would never do that. (Physician 8)
Variability of patient's values and preferences	For patients who are willing to accept dialysis, should it ever become an issue, we talk a little bit about the lifestyle changes that are going to happen if that becomes necessary. But really the issue for most people is what is their priority? Ultimately they have to decide what they are comfortable with. (Physician 5)
	I think you have to take into consideration the context. If you have somebody who says — in no way, shape or form I am ever going to agree to dialysis — and you know that you can be speeding that up. Each is unique, and it's important to have the dialogue with the patient. (Physician 8)
Maintaining physician agency and clinical judgment	
Perceived threat to clinical judgment	A lot of physicians, myself included, also don't want the decision completely taken out of our hands. (Physician 1)
	I personally don't use a risk score per se. I evaluate the situation with each patient and determine clinically whether, how high is their risk, basically. (Physician 4)
Influence of experiences with other risk scores	We use a lot of different risk predictors. So fear would be that people would depend on that and then not use their clinical judgment or look at the patient as a whole anymore … . So could it be helpful? Yes, I think it could be helpful but also think there is room for error and abuse. (Physician 2)
Danger in relying too heavily on tools	I just wouldn't want it to become a tool where we stop thinking because the tool says so. Like relying on the tool and stopping to examine the situation ourself, that would be one of the dangers I would see in that. … Well, the only drawback ... I wouldn't want people to rely only on that tool. (Physician 7)

Note: GFR = glomerular filtration rate.

incorporate physician agency and clinical judgment, which were perceived as important by both patients and physicians.

Future strategies in this area could focus on developing decision-aids that provide individualized information about the risks of kidney and heart disease outcomes, and include information on the impact of these outcomes, such as the need for temporary or permanent dialysis on quality of life. Given the important role that cardiologists play in guiding these decisions, physicians should be a target for training on the practice shared-decision making and use of decision-aids with patients.

Limitations

Our study included the perspectives of both patients and physicians, and representative recruitment ensured that we heard from patients without adverse events, and some who experienced kidney complications, including kidney failure requiring dialysis after invasive coronary procedures. However, there are some limitations to the study.

First, findings reflect only those of general decision-making experiences in the acute care context, so may not be similarly applicable to those who had unique decisional conflicts arise in their care. Second, our study was conducted at a single centre in Canada, which may have limited transferability to care in other regions and in other cultures. However, we included patients from rural and urban residences to address these groups' perspectives, and participant demographic characteristics and care models from our study are similar to those elsewhere in Canada and other high-income countries. Third, patient participants were predominantly older men, so perspectives of women and younger patients with CKD were underrepresented. Fourth, we included 2 groups of patients with CKD; those who had ACS in the past year and those who had coronary catheterization for an indication not related to ACS; however, we did not distinguish whether patient and physician perspectives differed in those 2 scenarios. Finally, we recognize that patient experiences were likely influenced by how their own care providers practised, and this study cannot answer how patient experiences, decisional conflict and their preferences would be influenced by different clinical decision-making approaches. Alternative study designs are required to understand how patients' preferences may vary, and the impact that processes and tools to support shared decision-making may have on their experiences with care.

Lessons learned from patient engagement

We used a patient-oriented research approach based on the Canadian Institutes of Health Research Patient Engagement Framework[16] and benefited from the lived experience of our patient partners with CKD and heart disease. Involving them from the start of the design of the study helped us to tailor our study questions and materials to our patient study population, and reviewing the analysis of interviews with them strengthened our confidence in the relevance of the themes that emerged from the research. Although working with our patient partners required additional time and planning, we were better able to synthesize findings and identify implications for improved future care from both the patient and physician perspective, which is fundamental to the practice of shared decision-making. Patient partners have also played an active role in dissemination of our findings to other researchers, clinicians and policy-makers attending an annual CKD meeting.

Conclusion

We identified several complexities related to bidirectional information exchange needed for shared decision-making about coronary procedures between patients with CKD and their physicians, including variable patient knowledge seeking and feasibility in acute care. Processes and tools to support shared decision-making in this setting should be personalized to reflect variability of risks and patient preferences and allow physicians to maintain their agency and contribute clinical judgment.

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