



Factors influencing patients' receptiveness to evidence-based recommendations during the clinical encounter

Journal of **Comparative Effectiveness Research**

Aim: To identify the factors that promote or interfere with evidence-based clinical decisions from the patient perspective. **Materials & methods:** We developed four hypothetical scenarios with clinical decisions, such as whether to pursue testing for a chronic condition. We conducted eight focus groups to better understand the influences on individuals' decisions in the context of the scenarios. **Results:** A patient's relationship with a physician emerged as the strongest influence on whether participants would accept or reject a physician's recommendation. Various patient characteristics and a patient's financial capacity were also important influences. **Conclusion:** Our findings point to the potential for interventions that improve communications and relationships between physicians and patients to promote evidence-based care.

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First draft submitted: 1 November 2016; Accepted for publication: 10 January 2017; Published online: 28 February 2017

Keywords: *Choosing Wisely*[®] • evidence-based medicine • healthcare decision-making • informed decision-making • patient trust

The US healthcare system is characterized by high spending that is not correlated to higher quality care [1], driven by the overuse of high-cost and low-value services [2] as well as underuse of high-value services [3]. The provision of evidence-based care depends on both the physician's and patient's behavior within the medical encounter. Although it is desirable for physicians and other clinicians to recommend services that have demonstrable benefit, they often deviate from this ideal. Physician decisions are influenced by a variety of factors, including the physicians' practice setting, the local healthcare delivery system and patients' expectations and constraints [4]. Patients play a key role in determining the care they receive, and vary in the degree to which they seek out, accept and act upon the evidence-based recommendations physicians provide them. Therefore, it is important to better understand how best to support patients as well as physicians in efforts to reduce inappropriate

care and enhance the utilization of evidence-based services [5,6]. This study focuses on the influences on patients' acceptance of evidence-based recommendations.

Although much literature exists for patient decisions that occur before the medical encounter – such as whether to seek treatment and choosing health insurance coverage [7–9] and after the medical encounter – such as adherence to treatment [10,11] – there is limited information on influences on patient decision-making at the point of care with the physician. To address this gap, we conducted this qualitative study with focus groups to solicit new insights on the patients' perspective during decision-making at the time of the clinical encounter.

Methods

Conceptual framework

In prior work [12], we conducted a literature review and consulted with subject mat-

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ter experts to develop a conceptual framework that describes influences on patient decision-making at the point of care (Table 1). This conceptual framework guided our data collection and analysis and recognizes the physician–patient relationship as a key factor in patient decision-making during the clinical encounter. In addition to the physician–patient relationship, we identified influences at four other levels: the patient’s personal characteristics, the patient’s social network, the patient’s environment and supports and the local healthcare system. Each of these levels can interact with one another and contribute in various degrees to a patient’s decisions.

Scenarios

We designed our qualitative work to explore the main factors at play when patients are considering physician recommendations during the clinical encounter. Focus group participants discussed their reactions to one of four scenarios, which we crafted using examples from *Choosing Wisely*® guidelines. The scenarios were based on typical decisions arising in common clinical situations: diagnostic testing for a new problem, such as pediatric appendicitis; diagnostic testing for an ongoing health concern, such as stable coronary artery disease; treatment and intervention decisions, such as for leg pain from intermittent claudication; and monitoring response to treatment, such as for acid suppression therapy for gastroesophageal reflux disease (GERD). We presented these scenarios and associated recommendations in plain language so that they were accessible to a broad consumer audience (Table 2). For the evaluation of suspected pediatric appendicitis, the evidence-based recommendation is to consider ultrasound as an option before a computed tomography (CT) scan [13]. For the evaluation of stable coronary artery disease, the evidence-based recommendation is to avoid annual stress cardiac imaging or advanced noninvasive imaging as part of routine follow-up in asymptomatic patients [14]. For the treatment of intermittent leg pain from claudication, the evidence-based recommendation is to avoid interventions such as surgical bypass, angiogram, angioplasty or stent as a first line of treatment [15]. For the management of GERD, the evidence-based recommendation is to titrate long-term acid suppression therapy to the lowest effective dose needed to achieve therapeutic goals [16].

Focus group approach

We used the conceptual framework to design questions that would elicit from participants the perceived influences on their acceptance or rejection of a physician’s recommendations in each scenario. Focus groups are

useful for hearing participants’ individual perspectives as well as the evolution and clarification of those perspectives as participants interact during the session [17]. The second feature was critical to the study, as it enabled participants to explore all influences including those suggested by fellow participants – that might affect their decisions at the point of care. Since participants are not trained to interpret and respond to clinical scenarios the way that physicians are, discussion among participants was especially advantageous. Finally, the focus group strategy permitted the study to include a larger and more representative sample of respondents per scenario. The focus group strategy does have tradeoffs: participants may discuss influences in less depth than during an individual interview; focus group discussions with dominant participants may lack input from more deferential participants. However, we do not believe our study was unduly affected by these issues. First, we observed data saturation (repetition of themes and no new data) by the end of the second session of each scenario. Second, our focus group facilitators were cognizant of involving all participants in discussion.

In each focus group session, the facilitator read a description of the scenario, which included information about a person’s medical history, current health concern and interactions with physicians. The facilitator asked participants to imagine themselves in that situation, presented the physician recommendations and answered questions participants had about the scenario.

We conducted two focus group sessions for each scenario, and we alternated the recommendations to control for any potential effect of presentation order on participants’ perceptions and reactions. In one focus group session, the facilitator first presented the approach supported by the *Choosing Wisely* principles, and in the other session, she first presented an approach not supported by the *Choosing Wisely* principles. After the facilitator presented the initial recommendation, she asked participants to discuss their reactions to the recommendation (including whether or not they thought they would accept it if they faced the scenario in real life), preferences regarding how to proceed and perceived influences on those preferences. Then, the facilitator presented the second recommendation and asked participants how their reactions and preferences would differ from the first recommendation. Finally, the facilitator revealed to the group as to which recommendation was evidence-based and asked how their reactions and preferences would differ if they had previously possessed that information. An example of the focus group discussion protocols is in the [Supplementary Data](#).

Table 1. Components of conceptual framework.

Domain	Components	Examples
Physician/patient relationship	Office atmosphere	Appearance of office space, interactions with office staff
	Physician communication skills	General patient communication skills, cultural competency, emotional intelligence
	Physician interaction style	Paternal approach (top–down), consumerist approach (passive/ bottom–up), joint engagement in decision-making (collaborative)
	Patient perceptions regarding physician	History with the physician, whether a patient chose the physician, a patient's trust in the physician
	Secondary decision-maker/advocate	Presence of a family member or friend as a caregiver or advocate for the patient
	Decision aids	Availability and use of decision aids
Patient characteristics	Health status and medical history	Overall health; includes functional or disability status
	Experiences with healthcare system	Experiences with providers and payers
	Health condition/problem	Perceived severity and urgency, expectations regarding next steps
	Cognitive biases and heuristics	Affect heuristic, anchoring bias, availability heuristic, loss aversion, present bias
	Knowledge and skills	Health and financial literacy, numeracy, communication skills
	Attitudes and beliefs	Decision-making preferences and styles, personal values regarding treatment and risk, financial attitudes
	Emotional status	Level of motivation, level of stress
Social network	Age and gender	
	Current family and friends	The family a patient currently lives with; the friends a patient currently has
	Background and family of origin	The family a patient grew up in
	Culture	Cultural and religious values, norms and beliefs
Environment and supports	Media	News, advertising
	Financial	Whether a patient has insurance or enough money to pay for healthcare
	Home	Support from family members, housing security
	Safety	Level of safety felt at home and in community
	Public health	Expectations and level of support at work, employer health campaigns, public health campaigns
Healthcare system	Access to services (geographic)	Proximity of health care services (urban vs rural); availability of convenient, timely, safe transportation
	Access to care (general)	Availability of clinicians by appointment or phone/email communication, wait times, availability of technology and/or machines that will help diagnose or improve a health condition
	Quality of care	Quality as perceived by patient; access to information on quality of services; how good or bad a patient thinks his or her doctors are, in terms of how they are able to help and give information
	Cost of care	Access to information on relative costs of care, access to patient/ plan specific information on costs of needed services

Participants

We used a marketing and research consulting firm to recruit 80 potential participants by telephone. The selected firm maintains a database of potential participants in the Washington, DC area, searchable by

different demographic criteria. The only requirement for participants recruited for the first scenario (pediatric appendicitis) was custodial guardianship of at least one child aged 6–17 years. For the remaining scenarios (stable coronary artery disease, intermittent leg pain

Table 2. Scenarios and clinical recommendations for focus group participants.

Scenario	Evidence-based recommendation	Nonevidence-based recommendation
(1) Pediatric appendicitis		
Imagine that you have a healthy 14-year-old boy. He does not take medication. He has no allergies and no history of any medical problems Last night, he vomited and this morning he was not hungry and did not want to eat his breakfast (which is unusual for him). He said his stomach hurt and when you felt his forehead, it was hot. This was the sickest your child has ever been, so you took him to the emergency room The doctor examines your child and finds that he has a very high temperature (102°F). He is sweating, it feels tender and sensitive when the doctor touches near his belly button, and he is clearly in a lot of pain As you discuss the child's symptoms with the physician, she tells you that your child might have appendicitis	The physician on call recommends further testing in the form of an ultrasound of your son's belly An ultrasound creates images using sound waves to help doctors diagnose problems. It involves moving a small device across the surface of the patient's skin	The physician recommends further testing in the form of a CAT scan of his belly to figure out why your son is in pain A CAT scan is an image created using x-rays to help doctors diagnose problems. It involves placing the patient on a table that slowly passes through the center of a large x-ray machine
(2) Stable coronary artery disease		
Imagine that you are 59 years old and you have heart disease. You take medication to keep your high cholesterol at a healthy level. You have not had any hospitalizations or surgeries before, and you stopped smoking 10 years ago The relevant factor of your family's medical history is that your father died of a heart attack at age 55 years Last year, you had chest pain while jogging, so you visited your doctor. An x-ray with dye revealed blockage in a blood vessel. You underwent a procedure to have a stent put in to open up the pathway. There were no complications with the procedure You have not had chest pain or shortness of breath since then and have been exercising three- to four-times per week by bicycle or elliptical trainer without difficulty You are in your cardiologist's office for a scheduled follow-up visit to discuss your heart condition	The cardiologist recommends that you continue your current medication, exercise and diet regimen	In addition to following your current medication, exercise and diet regimen, the physician recommends further testing in the form of stress cardiac imaging or advanced noninvasive imaging These tests all take pictures of your heart while you are walking on a treadmill. The nuclear test involves injecting a small amount of a radioactive substance into your bloodstream to get pictures. These tests can help your doctor see where any suspected blockages are and how severe they are

CAT: Computerized axial tomography.

Table 2. Scenarios and clinical recommendations for focus group participants (cont.).

Scenario	Evidence-based recommendation	Nonevidence-based recommendation
(3) Intermittent leg pain from claudication		
Imagine that you are 52 years old. Although you are a smoker, you feel healthy. As far as family medical history goes, your father died of a heart attack at age 55 years and your mother died from complications from diabetes at age 63 years. While on vacation 6 weeks ago, your left calf muscle ached after walking, especially up hills or up stairs. You relieved the pain by resting for a few minutes. After returning home, you experienced the same symptoms while walking up stairs, so you made an appointment to see your doctor. Your doctor ran tests that revealed high cholesterol, high blood pressure, obesity and borderline diabetes. He recommended that you quit smoking, and begin to diet and exercise. He gave you a prescription to lower your high blood pressure and cholesterol. Finally, your doctor mentioned that most often, the symptoms you have are due to narrowing of the arteries to the legs. Because of this, he would like you to see a vascular surgeon (a surgeon who treats problems with blood vessels) to check whether there are blockages in the arteries in your leg that need further treatment. You visit the surgeon and tell her that you followed your doctor's advice to quit smoking and start walking a few times a week. You have also lost 4 pounds since you changed your diet and lifestyle.	The surgeon recommends that you continue your current treatments and to return only if the symptoms have not improved in 6 months	In addition to following your current treatments, the surgeon recommends further testing and treatment to address the problem, which might include surgical bypass, angiogram, angioplasty or a stent. Testing and treatment options are supposed to help doctors look at the blockages in your legs and remove the blockages if necessary. For example: An angiogram is an x-ray test that uses a special dye and camera (fluoroscopy) to take pictures of the blood flow in an artery. Bypass surgery involves surgically placing a man-made tube or blood vessel from another part of your body into your leg to reroute blood flow around the blockage. Angioplasty is a procedure where a small tube with a balloon at the end is threaded through a blood vessel to the affected artery to reopen the artery and increase blood flow. Your doctor may also insert a mesh framework called a stent in the artery to help keep it open.
(4) GERD medication management		
Imagine that you are 62 years old. You were diagnosed with chronic acid reflux 3 years ago. You have no other health concerns and no recent physician visits. Your last colonoscopy was normal. At the time of the diagnosis, your symptoms included heartburn that got worse at night, when lying down, when eating acidic foods like tomatoes, when drinking alcohol, and when drinking caffeine. You have been able to control your chronic acid reflux symptoms well by changing your diet and using a medication called Nexium that you take each morning. Sometimes you decide to take an extra dose at night when your symptoms get really bad. You realize you only have a few pills left and call your doctor for a refill.	The doctor asks you to come in for a follow-up visit. She would like to talk about your symptoms and consider putting you on a lower dose of Nexium.	Instead of asking you to come in for a follow-up visit to discuss your symptoms and dosage level, she approves the refill with no change in the prescription.

CAT: Computerized axial tomography.

and GERD), the requirements were: an adult aged 40–69 years; and self-reported ‘excellent’ or ‘good’ health (excludes those with ‘fair’ and ‘poor’ health). The gastroenterology scenario had an additional requirement that the person had no more than one visit to a healthcare provider (excluding vision and dental care) in the past year. Participants were given an incentive payment of US\$100 for their time. This study was granted exemption by the New England Independent Review Board.

Overall, we were successful in recruiting participants from different ages, race and ethnicity categories, and education and income levels. We had an even balance of male and female participants and participants with and without a college degree. Participants were also evenly distributed between three household income brackets: less than US\$70,000; US\$70,000–US\$105,000; and more than \$105,000. Participants were unevenly distributed among racial and ethnic categories, as 70% of participants identified themselves as white. All participants were in good or excellent health (self-reported). We observed only mild variation in participants across scenarios. Participants in the first scenario (pediatric appendicitis) tended to be younger than those in the other scenarios because we did not apply an age minimum of 40 years; participants in scenario 1 had the widest age range (30 through 69), but over 80% were between the ages of 40 and 59 years. Participants in the other three scenarios were on average 10 years older, with over 80% between the ages of 50 and 69 years. [Table 3](#) includes a breakdown of demographic information overall and by scenario.

Data collection & analysis

We conducted eight in-person focus group sessions (two 90-min sessions for each of the four selected clinical topics) with a total of 70 participants in October 2015. The authors, two of whom facilitated the focus groups, did not have any contact with participants before or after the focus group sessions. All participants signed consent forms that described the purposes, procedures and funding source for the study. We asked participants a series of questions in conversational style about the factors influencing their reactions to the recommended approach to care for their scenario. With the permission of the participants, the discussions were recorded and manually transcribed as they took place in the focus group facility. We used the domains of the conceptual framework as the main codes to apply to the text of the focus group discussions in a qualitative coding software program (ATLAS.ti). The authors analyzed the coded data by identifying major themes – and their emergence in the discussion as a facilitator

or a barrier – by scenario and component of the conceptual framework. Finally, we used the COREQ checklist to guide the reporting of the study context, methods, findings and interpretations [17].

Results

First, we present participants’ reactions to the evidence- and nonevidence-based recommendations presented in each scenario, including any effects due to the order in which they were presented or revealing the evidence-based option. Second, we discuss how participants perceived the concept of evidence in general. Third, we report the influences that participants perceived had affected their reactions.

Reactions to recommendations

In two of the scenarios (2 [cardiology] and 3 [vascular]), many participants had a distinct preference for the evidence-based recommendation to ‘wait and see’ (no testing or treatment). In contrast, individuals presented with scenario 4 (GERD) expressed a clear preference for the nonevidence-based recommendation of maintaining the current dose of medication. Participants in scenario 1 (pediatric appendicitis) were equally amenable to both recommendations. The order in which the facilitator presented the treatment options had no effect for two scenarios (1 and 4), but seemed to have a slight influence on reactions in scenarios 2 and 3.

For scenario 1, many participants said that they were equally inclined to follow the nonevidence-based recommendation to get a CT scan as they were to follow the evidence-based recommendation to get an ultrasound. Participants noted a strong preference for taking any steps necessary to diagnose and treat the child’s emergency condition regardless of cost. The order in which the facilitator presented the treatment option had no effect on the ultimate reactions to the recommendations. After the facilitator revealed that the evidence-based recommendation was to get an ultrasound, many participants continued to favor the CT scan.

For scenarios 2 and 3, participants reacted more favorably to the evidence-based recommendation than the nonevidence-based recommendation, largely because they preferred testing and treatment options that were less invasive. A few participants were somewhat more agreeable to the more invasive, nonevidence-based approach when presented with this option first; however, the majority of participants were still hesitant to follow the nonevidence-based recommendation regardless of the order that the recommendations were presented. After the facilitator revealed that the evidence-based recommendation was to ‘wait and

Table 3. Characteristics of focus group participants.

Selected characteristics	Participants (%)				
	Scenario 1 (n = 17)	Scenario 2 (n = 17)	Scenario 3 (n = 18)	Scenario 4 (n = 18)	Total (n = 70)
Female	52.9	47.1	44.4	61.1	51.4
Age:					
– 30–39 years	11.8	0.0	0.0	0.0	2.9
– 40–49 years	41.2	17.7	11.1	27.8	24.3
– 50–59 years	41.2	47.1	44.4	33.3	41.4
– 60–69 years	5.9	35.3	44.4	38.9	31.4
Race/ethnicity [†] :					
– African–American	17.7	11.8	11.1	11.1	12.9
– Asian	5.9	0.0	0.0	0.0	1.4
– Hispanic	17.7	11.8	5.6	11.1	11.4
– White	58.8	64.7	77.8	83.3	71.4
– Other	5.9	17.7	16.7	16.7	5.7
Education:					
– Less than high school	0.0	0.0	0.0	5.6	1.4
– High school graduate	29.4	23.5	16.7	11.1	20.0
– Some college	35.3	29.4	27.8	16.7	27.1
– College degree	23.5	5.9	33.3	33.3	24.3
– Advanced degree	11.8	41.2	22.2	33.3	27.1
Household income:					
– Less than US\$35,000	5.9	0.0	16.7	5.6	7.1
– US\$35,000–69,999	23.5	41.2	11.1	33.3	27.1
– US\$70,000–104,999	29.4	23.5	33.3	38.9	31.4
– US\$105,000–139,999	35.3	23.5	16.7	11.1	21.4
– US\$140,000–174,999	5.9	0.0	11.1	0.0	4.3
– More than US\$174,999	0.0	11.8	11.1	11.1	8.6
Health status:					
– Excellent	29.4	29.4	33.3	61.1	38.6
– Good	47.1	70.6	66.7	38.9	55.7
– Fair	23.5	0.0	0.0	0.0	5.7
Saw a medical provider more than once in the past year	100	82.4	88.9	0.0	67.1
Has a child between ages of 6 and 17 years	100	17.7	27.8	38.9	45.7

The focus group sessions took place on 7 and 8 October 2015. While 80 participants were recruited, the percentages above include only the 70 who attended the sessions. The number of participants represents the sum of participants in two focus groups per scenario.

[†]Because we asked respondents about race and ethnicity separately, the figures for this variable add up to more than 100% in each column.

Sources: Self-reported data from participants at time of recruitment.

see', even more participants said they would avoid additional testing or treatment.

For scenario 4, participants rejected the evidence-based recommendation. They questioned the physician's recommendation to lower the dose of Nexium given that the scenario noted that the current dose was

successfully controlling symptoms and they expressed a desire to maintain the status quo rather than risk worsening of symptoms. Consequently, many participants said that they would be hesitant to pursue the recommendation of titration. The order in which the facilitator presented the treatment option had no effect on

the ultimate reactions to the recommendations. After the facilitator revealed that the evidence-based recommendation was to consider lowering the dose to avoid potential long-term side effects, some participants were more amenable to that option.

Participants' perceptions of evidence in medicine

Across scenarios, participants were generally accepting of evidence in medicine and were more likely to prefer a treatment option backed by research than unsubstantiated alternatives. However, participants did not trust evidence so much as to accept it without question. Participants pointed out that although evidence may be compelling for the average patient, it might not apply to their personal medical circumstances or preferences. Participants also noted that they were skeptical of evidence because of how often they hear of changes, citing the shifts in guidelines for the frequency of mammograms and debates over the nutritional benefits of foods such as milk and eggs. In addition, some participants said they questioned the profit motives of physicians, medical institutions and pharmaceutical companies funding or promoting the research.

Perceived influences

We asked participants a series of questions about the factors influencing their reactions to the two recommendations for their scenario. Participants perceived and reported on a variety of influences in the universe of medical decision-making, including influences on pre- and post-encounter decisions, decisions made in clinical scenarios other than the one presented and their feelings about the situation (with an unclear effect on decisions). Below, we use the domains of the conceptual framework to organize participant feedback on medical decisions at the point of care and specific to the scenario presented. Where necessary, we include participants' perceived influences on decisions during any general medical encounter (since focus group participant utterances often strayed from the topic of the specific scenario presented).

Patient-physician relationship

Across all focus group participants, the relationship a patient has with the physician emerged as the primary influence on whether participants would accept or reject a recommendation. Participants repeatedly described trust as a facilitator and a barrier: trust in a physician motivated them to agree with the recommendations, while distrust in a physician would make them question the recommendation and seek a second opinion. Participants identified a number of factors that affect their trust in physicians, as described below.

Patient perceptions regarding physician

Participants noted that they were more likely to trust a physician if they had a longer relationship with him or her. One participant noted, "The doctor that delivered my babies knows my kids well. I would follow her lead. But if a new doctor comes in...[such as] a doctor in an ER, then you are usually on guard". Participants also felt more comfortable with physicians who spent more time with them during an appointment. One participant explained that her decision would depend on how much attention the physician paid to her during the visit by saying, "Some make you feel like they care about you, and for some, you're just a name". Participants across the board trusted their regular physician more than physicians they were meeting for the first time (such as a specialist they were referred to) because they worried that the new physicians did not know their medical history well enough and were not as invested in the outcome.

Participants were also concerned about physicians' approach to medicine and whether they aligned with their own philosophies of care (such as how much pain they will tolerate or how willing they are to take prescriptions). Participants reported being more trusting of physicians who take their philosophies into consideration. Many participants noted that in nonemergency situations, they are more likely to trust physicians that try to minimize the number and intensity of interventions, whereas they are less likely to trust physicians that immediately suggest an invasive procedure without exploring other options first. This was especially relevant in scenarios 2 and 3, where potential treatments included an invasive option. A few participants expressed the sentiment that they trust surgeons who do not revert to surgery as the first line of care. As one participant noted, "That idea of ... what is the least hassle-free thing first and then progress to surgery. For me, that creates some trust. Trust is important in surgery". Participants also noted that they place more trust in physicians that take a holistic approach to care, treating the whole body and whole person instead of one condition at a time. Last, participants said they are more likely to trust physicians that believe in – and practice – individualized care. The desire for care that addresses the patient's mix of medical conditions and preferences persisted even after hearing about the evidence basis. As one participant explained, he was reluctant to simply agree with the evidence-based recommendation because "that is on average, but I'm not in the doctor's office as the average patient; I'm there as me. I have my own set of characteristics and preferences. I'm happy to know that, and I think it's an important starting point, but I'm still all about the exchange of information".

Physician communication skills & interaction style

Participants indicated that they were more likely to trust a physician that communicates in a clear, patient and collaborative manner. Most participants said that they are more likely to follow a physician's recommendation if he or she takes the time to explain the diagnosis and treatment options and answers any questions; they are less likely to trust a physician who rushes them out of the office without providing sufficient information. One participant said "[If they] put everything in layman's terms ... explain how they come up with the diagnosis and the tests they need to run, [I trust them more]".

Office atmosphere

The office atmosphere, including the condition of the office space and interactions with office staff, had unclear effects on participants' decisions during the health encounter described in the scenarios. Although a few participants indicated that the appearance of the office (i.e., how clean it is and how modern the technology is), wait times and office staff demeanor might influence how much they would trust the physician, the office and staff characteristics were more likely to predict how participants choose a physician and whether they would return (pre- and post-encounter decisions, respectively). Scenario 1 participants were unique in linking the emergency department atmosphere with trust in the physician and the influence on their decisions at the point of care. One participant mentioned a nurse's confidence would increase their trust in the physician and another participant mentioned the transient nature of emergency department physicians (due to changing shifts) would decrease their trust in the physician.

Other factors

Participants did not report that having a family member or friend at the visit with them would influence their decisions. Participants also did not mention using tools or processes to promote informed decision-making.

Patient characteristics

Participants noted that their health condition and certain personal traits and beliefs would influence how they make decisions about care. Themes that emerged during the focus groups include:

Past experiences with the healthcare system

Participants in scenarios 1, 2 and 4 cited past experiences with the healthcare system as barriers to accepting physicians' recommendations. Participants with negative experiences were more likely to want to ask questions before agreeing to a recommendation. A few

participants mentioned experiencing changes in guidelines for prescription drugs or testing; they found it difficult to accept at first and used it as a reason to question future recommendations.

Current health condition or concern

Participants in scenarios 1, 2 and 4 indicated that if they (or their child) were experiencing more pain or had a more severe condition, they would be more likely to want an intervention to resolve the issue and agree with the physician's recommendation, regardless of whether or not it was evidence-based. If they were experiencing less pain or a less severe condition, they would be more likely to challenge the recommendation and ask questions. These sentiments were reported the most in scenario 1, which was confronted with an emergency scenario (suspected pediatric appendicitis). As one participant explained, "*Depending on the pain and how close [the appendix] is to bursting ... I'd hear what the doctor has to say and go with what the doctor says. If it's not life-threatening, then we'd ask other questions... It depends on seriousness of the situation*". In this emergency scenario, participants noted a strong preference for taking any steps necessary to diagnose and treat the child's condition regardless of cost or evidence.

Attitudes & beliefs

Participants in scenarios 1, 2 and 3 expressed the expectation for a physician to 'do something', regardless of the evidence-based guidelines. A few participants indicated that they have come to expect testing to confirm a medical issue or treatment to resolve medical issues. One participant in scenario 1 said, "I want them to find out what is the problem [with my child], so they can do all the testing they can do ... that's the bottom line". After hearing the recommendation to 'wait and see', a few participants in scenario 2 expressed the desire for a test to confirm that nothing was wrong. In addition, a participant in scenario 3 indicated that if he were feeling any pain, he would expect the physician to perform tests or procedures to resolve the pain and would not be content with a recommendation for continued surveillance.

Personal values about seeking medical care, undergoing tests and procedures and taking medication directly influenced participants' likelihood to accept a recommendation. In contrast to the expectation for a physician to 'do something', many participants across scenarios 1, 2 and 3 stated that they would want providers to minimize medication and procedures, mainly because they were wary of and highly averse to side effects. For scenarios 2 and 3, participants reacted more favorably to the evidence-based recommendation

to ‘wait and see’, largely because they preferred testing and treatment options that were less invasive. As one participant concluded, ‘I tend to be a non-intervention type person. I want to know when I can stop cholesterol medications’.

Decision-making style of focus group participants

We found that most participants did not have a single preferred decision-making style when making health decisions. In general, most participants’ preferred style was context-dependent based on the severity of the condition and familiarity of the situation; patients with more severe or less familiar conditions were more reliant on physician recommendations. A few participants expressed a clear preference in taking an active role in decision-making regardless of condition or familiarity, mentioning previous experiences in which they diagnosed themselves or requested additional testing from physicians based on research they did independently. On the other hand, a few participants noted that they generally preferred a passive role and relied on physicians for their expertise and experience. A patient’s decision-making style in a medical encounter affects his or her receptivity to evidence-based care through their interaction with a physician; a passive decision-maker would benefit if a physician gives an evidence-based recommendation but could acquiesce to overutilization of healthcare services just as easily if given an alternative recommendation. For example, scenario 1 participants (who were given an emergency scenario) were more likely to let the physician take the lead and accept the physician’s recommendation without much of a challenge – regardless of whether the recommendation was based on the best current evidence.

Cognitive biases, heuristics & emotional status

It is not surprising that participants did not perceive the effect of cognitive biases and heuristics on their decisions because these influences are largely subconscious. However, we can infer from the responses how such psychological processes might manifest in the scenarios presented. It was clear, for example, that the emotional overload people feel in an emergency situation might color one’s decisions. One participant in scenario 1 directly addressed the issue, divulging that even though she had the intellectual knowledge that a CT scan was too drastic a procedure for suspected appendicitis in a child, she imagined that she would agree to it if the physician recommended it. As she explained, in that situation, *“I’m not thinking logically, so I’m not trying to question anything...I’m going to have to trust them and go with it... Your kid is sick, you don’t have time to argue”*.

Other influences

Participants did not report age, gender, health status or medical history (which does not include the current medical concern) as influential in their decision-making at the point of care in any of the scenarios.

Social network

Participants across all scenarios reported that their social networks had minor influences on their decisions during the health encounters described in the scenarios.

Current family & friends

Some participants reported that they consulted with current family (such as their spouse) and friends, particularly those with a medical background, before making big health decisions. Reliance on friends and family varied by individual (not by scenario). Some participants relied heavily on their social networks for information on procedures and decision-making, while others preferred individual discussions with their physician. One participant summarized the influence of friends and family by saying it *“depends on the circumstances if I trust them or my doctor”*.

However, the influence of friends and family were more likely to influence pre-encounter decisions, such as which physician or practice to select based on recommendations and experiences of other people in their social network. Most participants noted that they like to select providers based on word of mouth from friends and family, and they are more likely to trust physicians that have been recommended to them. A few participants also noted that they are more likely to trust a specialist if they are referred by a primary care provider that they trust.

Background & family of origin

A few participants noted more generally that their current beliefs and values stem from their upbringing or family of origin. For example, some participants noted a common family belief in avoiding medical interventions, preferring to use alternative therapies or letting the body heal itself. Participants with family medical histories similar to the scenario (such as in scenario 2) reported that knowledge of the disease in their family would make them more cautious and more likely to accept the physician’s recommendations (whether or not it was evidence-based). For example, one participant with a family history of cardiovascular disease said he would be more likely to accept a physician’s recommendation to pursue stress testing or more invasive procedures because he knows that cardiovascular disease runs in his family and additional testing would give him peace of mind.

Other influences

Participants in scenarios 2 and 3 reported seeing advertisements on television but did not perceive media to be an influence on their decision-making. Participants did not perceive or report a significant influence of culture, race or ethnicity on their decision-making.

Environment & supports

A variety of views on cost were reported across scenarios, with the major determinants being quality of insurance coverage and severity of medical condition.

Financial capacity

Most participants in scenarios 2, 3 and 4 noted relying on insurance to cover the costs of necessary tests and procedures. In the discussion, they therefore focused on the out-of-pocket costs for pre- and postencounter decisions, such as copay for visits and prescriptions. However, cost was a major concern for a few participants due to inadequate or lack of health insurance. As one participant noted, “(when considering treatment options,) I automatically think about how much it costs.” For participants presented with scenario 1 (pediatric appendicitis), cost was not a consideration at all. Scenario 1 participants noted that given the emergency situation, they primarily wanted physicians to diagnose their child and treat him or her as quickly as possible, without regard to the financial consequences.

Home

Availability of support at home influenced decisions for a few participants, particularly when the recommendation involved more invasive testing or treatment and might result in a longer recovery time. One participant in scenario 3 (vascular surgery) noted “You need to talk to other family members ... especially if they have to take care of you (after the surgery).”

Public health

Participants in scenario 3, where one of the treatment options might require respite from work during recovery, were cognizant of how health could affect employment (for themselves and for the broader population). One participant described that in the past, he selected an alternative recommendation instead of surgery because it would not require him to miss as much work.

Other influences

Participants did not perceive access to services as an influence on their treatment decisions; proximity to services was more likely to affect selection of a physician or facility (a preencounter decision).

Healthcare system

The healthcare system did not have a clear influence on how participants thought they would react during the health encounters described in the four scenarios.

Access to care

Participants were more likely to note that the healthcare system influenced their pre- and post-encounter decisions, noting factors such as access to care and appointment availability. Some participants explained that these factors influence their choice of physician or practice before a health encounter and likelihood to follow-up postencounter.

Quality of care

A few participants across all scenarios expressed concern that recommendations were not always based on evidence, but rather a physician's incentives from pharmaceutical companies, desire to bill more services or desire to practice defensive medicine (that is, to provide care based on a perceived ability to prevent or limit the probability of litigation). Participants did not explicitly link these sentiments to the likelihood of accepting or rejecting a recommendation.

Cost of care

A few participants in scenarios 3 and 4 believed that transparent information on costs of care could assist with decision-making and would enable them to better understand the costs and benefits of undergoing tests or treatment, but others preferred not to discuss costs and were hesitant to enter into a ‘business relationship’ with their physician. A participant in scenario 3 experienced limitations in coverage from an insurance company that contrasted with her physician's recommendation to get an MRI; the participant noted that the insurance terms prevented her from making the decision whether to accept the recommendation. The influence of insurance coverage was a popular topic to debate; as another participant in scenario 3 summarized, “if you have insurance, you don't have to worry about (cost). If you don't (have insurance), then you do. Or you have to (follow the insurer's guidelines).”

Discussion

The relationship patients have with their physicians – and, in turn, their trust in the physician – was the strongest influence on decisions at the point of care for focus group participants. A physician's communication skills, demeanor and history with a patient were important determinants to a trusting relationship that could pave the way for acceptance of a recommendation (whether objectively ‘evidence-based’ or not). These findings corroborate other studies that illus-

trate the importance of the physician's demeanor in developing the trust of a patient [18] and the tendency for patients to favor a treatment option if a trusted physician recommends it [19].

Strategies for inducing physicians to suggest evidence-based treatment options include targeted reimbursement structures, such as bundled payments and payment for performance. Approaches to strengthening physicians' relationships with patients include training on informed decision-making and motivational interviewing techniques as well as separate incentives or requirements to use formal shared decision-making tools in preference-sensitive clinical scenarios [20]. In addition, physicians could be better supported for taking the time to engage patients regarding their concerns, priorities and treatment preferences. These strategies would be most applicable to scenarios 2 and 3, which involved choices of tests or treatments in an office setting; however, decision support is becoming a valuable tool in the emergency department as well [12,21]. Despite this potential, developing strategies for helping physicians and practices that increase patient trust has proved difficult. Sustained physician behavior change requires targeted training, substantial practice and support from physicians' healthcare delivery systems [22]. Along with evaluations of models that cultivate patient trust, future research might consider the impact on the therapeutic relationship of disagreements between patients and providers and patients' awareness of provider incentives that could influence clinical recommendations.

Patient-level characteristics also emerged as an important category of influences in the focus group discussions. Focus group participants echoed the literature findings on influences derived from the severity of the health conditions; participants said they would be more likely to accept a physician's recommendation when a health condition was more severe. However, focus group findings suggest that the context surrounding a severe or emergent health condition could give cognitive biases and heuristics more relevance in patient decision-making (which could be a force for or against an evidence-based recommendation). Limits in healthcare knowledge and skills compound the difficulty in choosing a more evidence-based recommendation. Although the level of engagement in decision-making varies across patients, many (and indeed nearly all participants) express a desire for physicians to explain medical concepts and treatments to them in laymen's terms. These patient-level findings bolster the importance of a physician's ability to use motivational interviewing and accessible information to encourage a patient to incorporate both his preferences and full knowledge of the treatment options into his decision.

Although the literature suggests significant influence derived from culture, family and friends on healthcare decisions [23–25], focus group participants did not perceive the social network domain to have a large influence on their decisions at the point of care. Friends and family were more likely to influence pre- and postencounter decisions. However, social networks had the potential to influence decisions at the point of care through their effect on a patient's trust in a physician. Except for scenario 1, where parents discussed making a medical decision on behalf of their children, our study focused on scenarios where patients made decisions on their own (with a physician) at the point of care. Given the debate on the validity of substituted judgement [26] and the variability in how caregivers view their roles as surrogate decision-makers for elderly and disabled adults, additional research on how caregivers make medical decisions on behalf of others is necessary. There is some evidence already that caregivers would benefit from decision support [27].

Focus group participants and previous research seemed to place similar emphasis on two components of the environment and supports domain: patients' financial capacity and home life. The influence of costs on medical decisions was a commonly cited subject under this domain in the focus group discussions. Focus group participants revealed a range of preferences regarding costs, which varied by scenario, severity of medical condition and level of insurance coverage. Those with generous health insurance did not feel that cost was a concern, while those with little or no health insurance felt strongly about weighing the relative costs of each medical decision. These findings echoed the perception of physicians in a companion study that a patient's level of insurance coverage and ability to pay typically serve as barriers to evidence-based care, because they either cover unnecessary tests (such as those in scenarios 2 & 3) or lack coverage for valuable alternatives (such as lower doses of GERD medication, which are sold over-the-counter) [4]. If, as the literature suggests, high-deductible health plans and other forms of cost sharing become more common, patients might place an even greater emphasis on understanding and using costs in their medical decisions. While the effects of widespread cost-sharing on the use of evidence-based care is unknown, prior research suggests that targeted insurance benefit design and financial incentives could encourage its use [28,29].

The influence of other home supports on medical decisions was only brought up in the context of assistance after a surgery. It is possible that the diversity in our focus groups was not wide enough to have heard more

about housing security, safety, public health support or access to services as an influence on decision-making.

The focus group discussions did not uncover strong connections between healthcare system factors and decisions at the point of care. More research is needed to link factors such as access and perceived cost and quality effects to decisions at the point of care. However, these forces are likely to be more indirect than the other levels of the model.

While a few participants' initial attitudes persisted throughout the discussion, many participants desired more information on potential treatment options and responded favorably when presented with the evidence promoting one treatment option over the other. For patients with an open mindset, there seems to be an opportunity within the clinical context to improve uptake of evidence-based treatments. However, our findings suggest that evidence in medicine does not speak for itself; rather, physicians must address the patients' unique influences to effectively reduce demand for low-value testing and minimize dosages for medications with adverse side effects. Specifically, evidence-based recommendations would be best received if physicians recounted the potential benefits and costs of the research, the study's limitations and changes in research findings over time.

It is important to note the limitations in this study. The influences reported in the focus groups are those that participants perceive they would have had if they were in the scenario read to them; we cannot know the actual presence or effect of those influences – or of influences not mentioned during the discussion – on participants' decisions in real life. Although the focus group approach limits our ability to detect the existence or assess the level of impact of subconscious influences, it is well-positioned to highlight the influences most salient to participants. Finally, we selected respondents that reported being in 'good' or 'excellent' health to better isolate participants' influences in each scenario from competing health and social concerns. However, such attention to precision comes at a cost; it is possible that these findings might not translate to populations with complex healthcare needs.

Conclusion

Although a variety of factors are at play when patients are considering physicians' recommendations during the clinical encounter, the physician–patient relationship is a key influence. The quality of the relationship is largely dependent on the physician's communication skills and length of relationship with the patient. These findings point to the importance of a physician's initial recommendation as well as the potential value of interventions that promote improved

communication and relationship building between physicians and patients. Future research that investigates how the level of a patient's trust in a physician would affect his decisions at the point of care would be useful in developing strategies for the uptake of evidence-based treatments.

Various patient characteristics are also quite important, including the severity of the health condition, amount of healthcare knowledge and level of engagement in care. In addition to the cost considerations imposed by the patient's financial circumstances and type of health insurance, other environmental supports come into play in specific scenarios (like the decision to consider a surgical intervention). Not surprisingly, the urgency of the patient's health concern can override many other considerations, including costs. Consistent with other literature, social network and broader healthcare system issues may have a greater overt influence on decisions pre- and postencounter rather than decision-making that occurs at the point of care.

Quantitative assessments that target specific domains in the conceptual framework are needed to confirm the individual contributions of the themes that emerged in our study. Social experiments would be critical to examine subconscious influences, such as cognitive biases and social circles, in particular. It would also be prudent to directly investigate whether patients would and could use shared decision-making tools if they were made available in a clinical context.

The diversity of influences involved in patient decision-making in clinical settings suggest that great opportunity exists to improve the likelihood that patients will seek out, and act upon, evidence-based recommendations. However, interventions meant to improve patient decision-making at the point of care will need to be adaptable for use in specific clinical conditions, patient populations and care settings.

Supplementary data

To view the supplementary data that accompany this paper please visit the journal website at: <http://www.futuremedicine.com/doi/full/10.2217/ce-2016-0077>

Acknowledgements

The research that contributed to the content of this article was conducted by Mathematica Policy Research under a contract with the Robert Wood Johnson Foundation (RWJF). The authors take full responsibility for the accuracy of material presented herein. The views expressed are those of the authors and should not be attributed to RWJF. The authors are grateful to Eugene Rich for his subject matter expertise and manuscript review. The authors thank M Adams, E Brody and A Collins for their research assistance, and F Martin for additional guidance on the subject matter. Finally, we appreciated the insights of

the members of our technical expert panel, who advised us on various phases of this project: P Alguire, M Barry, R Berenson, D DeWalt, N Gajewski, S Magnan, T Montgomery, F Opelka, W Rich III, L Sandy and D Wolfson.

Financial & competing interests disclosure

The authors have no relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties.

No writing assistance was utilized in the production of this manuscript.

Ethical conduct of research

The research that contributed to the content of this article received an exemption from review by the New England Independent Review Board on 10 September 2015. We provided participants with information about the study, including the purpose, focus group procedures and the benefits and potential risks of participation. We also obtained signed consent forms from all focus group participants at the beginning of each session.

Summary points

- The objective of this study was to identify the factors that promote or interfere with evidence-based clinical decisions from the patient perspective using focus groups of relatively healthy individuals.
- Overall, a patient's relationship with a physician was a primary influence on whether he or she would accept or reject a clinical recommendation.
- Participants described trust as a facilitator and a barrier to making an evidence-based clinical decision: trust in a physician motivated them to agree with the recommendations, while distrust in a physician would make them question the recommendation and seek a second opinion.
- Factors that affect patient trust include patient perceptions of physicians and physicians' communication skills and interaction style.
- Patient characteristics (such as past experiences with the healthcare system, the current health condition, knowledge and attitudes) emerged as moderate influences on medical decisions.
- Although elements of a patient's social network (such as current family and friends) were perceived as potentially influential, the magnitude of the impact on decisions at the point of care was less certain.
- Financial capacity was a major concern for a few participants due to inadequate or lack of health insurance, but it was not a concern for participants with generous health insurance coverage.
- The urgency of the patient's health concern can override many other considerations, and may lead patients to accept the physician's recommendation without extended discussion.
- These findings point to the importance of a physician's ability to use motivational interviewing and accessible information to encourage a patient to incorporate both preferences and full knowledge of the treatment options into his or her decision.

References

Papers of special note have been highlighted as:

• of interest; •• of considerable interest

- 1 Squires D. Explaining high health care spending in the United States: an international comparison of supply, utilization, prices, and quality. The Commonwealth Fund, Washington, DC, USA (2012). www.commonwealthfund.org
- 2 Schwartz AL, Landon BE, Elshaug AG, Chernew ME, McWilliams JM. Measuring low-value care in medicare. *J. Am. Med. Assoc.* 174(7), 1067–1076 (2014).
- 3 McGlynn EA, Asch SM, Keesey J, Hicks J, DeCristofara A. The quality of health care delivered to adults in the United States. *N. Engl. J. Med.* 348(26), 2635–2645 (2003).
- 4 O'Malley AS, Collins A, Contreary K, Rich EC. Barriers to and facilitators of specialist physician decision making at the point of care: implications for delivery systems, payers and policymakers. *MDM Policy and Practice* doi:10.1177/2381468316660375 (2016) (Epub ahead of print).
- A companion piece to this manuscript, which examines physicians' perspectives on factors that support or hinder evidence-based decisions and the implications for delivery systems, payers and policymakers.
- 5 Lin GA, Redberg RF. Addressing overuse of medical services one decision at a time. *J. Am. Med. Assoc.* 175(7), 1092–1093 (2015).
- 6 Newhouse JP, Garberg AM, Graham RP, McCoy MA, Mancher M, Kibria A. *Variation in Health Care Spending: Target Decision Making, Not Geography*. National Academies Press, Washington, DC, USA (2013).
- 7 Anderson M, Dobkin C, Gross T. The effect of health insurance coverage on the use of medical services. *Am. Econ. J. Econ. Pol.* 4(1), 1–27 (2012).
- 8 Hofer A, Abraham JM, Moscovice I. Expansion of coverage under the Patient Protection and Affordable Care Act and primary care utilization. *Millbank Quart.* 89(1), 69–89 (2011).
- 9 Schram A, Sonnemans J. How individuals choose health insurance: an experimental analysis. *Euro. Econ. Rev.* 55(6), 799–819 (2011).

- 10 Asche C, LaFleur J, Conner C. A review of diabetes treatment adherence and the association with clinical and economic outcomes. *Pharm. Econ. Health Pol.* 33(1), 74–109 (2011).
- 11 Thompson L, McCabe R. The effect of clinician–patient alliance and communication on treatment adherence in mental health care: a systematic review. *BMC Psych.* 87(12), doi:10.1186/1471-244X-12-87 (2012) (Epub ahead of print).
- 12 Collins A, Stepanczuk C, Williams SS, Rich EC. Supporting better patient decisions at the point of care: what payers and delivery systems can do. Mathematica Policy Research, Washington, DC, USA (2016).
- **A companion piece to this manuscript, which highlights opportunities for payers and healthcare delivery organizations to support patients in typical point-of-care situations, including value-based insurance design, informed decision-making tools, revised provider incentives and improved physician communication.**
- 13 American College of Surgeons. Don't do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option. ABIM Foundation, Philadelphia, PA, USA (2013).
www.choosingwisely.org
- 14 Consumer Reports. Imaging tests after a heart procedure. ABIM Foundation, Philadelphia, PA, USA (2012).
- 15 Consumer Reports. Treating blocked leg arteries. ABIM Foundation, Philadelphia, PA, USA (2013).
- 16 Consumer Reports. Treating heartburn and GERD. ABIM Foundation, Philadelphia, PA, USA (2012).
- 17 Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *Int. J. Qual. Health Care* 19(6), 349–357 (2007).
- 18 Hall MA, Dugan E, Zheng B, Mishra AK. Trust in physicians and medical institutions: what is it, can it be measured, and does it matter? *Millbank Quart.* 79(4), 613–639 (2001).
- **Seminal review of research on patients' trust that highlights opportunities for payers and healthcare delivery organizations to support patients in typical point-of-care situations, including value-based insurance design, informed decision-making tools, revised provider incentives and improved physician communication.**
- 19 Orom H, Underwood W 3rd, Cheng Z, Homish DL, Scott I. Relationships as medicine: quality of the physician–patient relationship determines physician influence on treatment recommendation adherence. *Health Serv. Res.* doi:10.1111/1475–6773.12629 (2016) (Epub ahead of print).
- 20 Contreary K, Rich E, Collins A, O'Malley A, Reschovsky J. Supporting better physician decisions at the point of care: what payers and purchasers can do. Mathematica Policy Research, Washington, DC, USA (2016).
- 21 Hess EP, Hollander JE, Schaffer JT *et al.* Shared decision making in patients with low risk chest pain: prospective randomized pragmatic trial. *BMJ* 355, i6165 (2016).
- 22 Thom DH. Training physicians to increase patient trust. *J. Eval. Clin. Pract.* 6(3), 245–253 (2000).
- **Evaluation of training program to modify physician behaviors associated with increasing patient trust and improving outcomes.**
- 23 Siminoff LA. Incorporating patient and family preferences into evidence-based medicine. *BMC Med. Inform. Decis. Mak.* 13(Suppl. 3), S6 (2013).
- **Discusses how patient-centered evidence-based medicine can be achieved through the incorporation of patient-derived data and physicians' consideration of sociocultural influences, such as a patient's family.**
- 24 Sanford J, Townsend-Rocchiccioli J, Horigan A, Hall P. A process of decision making by caregivers of family members with heart failure. *Res. Theory Nurs. Pract.* 25(1), 55–70 (2011).
- 25 Brunson EK. How parents make decisions about their children's vaccinations. *Vaccine* 31(46), 5466–5470 (2013).
- 26 Torke AM, Alexander GC, Lantos J. Substituted judgment: the limitations of autonomy in surrogate decision making. *J. Gen. Intern. Med.* 23(9), 1514–1517 (2008).
- 27 Garvelink MM, Ngangue PAG, Adekpedjou R *et al.* A synthesis of knowledge about caregiver decision making finds gaps in support for those who care for aging loved ones. *Health Aff.* 35(4), 619–626 (2016).
- 28 Gibson A, Boddy K, Maguire K, Britten N. Exploring the impact of providing evidence-based medicine training to service users. *Research Involvement and Engagement* 1(10), doi:10.1186/s40900-015-0010-y (2015) (Epub ahead of print).
- 29 Volpp K, Loewenstein G, Asch D. Choosing Wisely: low-value services, utilization, and patient cost sharing. *J. Am. Med. Assoc.* 308(16), 1635–1636 (2012).
- **Discusses how value-based insurance design could be an effective tool to decrease usage of low-value services, supporting *Choosing Wisely* principles.**