


## ORIGINAL RESEARCH

The Practice of Emergency Medicine

# Clinicians' perspectives on the implementation of patient decision aids in the emergency department: A qualitative interview study

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**Abstract**

**Objective:** Decision aids (DAs) are tools to facilitate and standardize shared decision making (SDM). Although most emergency clinicians (ECs) perceive SDM appropriate for emergency care, there is limited uptake of DAs in clinical practice. The objective of this study was to explore barriers and facilitators identified by ECs regarding the implementation of DAs in the emergency department (ED).

**Methods:** We conducted a qualitative interview study guided by implementation science frameworks. ECs participated in interviews focused on the implementation of DAs for the disposition of patients with low-risk chest pain and unexplained syncope in the ED. Interviews were recorded and transcribed verbatim. We then iteratively developed a codebook with directed qualitative content analysis.

**Results:** We approached 25 ECs working in urban New York, of whom 20 agreed to be interviewed (mean age, 41 years; 25% women). The following 6 main barriers were identified: (1) poor DA accessibility, (2) concern for increased medicolegal risk, (3) lack of perceived need for a DA, (4) patient factors including lack of capacity and limited health literacy, (5) skepticism about validity of DAs, and (6) lack of time to use DAs. The 6 main facilitators identified were (1) positive attitudes toward SDM, (2) patient access to follow-up care, (3) potential for improved patient satisfaction, (4) potential for improved risk communication, (5) strategic integration of DAs into the clinical workflow, and (6) institutional support of DAs.

**Conclusions:** ECs identified multiple barriers and facilitators to the implementation of DAs into clinical practice. These findings could guide implementation efforts targeting the uptake of DA use in the ED.

**KEYWORDS**

chest pain, decision aid, implementation science, qualitative analysis, shared-decision making, syncope

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## 1 | INTRODUCTION

### 1.1 | Background

Interest in shared decision making (SDM) in emergency medicine has increased during the past several years.<sup>1-3</sup> SDM is defined as “a collaborative process in which patients and clinicians make healthcare decisions together, taking into account the best evidence available, as well as the patient’s values and preferences”<sup>4</sup> and has been associated with increased patient knowledge, increased treatment adherence, and decreased resource use.<sup>5-7</sup> Patient decision aids (DAs), also known as SDM tools, are “tools to help people participate in decision-making about healthcare options” that “provide information on options and help patients clarify and communicate their personal values.”<sup>8</sup> The intent of these DAs is to facilitate SDM with the aim of improving the quality of patients’ healthcare decisions. Because DAs are a means to facilitate SDM, the 2 are inextricably linked. SDM can be performed without a DA and may be preferred for the greater flexibility and convenience of using verbal communication alone. However, DAs offer an opportunity to standardize the discussion and optimize patient comprehension, typically using text and graphics.

### 1.2 | Importance

Cardiovascular complaints, such as chest pain and syncope, are common, are associated with significant mortality and morbidity, and represent a high proportion of visits to emergency departments (EDs).<sup>9,10</sup> DAs have been developed to facilitate SDM specifically for these 2 acute ED complaints: low-risk chest pain<sup>11</sup> and unexplained syncope.<sup>12</sup> “Chest Pain Choice,” a DA for the disposition of patients with low-risk chest pain, has been studied in 2 randomized controlled trials.<sup>11,13</sup> It led to a decrease in chest pain admissions, an increase in patient knowledge, and a decrease in decisional conflict. The Syncope Decision Aid (SynDA) was piloted in a small study and was shown to be safe and effective at increasing patient engagement.

Although many emergency clinicians perceive SDM to be appropriate for emergency care<sup>14,15</sup> and evidence-based DAs exist for certain scenarios, the uptake of these tools remains limited in clinical practice. Additional studies have been published that investigated the use of DAs for other clinical scenarios, including suspected ureterolithiasis,<sup>16</sup> thrombolytic for ischemic stroke,<sup>17</sup> and blunt head trauma neuroimaging,<sup>18</sup> among others. Understanding the barriers and facilitators to implementation of DAs in the ED is critical to guiding and increasing the adoption of these patient-centered tools.

### 1.3 | Goals of this investigation

The objective of this qualitative study was to explore the barriers and facilitators related to the implementation of DAs for SDM in the ED. This study focuses specifically on the implementation of DAs developed for patients with low-risk chest pain and unexplained syncope:

#### The Bottom Line

Uptake of decision aids (DA) for shared decision making in the emergency care setting has been limited. This qualitative study describes perspectives of emergency clinicians from a large, urban health system on DA implementation barriers and facilitators for low-risk chest pain and unexplained syncope. Factors identified in this study provide a starting point to guide successful DA implementation efforts in the emergency department.

Chest Pain Choice and SynDA. We sought to explore emergency clinicians’ perceptions of these 2 DAs, factors affecting usage, and potential implementation strategies.

## 2 | METHODS

### 2.1 | Study design

This was a qualitative study using semistructured interviews with emergency clinicians, including attending physicians, resident physicians, and physician assistants. This was a qualitative study using a thematic-analysis approach guided by the Consolidated Framework for Implementation Research (CFIR) and Theoretical Domains Framework (TDF) implementation science theoretical frameworks under a constructivist/interpretive research paradigm. An integrative, team-based process was used to identify themes. To the extent feasible, we adhered to the Standards for Reporting Qualitative Research (see the Supplementary Material). As an incentive, each participant was entered into a raffle to win a \$20 gift card. Verbal consent was obtained from each participant at the beginning of each recorded interview. The study was deemed to be exempt human research by the local institutional review board.

### 2.2 | Study setting, participants, and recruitment

Participants were emergency attending physicians, a resident, and a physician assistant working in a single diverse health system composed of 6 hospitals (4 academic, 2 community) in New York, NY. The 6 hospitals did not have existing institutional nor departmental support for use of the DAs and did not keep copies of the DAs available for use in routine clinical care. The SynDA tool was provided to clinicians only in the context of the randomized trial performed from 2017 to 2019. A purposive sample of clinicians was invited to participate based on factors such as age, sex, practice setting (academic vs community) and participation in the SDM trial evaluating the SynDA tool.<sup>19</sup> We invited faculty, residents, and physician assistants to encourage a broad range of perspectives. Participants were contacted via email by a

coinvestigator (L.G.) inviting them to participate in an interview study about SDM in the ED. Other participants were selected using an ED clinician list in an attempt to purposively recruit a diverse sample of clinicians. We initially planned to conduct 20 interviews with at least half being with participants from the SynDA trial. We were prepared to perform additional interviews if thematic saturation had not been achieved after 20 interviews.

### 2.3 | Interview guide

The 2 lead investigators developed the interview guide using the TDF and the CFIR to inform the design. The TDF is composed of 12 domains used in implementation research to describe the processes involved in changing the behavior of healthcare professionals.<sup>20</sup> The CFIR is composed of 5 domains (ie, intervention characteristics, inner setting, outer setting, characteristics of the individuals, and implementation processes), which provide a structure to analyze how evidence-based interventions are, or are not, implemented into actual clinical practice.<sup>21</sup>

The interview guide was separated into 2 subsections: 1 focused on SDM for patients with chest pain and the other on SDM for patients with syncope (see Appendix A). Interview questions focused specifically on the use of patient DAs to facilitate SDM for these clinical scenarios. Minor changes were made to the interview guide after the first 3 interviews based on participant feedback. The interview guide contained 37 questions in total, split between the 2 subsections. Follow-up questions based on participants' answers were at the discretion of the interviewer. Interviews were designed to be 20 to 30 minutes in duration. Both DAs were shown to participants during the interviews to help inform their answers (see Appendix B).

### 2.4 | Data collection

All interviews were performed over Zoom Video Conferencing software (San Jose, CA). Participants provided verbal consent at the beginning of the meeting and were reminded that the interview was being recorded. All interviews were conducted by a non-clinical, masters-level coinvestigator with prior experience in qualitative research (L.G.). Interviews were conducted during a 6-month period in 2020. All recordings were automatically transcribed, and the senior author listened to each recording to verify accuracy and completeness of the transcriptions.

### 2.5 | Data analysis

Transcripts were uploaded into Dedoose, a qualitative data management and analysis software (Dedoose Version 7.0.18; SocioCultural Research Consultants, LLC, Manhattan Beach, CA). A total of 4 investigators, all of whom had prior qualitative research experience, participated in the coding process. Each transcript was coded twice by

2 separate investigators. The codebook was developed with a content analysis directed approach. Emergent codes were organized using our 2 a priori selected theoretical frameworks: the TDF and CFIR. The codebook was iteratively refined as transcripts were coded and recoded. Intercoder reliability was ensured with regular video conferences between coders (M.A.P., L.G., E.M.S., T.B.) to discuss coded data, reconcile differences, and reach consensus on code meanings. A total of 2 investigators then recoded all transcripts in Dedoose once the final codebook was established. Disagreements on coding were resolved by group discussion until consensus was achieved. The codebook can be found in Appendix C. Although the interview guide was separated into 2 sections, 1 focused on syncope and the other on chest pain, only 1 codebook was developed combining concepts emerging from both sections. The analysis focused specifically on the implementation of SDM, with and without DAs, in the ED for patients presenting with chest pain or syncope.

### 2.6 | Research team and reflexivity

The research team was composed of a masters-level research manager with prior qualitative research experience conducting semistructured interviews, 1 emergency resident with prior research experience, and 4 board-certified emergency clinician-investigators with prior experience in SDM, qualitative, and cardiovascular research. The participants did not know the interviewer before the interview. The clinician researchers did not routinely use these DAs outside the context of a research study.

## 3 | RESULTS

### 3.1 | Characteristics of study participants

We approached 25 emergency clinicians from both academic and community practice settings, of whom 20 agreed to be interviewed (mean age, 41 years; 25% women). Participant characteristics are found in Table 1. All clinicians were practicing clinically in EDs belonging to a large health system in New York, NY. Most clinicians were faculty physicians with 1 physician assistant and 2 senior residents, and most practiced in an academic setting (85%). A total of 3 different hospitals were represented. Hereafter, we refer to our sample of clinicians as "participants." The demographic composition of our sample roughly corresponds to the most recent survey of the US emergency physician.<sup>22</sup>

All participants indicated familiarity with SDM. Some had never used a patient DA, such as the SynDA tool or Chest Pain Choice. Of the 20 participants, 11 (55%) had participated in the SynDA randomized controlled trial and thus had experience using the tool in clinical practice. Thematic saturation was achieved after 20 interviews with no new themes emerging in the final 3 interviews conducted. Representative quotes and themes for barriers and facilitators are listed in Tables 2 and 3.

**TABLE 1** Characteristics of interview participants, n = 20

Characteristic	Count (%) or mean (range)
Sex, female	5 (25)
Age, years	41.8 (29–67)
Race	
White	11 (55)
Asian	4 (20)
Black	3 (15)
Other	2 (10)
Practice setting	
Academic	17 (85)
Community	2 (10)
Both	1 (5)
Years in practice after residency	10.1 (0–33) <sup>a</sup>

<sup>a</sup>A total of 2 Emergency Clinicians were in residency when interviewed; 1 Emergency Clinician was a physician assistant.

## 3.2 | Main results: barriers

The 6 main barriers identified were (1) poor accessibility of the DAs, (2) concern for increased medicolegal risk, (3) lack of perceived need for a DA, (4) patient factors such as language barriers and limited health literacy, (5) skepticism/limited knowledge of DA, and (6) lack of time to perform SDM with a DA.

### 3.2.1 | Accessibility (intervention characteristic)

A prominent logistical barrier that emerged was the accessibility of the DAs while on shift in the ED and how formatting could affect availability. Participants believed preprinted paper versions of the DAs would be hard to find in the ED and finding the electronic document to print a copy would be inconvenient. Printing new copies in the ED would also result in a grayscale version being used because color printers were reportedly unavailable. Others noted that electronic versions could be difficult to bring to the bedside with an electronic device (eg, iPad). Difficulty gaining access to the DA was viewed as a potential “hassle.” Participants expressed uncertainty as to how the DA (in paper or electronic form) could be seamlessly integrated into the ED workflow.

### 3.2.2 | Medicolegal risk (outer setting)

Many participants expressed concerns around medicolegal risk. Doubts about medicolegal protection afforded by SDM and DAs were prominent. Although some participants reported that thorough documentation of SDM with DA usage could provide medicolegal protection in the event of a “bad outcome,” certain participants doubted this. These participants noted that adverse clinical outcomes could

supersede any documentation of DA usage if legal action were pursued. Use of the DAs was perceived not to be the current “standard of care.”

### 3.2.3 | Lack of perceived need (individual characteristic)

Another prominent barrier involved participants’ perceptions of the intervention. Many participants reported a lack of perceived need for a DA. Participants felt confident that they could communicate risks, benefits, and explain options without a formal DA. Many reported already performing unstructured SDM, that is, informal SDM without use of DA, and felt confident in their ability to communicate effectively with patients about disposition decisions. Many participants felt that no additional training was necessary to perform SDM or use the DAs in question.

### 3.2.4 | Limited health literacy/language barriers (individual characteristic)

Limited health literacy of patients was another commonly reported barrier. Participants expressed concern that patients may not fully understand the risks of various options or importance of follow-up. A lack of understanding on the part of the patient could lead to them making the “wrong decision.” Language barriers would also contribute to this given that most participants spoke primarily English and that the DAs were available only in English, an intervention characteristic barrier.

### 3.2.5 | Skepticism and limited knowledge of the DA (individual characteristic)

Skepticism around the validity of the DA was reported by several participants who harbored doubts regarding the published evidence supporting use of the DAs. There was uncertainty regarding the effectiveness of the DAs at producing the desired outcomes. Participants expressed a desire for more research examining the various effects of using the DAs. Many participants had not heard of the Chest Pain Choice or SynDA tools.

### 3.2.6 | Lack of time (inner setting)

Lack of time to perform SDM with a DA was frequently reported. Participants felt that, during a busy shift, it was difficult to find the time to obtain the DA and to engage with the patient in a genuine SDM discussion. Some participants noted that simply telling the patient the clinician-determined disposition was faster than conducting SDM with a DA. Other participants felt that using a DA was yet another task to add to an already overburdened workflow.

**TABLE 2** Barriers to implementation of patient decision aids

Theme, barriers	Representative quote	CFIR	TDF
Poor accessibility of decision aids	<p>"If it ends up in the ... massive confines of the document database and EHR, I think it would probably be more difficult to use it."</p> <p>"Bringing a piece of paper to the bedside, it's not easy every single time. Who knows where the paper is going to be?"</p>	Intervention characteristics	Environmental context/resources
Concern for increased medicolegal risk	<p>"And I think the negative consequences would be issues with ... the medical-legal side. So maybe you giving the patient the option to kind of share in the decisions may lead to ... decisions or downstream testing ... or lack of downstream testing that might lead to a bad outcome and then, you know, the medical-legal issues associated with that."</p> <p>"I wonder if you can use this and will it hold up in a court of law? Because ultimately, I think for most doctors, that's the ultimate question. Sure, give it to the patient, but is this patient going to go out, get sick or die? And am I going to get sued?"</p>	Clinician characteristics	Beliefs about consequences
Lack of perceived need for decision aids	<p>"I don't feel a strong need for one. I know it is often helpful to use a visual tool to convey levels of risk to patients. But I don't feel an absence of that. When I talk to patients about this. I think they're able to understand the advantages and disadvantages of the various choices. Though they don't have a visual representation of this specific risk, or this specific level of risk, so can't say it wouldn't be helpful, but I am not dying to have one to use."</p> <p>"I'm not entirely optimistic about the use of formal tools, but maybe needed for people who don't feel comfortable having these conversations without that kind of support."</p>	Clinician characteristics	Knowledge/training/skills
Limited health literacy and/or capacity of patients	<p>"I believe that we have a lot of patients who probably do not have a high school education ... some parts look very wordy ... I can see how all this information may go over their head."</p> <p>"I think it's arbitrary when I do employ shared decision-making, it would depend on again, what I perceived to be the patient's understanding of what's going on. And not sort of their education level, but maybe their understanding of their health and disease"</p>	Patient characteristics	Beliefs about capabilities
Skepticism about validity/limited knowledge of decision aids	<p>"... the overall feeling after looking at this is, I'm trying to talk the patient out of staying in the hospital, but it's not because of the length of stay, or because of the cost. I'm trying to keep them out of the hospital because I don't think they need to be in the hospital, and I am trying to present it in a scientific way. But it's not resonating with me."</p> <p>"Maybe if it was validated in the literature or something ... or if somebody could demonstrate to me how they use it in a really specific way."</p>	Intervention characteristics	Beliefs about consequences
Lack of time for decision aid use	<p>"In an extremely busy ER just telling the patient that this is going to be the plan is so much faster than going through this entire thing. For example, if I thought the patient probably needed to stay, then I would just go over there and tell them they're staying overnight for observation."</p> <p>"The other thing is that every small task in the ER takes up a certain amount of time. And a lot of our delays are just a pile up of infinitesimally small tasks."</p>	Inner setting	Environmental context/resources

Abbreviations: CFIR, Consolidated Framework for Implementation Research; EHR, electronic health record; ER, emergency room; TDF, Theoretical Domains Framework.

**TABLE 3** Facilitators to implementation of patient decision aids

Theme, facilitators	Representative quote	CFIR	TDF
Positive attitudes toward SDM	<p>"I mean, I don't see any downside. I think if you involve the patient in the decision-making, you're more likely to get a treatment plan and a follow-up plan that they'll be able to complete successfully. So that's a good thing."</p> <p>"I think we're seeing it more and more the wave of the future or the present time. I don't think there's going to be any getting away from that. I think we moved away from paternalistic medicine."</p>	Clinician characteristics	Beliefs about consequences/optimism
Patient access to follow-up care	<p>"... if this decision aid incorporated the number to call for the cardiology fellow who will guarantee an appointment within 72 hours, I'm feeling much better. So in other words, I think for this really to be effective, there needs to be a mechanism that ensures the follow up."</p> <p>"So it's a lot easier to have this conversation with a patient if I know they have a primary care doctor or cardiologist that they will follow up with in two to three days."</p>	Outer setting	Beliefs about consequences
Potential for improved patient satisfaction	<p>"I think you can decrease boarding and stays in the hospital and improve patient experience and patient satisfaction."</p> <p>"I think there's better patient satisfaction, going through the decision-making tree and the risk factors and my thinking puts them more at ease and gives them the power to see why we made the decision. If we're both on the same page that increases their happiness or their satisfaction."</p>	Clinician characteristics	Beliefs about consequences
Potential for improved risk communication	<p>"I think a positive consequence, just more conversation and better communication between the patient and the doctor."</p> <p>"I think patients responded pretty well to having a visual aid to better understand what their actual risks are rather than just hearing numbers."</p>	Clinician characteristics	Beliefs about consequences
Strategic integration of decision aids into workflow	<p>"I think it's helpful to have a visual aid that the patient can use so having it nearby is super helpful. Meaning, integrated when you're entering a diagnosis of chest pain, or perhaps even when you order a troponin, or with your troponin results, having a link to be able to use the decision tool would be helpful and more likely to get people to use it."</p> <p>"If a patient's chief complaint is syncope, then when you enter into the chart ... or you go to click on a note, it says this patient is eligible and maybe it can trigger this [decision aid]."</p>	Implementation process	Environmental context/reinforcement
Institutional support of decision aids	<p>"I think just a tyrannical edict from the leadership saying, this is what we're doing. You have to do this and you have to use this tool. And then ... either the patient goes home or gets admitted to observation. And then that'll work better."</p> <p>"If this was vetted by hospital administration leadership, or national association, if someone could, I mean, I guess you can't guarantee anything. But if someone can tell me that this is the standard of care, and it's like part of everyday practice."</p>	Implementation process	Environmental context/social influences (norms)

Abbreviations: CFIR, Consolidated Framework for Implementation Research; SDM, shared decision making; TDF, Theoretical Domains Framework.

### 3.3 | Main results: facilitators

The 6 main facilitators identified were (1) positive attitudes toward SDM, (2) patient access to follow-up care, (3) potential for improved patient satisfaction, (4) potential for improved risk communication, (5) strategic integration of DAs into workflow, and (6) institutional support of DAs.

#### 3.3.1 | Positive attitudes toward SDM (belief about consequences)

Most participants expressed positive attitudes toward SDM in general. Many viewed SDM as a valuable component of clinical practice that would continue to gain acceptance over time, especially as patients become more knowledgeable about their conditions and thus become

more involved in their healthcare decisions. Others believed that management plans formulated using SDM would improve patient adherence to treatment and follow-up. DAs were viewed as a means of facilitating SDM.

### 3.3.2 | Patient access to follow-up care (outer setting)

Access to follow-up care was mentioned as a prominent facilitator. Many participants reported that they would use the DAs more frequently and with greater comfort if patients had access to appropriate, expedited follow-up care. Certain participants felt that a specific appointment, made before discharge, would lead to more comfort using the DA for SDM. Many participants expressed concern about patients being discharged and being unable to follow-up in a timely manner with an outpatient physician for further management (eg, stress testing, echocardiography, ambulatory cardiac monitoring).

### 3.3.3 | Potential for improved patient satisfaction (belief about consequences)

The belief that using the DA could improve patient satisfaction was an important facilitator. Participants noted that good patient–clinician communication is an important factor leading to greater patient satisfaction and viewed the DAs to enhance communication. SDM was also perceived to show respect for patient autonomy, which could also lead to greater patient satisfaction. Engaging in SDM with the DAs would allow the patient to better understand the decision-making process and arrive at a satisfactory plan of care. As medical information becomes more accessible via digital means, patients are often informed when presenting to the ED and have a greater desire to participate in the decision-making process.

### 3.3.4 | Potential for improved risk communication (belief about consequences)

The perception that the DA would improve risk communication was another significant facilitator. Participants noted that engaging patients with the DAs could better convey the risk and nature of potential adverse outcomes. Notably, participants believed the visual aid, with simple, descriptive language and a 100-person pictogram, could be easier to understand for patients than numerical risk values conveyed verbally.

### 3.3.5 | Strategic integration of DAs into workflow (implementation process)

Participants frequently noted strategic integration of the DAs into workflow as a key facilitator. Although some reported electronic health

record (EHR) “pop-up fatigue,” specific strategies for integration into workflow primarily involved EHR mechanics. These included prompts for using the DAs with specific chief complaints entered in triage (eg, chest pain and syncope), when ordering diagnostic tests, and when pertinent test results became available such as the troponin level. Ability to document use of DAs directly into the EHR in an automated, standardized fashion, instead of scanning paper forms, was also reported as a potential facilitator.

### 3.3.6 | Institutional support of DAs (inner setting)

Institutional support for DAs was of particularly important concern for participants. Many reported that buy-in from hospital leadership could promote usage of DAs as standard of care. Others noted the importance of departmental support, namely, evaluation and formal endorsement of the DAs by the department before acceptance and usage. Prior vetting by the legal and/or risk management departments was also mentioned as a way to increase adoption of DAs.

## 4 | LIMITATIONS

Our qualitative study was hypothesis generating, rather than hypothesis testing. Participants were recruited from a single hospital system in New York City and all worked within the same large health system, with most participants working in an academic setting. Clinicians from other practice settings, such as a community or rural settings, may have different perceptions of SDM and the use of DAs. Other health systems may contain different barriers and facilitators to DA implementation. Practice patterns outside the United States may differ significantly, so our findings may not apply internationally. Given that SDM and a specific DA (SynDA) was studied in this health system, it is possible that participants were more likely to be supportive of DAs and SDM. However, this also permitted participants to have a more informed opinion of DAs in clinical practice based on firsthand experience. Participants' answers may have been subject to social desirability bias because SDM is generally viewed as a desirable, patient-centered approach to care and because the principal investigator of the research team was known to be an advocate of SDM. Our study focused solely on disposition decisions after negative ED workups for chest pain and syncope. We cannot entirely generalize our findings to other healthcare decisions made in the ED, but our findings can guide future investigation into DAs in other scenarios. Although our interview guide was designed to be comprehensive and was based on established implementation science frameworks (ie, CFIR, TDF), questions based on another implementation science frameworks may have led to other themes.

## 5 | DISCUSSION

Although qualitative studies have explored clinician attitudes toward SDM in general<sup>23</sup> and toward the use of evidence-based

risk-stratification tools,<sup>24</sup> our study is the first to specifically explore the implementation of DAs to facilitate SDM in the ED setting. SDM has been lauded as a method to deliver high-quality, patient-centered care in the ED,<sup>1,2,25</sup> and DAs have been identified as a means to facilitate and standardize the delivery of SDM.<sup>8,26,27</sup> However, very little research has examined the implementation of DAs into clinical practice in the ED.

Our study highlighted several key challenges to the successful operationalization of DAs in the ED. First, participants reported time pressures as a significant barrier to DA use. This is consistent with prior work suggesting that this is a barrier to SDM practice in general.<sup>14,23,28</sup> Participants attributed this to high patient volumes and the amount of time necessary to properly engage patients using DAs. Clinician-directed decision making is generally less time consuming than locating the appropriate DA and engaging patients in a genuine SDM discussion. However, certain strategies to mitigate these time constraints could be employed, such as providing the DA to the patient before the clinician coming to the bedside to have the final disposition discussion or having another member of the healthcare team (eg, nurse, technician) bring the DA to the patient. Also, streamlining documentation of DA use in the EHR could be helpful to increase efficiency using standardized text (eg, smartphrases) and decrease the added burden on clinicians.

Accessibility of the DAs was also identified as a major barrier. Efforts to make the DA easily accessible for clinicians will be central to any implementation effort. Because clinical workflow in the ED is increasingly dependent on the EHR and increasingly “paperless,” the DA may be best situated as a link in the EHR to an electronic version (eg, PDF) that can be printed and brought to the bedside. To maximize dissemination, DAs may benefit from being redesigned in grayscale (as with Chest Pain Choice) as opposed to color so that color printers are not needed for use. Preprinted versions create other barriers to use because they would require replenishment and a departure from the typical clinical workflow. Another option, when an electronic device is available (eg, smartphone, tablet), would be to create an application, website, or PDF that was accessible to patients, perhaps by scanning a Quick Response (QR) barcode.

Not surprisingly, participants expressed concern about medicolegal issues arising in the event of an adverse outcome, which reflects the high basal level of concern for litigation. The option of following a less “defensive” management plan mentioned in the DAs, without additional testing or observation, led to concerns of potential legal consequences. Although a previous experimental survey study has suggested that SDM may be medicolegally protective in the event of a post-ED visit adverse outcome,<sup>29</sup> this is still an area of uncertainty.<sup>30</sup> Studies conducted in other settings have suggested that DA use would offer some medicolegal protection.<sup>31,32</sup>

Our data and others suggest that to successfully implement DAs in the ED, these medicolegal concerns must be directly addressed. One approach would be to engage with the legal and risk management departments at the institutional level to have them review the DAs and the associated standardized documentation that would be entered into the medical record. Approval from these departments could signif-

icantly reduce fear of litigation for clinicians. In fact, many participants cited institutional “buy-in” as an important facilitator to DA adoption. Another means to decrease medicolegal fear would be to create a reliable clinical pathway for all patients to be given access to follow-up care to see a primary care physician or cardiologist after discharge from the ED.

Many participants preferred to engage in informal, unstructured SDM rather than practice SDM with a DA. This skepticism regarding the potential added value of a DA will hinder the uptake of these tools. We suspect that this skepticism could be overcome if clinicians believed that the DA truly offered added medicolegal protection and improved risk communication. If the benefit of using a DA is considered minimal, clinicians will have little motivation to overcome even minor logistical barriers.

Risk communication is a complex yet essential part of SDM and has been defined as “The open, two-way exchange of information and opinion about risk, leading to a better understanding of the risk in question, and promoting better (clinical) decisions about management.”<sup>33</sup> Risk can be communicated in a variety of ways: in absolute versus relative terms and in numerical versus verbal versus graphical format and can be framed as loss versus gain. The quantity of data presented can also vary, and too much data can be overwhelming for patients.<sup>34</sup> Clinicians’ lack of perceived need for a DA may indicate overconfidence in their ability to communicate risk. DAs have been shown to improve accurate risk perceptions when probabilities are included.<sup>8</sup> Communicating accurate risk information could be useful in other healthcare decisions, including imaging or further treatment, such as lumbar puncture versus computed tomography angiography to rule out aneurysmal subarachnoid hemorrhage, imaging for suspected renal colic, or thrombolytics for ischemic stroke.

Although opinions on DAs were mixed, positive attitudes toward SDM were prevalent. Participants reported that DAs were a way to improve communication with patients around risk, increase patient satisfaction/autonomy, and potentially reduce low-yield resource use (eg, admissions to the observation unit, stress testing). These positive attitudes have been demonstrated in previous studies of emergency physicians.<sup>14,15</sup>

Regarding implementation into ED workflow, participants provided valuable input as to how best to promote uptake. The DAs must be easily accessible from the EHR and prompts to access and use the DA must be strategically placed. A prompt that occurs too early in the visit, for example, before test results are available, will lead to it being dismissed. Similarly, a prompt to use a DA that appears after the disposition decision has been made will also be ignored. A prompt or reminder could “fire” after the final laboratory test has provided results because many clinicians will only start to contemplate the disposition for these patients after the troponin and other laboratory results are final. Generally, prompts will need to be tailored to the decision—with prompts about diagnostic imaging coming earlier and prompts about disposition coming after tests have provided results. “Audit and feedback” were proposed to participants as means to encourage the use of the DAs but were met with mixed reactions. Some felt that clinicians already experienced enough scrutiny around other metrics and might not react



positively. Feedback without first obtaining genuine “buy-in” from clinicians might be ignored.

As a result of the practice of defensive medicine and other cultural factors in the US healthcare system, hospitalization for patients with these chief complaints, despite an unremarkable ED evaluation, remains common. This may not be the case on other countries with less “intensive” healthcare systems. As such, these DAs may be of less use in other countries. The results of our study suggest that there are common facilitators and barriers to the implementation of patient DAs in the ED. The prominent barriers were accessibility of the DA, limited knowledge of and faith in the DAs, and medicolegal concerns. The prominent facilitators were strategic integration of the DAs into the ED workflow, improved access to the DAs, and institutional support for their use. Attempts to implement DAs without significant, upfront investments in mitigating these barriers and maximizing these facilitators are unlikely to be successful. A sustained, multifaceted set of implementation strategies would need to be deployed targeting a variety of factors at the intervention, clinician, patient, and institutional levels. These findings can guide future implementation efforts focused on increasing the use of DAs to facilitate reliable and standardized SDM in emergency care.

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#### CONFLICT OF INTEREST

The authors declare no conflict of interest.

#### AUTHOR CONTRIBUTIONS

Marc A. Probst, Lauren Gordon, and Elizabeth M. Schoenfeld were responsible for the study concept and design. Lauren Gordon was responsible for data acquisition. Tausif Billah, Marc A. Probst, Elizabeth M. Schoenfeld, and Lauren Gordon analyzed and interpreted the data. Bernard P. Chang, Tausif Billah, Marc A. Probst, and Elizabeth M. Schoenfeld drafted the article. All authors contributed critical revisions of the article for important intellectual content. Bernard P. Chang, Elizabeth M. Schoenfeld, and Marc A. Probst offered statistical expertise.

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#### SUPPORTING INFORMATION

Additional supporting information may be found in the online version of the article at the publisher's website.

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