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A Mixed-Methods Study of Clinicians' Attitudes Toward Pathology Explanation Clinics

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ABSTRACT

Objectives: To characterize the attitudes of treating clinicians toward pathology explanation clinics (PECs).

Methods: Clinicians from a tertiary care academic medical center were asked, "How interested would you be in having your patient meet with a pathologist to discuss their pathology report and see their tissue under the microscope?" Clinicians ranked their interest, then expanded on concerns and benefits in a semistructured interview. Audio recordings of interviews were transcribed and analyzed using a qualitative thematic approach.

Results: A total of 35 clinicians were interviewed, with 83% reporting some level of interest in PECs. Clinicians felt that highly educated and motivated patients were most likely to benefit from a PEC. Clinicians recognized that PECs could improve understanding and emotional processing but that the patient's information needs must be balanced with the potential for cognitive overload and emotional distress. When integrating the pathologist into the care team, clinicians worried about the pathologist's communication skills, care fragmentation, and increased clinician workload. If performed well, clinicians felt PECs had the potential to increase clinician efficacy and improve quality of care.

Conclusions: Overall, clinicians are interested in PECs when they fulfill a patient's information needs and are optimally performed.

KEY POINTS

- Pathology explanation clinics (PECs) are emerging as a new care model in pathology. The attitudes of treating clinicians toward PECs have not yet been characterized.
- Eighty-three percent of treating clinicians showed some level of interest in their patients participating in a PEC.
- Clinicians' concerns regarding PECs centered on information overload for their patients and the pathologist's ability to communicate with patients.

KEY WORDS

Quality; Health communication; Cancer; Pathology; Anatomic; Education

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INTRODUCTION

The receipt of a pathology report without additional explanation can lead to confusion and exacerbate patient anxieties.[1] Recent legislation, including the 21st Century Cures Act, has increased patient access to pathology reports delivered directly via patient portals.[2] Novel methods for helping patients interpret these reports are emerging. A pathology explanation clinic (PEC) is an interactive visit whereby the patient and pathologist meet to discuss the pathology report and review the patient slides.[3] In the literature, PECs are also referred to as a patient-pathologist consultation or a patient-centered pathology visit.

Practices within the United States as well as abroad are beginning to incorporate PECs into routine care.[4-6] Early research shows that patients are highly satisfied with the interaction and find it useful.[4-6] In addition to positive patient experiences, one study found significant quality improvement in the form of revised pathology reports, referrals for a second

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opinion, and even changes in treatment plans following the PEC.[6] Early longitudinal studies in men with low-stage prostate cancer also show both patient-level and systemic-level impacts of PECs. On an individual level, men with low-stage prostate cancer reported a high level of satisfaction with the PEC as well as improved understanding of diagnosis and confidence in making a high-quality medical decision.[7] On a systemic level, PECs positively affected the treating clinician experience and resulted in overall improvement in quality of care.[7]

PECs are an interaction embedded within a core of key stakeholders including the patient, the pathologist, and the treating clinician FIGURE 1. To effectively study the value of PECs, it is essential to begin with a study of the attitudes of these key stakeholders. Early work in patient attitudes toward PECs shows that 85% of patients with cancer are either definitely interested or interested in meeting with their pathologist.[8] Patients perceive that attending a PEC has the potential to improve disease understanding, demystify the process of diagnosis, and lead to patient empowerment. Early work in pathologists' attitudes toward PECs shows that 86% of pathologists are either definitely interested or interested in meeting with their patients to review slides and discuss diagnosis.[8] Pathologists note potential the impact to patients, individual pathologists, and the field of pathology as a whole.[9]

While the attitudes of patients and pathologists toward PECs have been preliminarily characterized, the attitudes of treating clinicians (ie, oncologists, surgeons, internists, obstetrician/gynecologists, etc) toward PECs have not yet been described. Treating clinicians are key stakeholders in the implementation and study of PECs, and thus understanding their attitudes is essential in designing a PEC that maximizes value for patients and treating clinicians.

To address this gap, we conducted a study using quantitative and qualitative methods to broadly understand treating clinicians' attitudes toward the utilization of PECs in health care delivery under optimal conditions. Optimal conditions for PECs included following best practice standards that (1) the patient had been told their diagnosis by the treating clinician, (2) the pathologist only discussed diagnosis and referred the patient back to treating clinician for questions about prognosis and treatment, and (3) the pathologist sent a follow-up note to the clinical team after the PEC.[4,5,10] We quantitatively described clinicians' level of interest in PECs and assessed if this level of interest was related to any provider characteristics (ie, age, specialty, rank etc). Using a qualitative thematic approach, we described clinicians' attitudes toward PECs, concentrating on potential benefits and concerns for patients, treating clinicians, and the overall quality of care in the health system.

MATERIALS AND METHODS

This study was reviewed and deemed exempt and not regulated by our institutional review board as part of a quality improvement project (HUM00144372).

Sampling and Recruitment

Using a snowball recruitment strategy, clinicians from specialties including surgery, internal medicine, and hematology/oncology were identified from a tertiary care academic medical center. To be included, participants needed to be an active treating clinician at our institution. All clinicians were contacted once via e-mail and invited to participate in the study.

Our goal in recruitment was to capture as many perspectives as possible. To this end, we specifically followed divergent (ie, differing from the majority) opinions from clinicians as they arose. Clinicians recommended to the study group from clinician participants with divergent opinions were contacted via e-mail up to two times to be invited to participate in the study. Most interviews were conducted via Zoom, and other methods of interview included phone interviews or e-mail response.

Data Collection

The interviewer followed an interview guide created by the study team and used a Zoom Poll during the interview. Clinicians were consented for the study and for the recording of the interview. Clinicians were asked to state their age, sex, academic rank, and specialty. Next, we explicitly stated a series of assumptions to ensure clinicians would communicate their attitudes toward

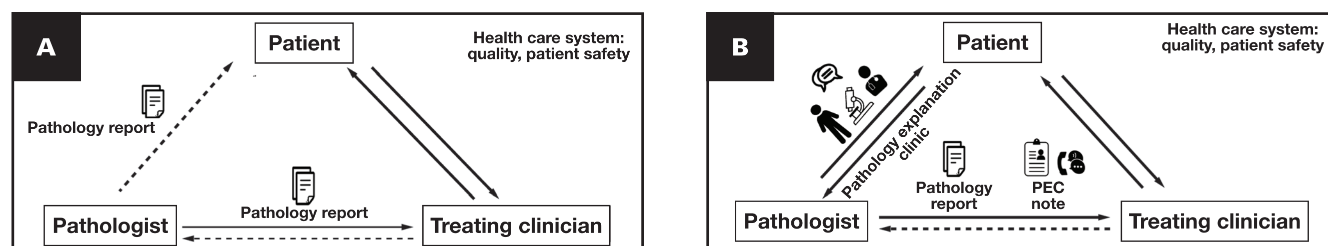

FIGURE 1 Communication of pathologic diagnoses between key stakeholders. **A**, Current state: the pathologist communicates the diagnosis through a pathology report, which is sent through the electronic medical record to the treating clinician. Patients may access the report through the patient portal. There is no established route for the patient to contact the pathologist. All communication about the diagnosis is communicated through the treating clinician or through the patient's written pathology report. **B**, Communication functions of the pathology explanation clinic (PEC): the PEC would provide an established route for communication between patients and pathologists. It would also add to communication between pathologists and the treating clinician through the addition of a PEC note in the electronic medical record and a phone call as indicated for additional communication around pathology diagnoses. All communications between key stakeholders are embedded within the health care system and thus relate to quality and patient safety. Weight of arrow indicates strength of communication. Dashed lines indicate when communication may occur but does not always occur.

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PECs based on an optimally practiced PEC, with each of the assumptions existing as a best practice guideline in completing patient-pathologist interactions.[4,5,10] The assumptions included the following: (1) the patient was already told their diagnosis by the provider or another treating clinician, (2) the pathologist would not discuss treatment options with their patient, and (3) the pathologist would send a follow-up note to the provider about what was discussed and questions that arose during the PEC. The omission of these stated assumptions could have led clinicians to worry about pathologists revealing the initial diagnosis, discussing treatment, or not including clinicians in the conversation about what was discussed related to pathology, thus obscuring our study goal to understand attitudes of clinicians toward optimally practiced PECs.

Clinicians were then asked the following question: "How interested would you be in having your patient meet with a pathologist to discuss their pathology report and see their tissue under the microscope?" If there were additional questions about the assumptions, they were answered or restated after the main interview question was asked. Clinicians then ranked their interest on a 6-point Likert scale from *definitely interested* to *definitely not interested* with no option for neutral, presented on a Zoom Poll. After the clinician submitted their level of interest in the poll, the level of interest of the clinician was restated by the interviewer: "You chose somewhat interested. Could you expand on why you made that choice?" The interviewer probed on any identified benefits or concerns relating to PECs. The interviewer also probed on any comments relating specifically to how patients, treating clinicians, and the overall care team could be affected by a patient completing a PEC.

Data Analysis

Quantitative Analysis

Descriptive statistical analysis was conducted using the statistical software RStudio (Version 4.0.3). Descriptive statistics were used to calculate the median and interquartile range for age, given a nonnormal distribution of the variable. Proportions were calculated for all other independent variables. The outcome of interest level consisted of six options from *definitely interested* (1) to *definitely not interested* (6) with no option to be neutral, requiring those interviewed to choose between interested and not interested. The outcome was treated as a continuous variable, and linear regression was used to assess the strength of the independent variables (age, rank, sex, and specialty) in predicting interest level. Specialties were grouped into hematology/oncology, surgical specialties, dermatology, and internal medicine/other specialties. Specialties included in the "internal medicine/other" category were gastroenterology, pediatrics, pulmonary and critical care, and emergency medicine. To examine for additional granularity that may have been missed using a linear regression model including all variables, individual linear regression models were tested.

Qualitative Thematic Analysis

Audio recordings of interviews were transcribed. Using the software NVivo, qualitative thematic analysis (including coding transcripts and developing themes) was completed by three members of the study team (S.E.B., S.R.K., C.J.L.). First, the team independently coded a subset of 10 interview transcripts to develop a codebook that captured the central ideas from the interviews that related to the study objectives. Next, the team applied the codebook to all transcripts, discussed the codes and how they were applied to resolve any disagreements, and developed themes that represented the perceived challenges and benefits of PECs. Similar to the methods in Lapedis et al,[9] a rigorous qualitative approach was achieved by using a three-person team to (1) independently define codes, resolve discrepancies, and reach consensus to ensure internal validity, or accuracy, of the coding; and (2) examine and present multiple perspectives in the following results, including disconfirming evidence (ie, comments that diverge from or conflict with a particular theme) that adds nuance to the overall thematic findings. At 35 interviews, we reached thematic saturation and recruitment was completed.

RESULTS

Quantitative Analysis

Fifty-nine clinicians were invited to participate in the study via e-mail. Thirty-five participants agreed to participate and were interviewed (59.3% response rate). The median age of respondents was 39 years, with an interquartile range of 36 to 46 years and an overall range of 29 to 69 years. Women slightly outnumbered men (19/35; 54%). Clinicians' rank was divided evenly among groups: trainees (resident or fellow), 23% (8/35); junior attendings (0-5 years after training), 26% (9/35); midcareer attendings (6-10 years after training), 23% (8/35); and senior attendings (11+ years after

TABLE 1 Characteristics of Respondents (n = 35)[a]

Characteristic	Value
Median age, y	39
Sex, female, %	54
Rank, %	
Resident/fellow	23
Junior attending	26
Midcareer attending	23
Senior attending	29
Specialty, %	
Pediatrics/gastroenterology	3
Pediatrics/internal medicine	3
Emergency medicine and hospice and palliative care	3
Orthopedic surgery	3
Surgical oncology	6
Pulmonary and critical care	6
Dermatology	11
Gastroenterology	14
Plastic surgery	14
Hematology/oncology	37

[a]Most respondents were from hematology/oncology and surgical specialties.

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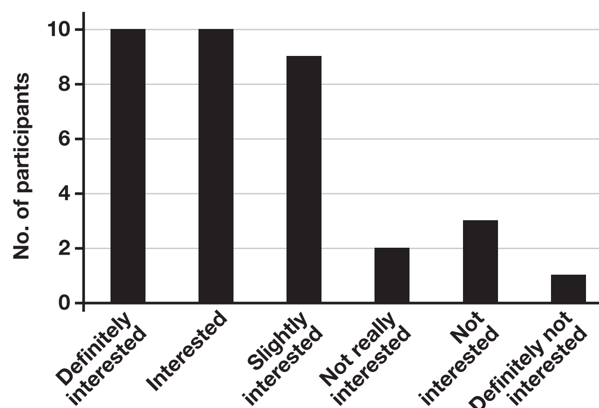

FIGURE 2 Clinician interest levels. Most participating clinicians (29 of 35 [83%]) showed some level of interest, ranging from slightly interested to definitely interested, in their patients participating in a pathology explanation clinic.

training), 29% (10/35). Most of physicians interviewed were from hematology/oncology and surgical subspecialties. See TABLE 1 for the full description of participants.

The average clinician interest in patients participating in PECs was 2.46 (on a scale of 1-6), falling between "interested" and "slightly interested" FIGURE 2. Overall, 83% of clinicians noted some level of interest in PECs for their patients. Using a full linear regression model with all clinician characteristics, no significant differences in interest level by age, rank, specialty, or sex were found.

Qualitative Thematic Analysis

The attitudes of treating clinicians toward PECs were nuanced and frequently rested on a balance of multiple competing interests. For the purpose of organization, we broke the analysis out into two individual domains: (1) patient impact and (2) integrating the pathologist into the care team. In the domain of patient impact, clinicians felt that only a subset of patients, those who were highly educated or motivated, were most likely to benefit from PECs. In general, however, clinicians felt that PECs—especially the visual nature of the PEC—could improve understanding, provide transparency to the process of diagnosis, empower patients, and aid in decision-making preparation. Some clinicians were concerned that the addition of PECs into care delivery could lead to cognitive overload and emotional distress for some patients. In the domain of integrating pathologists into the care team, clinicians noted that deeper integration of the pathologist would require delicate balancing of the expertise of the clinician and the pathologist. Clinicians voiced concerns about the pathologist's ability to establish boundaries and communicate clearly and empathetically with patients. Clinicians voiced concerns over logistical aspects of integrating the pathologist into the care team, including care fragmentation and increased clinician workload, but did note that if PECs were done well, there was the potential for improved clinical efficiency and overall quality of care.

Domain 1: Patient Impact

Clinicians Believe Highly Educated or Motivated Patients Are Most Likely to Benefit From PECs

Clinicians explained their attitudes toward PECs were highly dependent on individual characteristics of the patients who would participate in them. Overall patient characteristics associated with perceived clinician benefit from PECs included those who were highly educated or motivated with backgrounds in health care, engineering, or other types of professionals. As one clinician states, "I can think [of] people who . . . are highly educated or their professions are like engineers, or they are in the health care field. They love more information. And so, I think they would . . . love that [PEC] and . . . just . . . love learning from it [PEC] and . . . find a lot of interest in that [PEC]" (hematology/oncology, fellow 12). Clinicians noted that these types of highly educated or motivated patients are typically only a small subset of their patient panel. As one clinician states, "I think the benefit is that there is a small number of patients who would like to have that opportunity . . . to understand and see their images. I actually . . . don't know that it's a large volume of patients. And I think it's a little bit beyond them, but I think there's a small group of very interested or interested patients who would like to see their slides, like to see the positive margin and help them make a decision about additional treatment care" (plastic surgery, midcareer attending 8). Clinicians did not envision PECs as something that would potentially benefit all types of patients but rather that PECs could be useful for a small subset of very interested, motivated, or highly educated patients who wish to have a deeper understanding of their pathologic diagnosis.

Patients' Pathology-Specific Information Needs Must Be Balanced With the Potential for Cognitive Overload and Emotional Distress

Clinicians felt that PECs would be most beneficial when provided to a subset of interested, motivated, or highly educated patients, but they also explained that in general, patients' pathology-specific information needs must be balanced with the potential for cognitive overload and emotional distress. Clinicians noted that PECs could provide useful information to patients about their diagnosis, as well as the process of diagnosis, and that the visual nature of PECs, in which slides are shown and images are explained, could be particularly valuable. Clinicians cautioned, however, that the information would need to be appropriately timed and titrated to each individual patient's needs as information can be harmful to some patients, leading to information overload and emotional distress.

Clinicians believed that PECs could help patients fundamentally understand both the details of their specific diagnosis and the process of a pathologic diagnosis, which may better prepare patients for an informed and values-concordant medical decision. Clinicians explained that to make a quality medical decision, it is essential that patients are informed about their diagnosis, that information improves patient autonomy, and that PECs could add value to the process of a quality medical decision TABLE 2. Clinicians noted that PECs may also be particularly useful as a form of direct pathology education, especially when the clinical

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TABLE 2 Potential Impact of PECs on Patients as Described by Treating Clinicians

Theme	Representative Quotes
Clinicians believe highly educated or motivated patients are most likely to benefit from PECs.	"And so I think patients in that camp who are highly educated and motivated would definitely benefit from sitting down directly with the pathologist."
	"I do think there is a subset of patients who are very analytical and if given the opportunity to have more information because they read about different types, then they might [be interested in PEC]."
	"So it's [PEC] beneficial for . . . the types of patients who read a ton about their thing and . . . definitely do like to understand every word on their pathology report."
Patient's pathology-specific information needs must be balanced with the potential for cognitive overload and emotional distress.	"I would say that an abundance of information is generally good for patients. . . . Having a solid fund of knowledge . . . is one of the great enhancements to autonomy as one of the principles of medical ethics for the liberty interest of the patient. So, as the patient is ultimately moving towards issues of informed consent that they are armed with as much information as possible to incorporate into their own stable value system in terms of making a choice."
	"The majority of our explanation of pathology results is verbally . . . there are some patients who, for whom I just think a picture would be worth 1000 words."
	"But there's some . . . possible reservations which may include information overload to the patient, which we as physicians are notorious to do . . . and oftentimes, the more information we give them when it comes to those minute details, . . . it might cloud the big picture occasionally."
	"I think . . . more of an in-depth understanding of exactly what the bone marrow showed would . . . help make some of the patients who are interested [in PECs] feel more empowered and more . . . clear and certain about the diagnosis and the pathophysiology about what's going on with them."
	"The reason I answered interested and not definitely interested is just because every once in a while, we do see patients who are just completely overwhelmed with information."

PEC, pathology explanation clinic.

diagnosis alone is uncertain: "[PEC] actually might be an opportunity for some education to the patient about . . . why . . . this looks like Crohn's and not ulcerative colitis . . . especially in the setting of . . . a diagnosis that may be uncertain . . . I can see there being an added value there [PEC]" (gastroenterology, junior attending 17). Another clinician mentions that seeing the process of a pathologic diagnosis through a PEC could improve transparency of the diagnostic process for patients, removing the "black box" of the process of pathology, to help patients better understand their diagnosis.

> If I just tell them … we did a procedure we took biopsies, you don't have Crohn's disease … [the patient may think], "What if the pathologist … didn't know what he was doing?" … it's just like the black box that they don't understand… .Whereas I think if … the pathologist is able to say … "When I look … for … Crohn's disease or cancer … this is what I'm looking for. And … you clearly don't have any of that." I think it puts their mind at ease that it's … a true positive or true negative. (gastroenterology, fellow 4)

Clinicians overall felt the most potentially powerful aspect of the PEC was the visual nature of the tool.

> And it is just that visual representation can be helpful. So, I could see that piece … being really valuable for some of the patients … not that they'll necessarily understand the nuances of all the staining and all this kind of stuff. But just … okay I can sort of see it to kind of understand my diagnosis, a little bit better … how … the cells are sort of growing through, whether it's a tissue plane or something. (pediatrics, senior attending 17).

Clinicians noted that they frequently use radiology images and other visuals to explain medical information to their patients. Clinicians appreciate that visual information often improves patient comprehension **TABLE 2**. Clinicians note that there is currently no way for them to show patients any pathologic images, and the visual nature of PECs seems valuable. As one clinician states, "I find the parents and the older kids at least are very interested in looking at MRI images and I find that very education[al] and they help to explain things . . . and I've had families ask me if they could look at the biopsies and I don't have a way of showing them and I think there is value in them seeing the biopsies" (pediatric gastroenterology, senior attending 20). Overall, clinicians felt that there was value in PECs toward better informing patients about their diagnosis, and they were particularly excited by the visual nature of the PEC as compared to the standard verbal and written modes of communication for pathology information.

Clinicians noted that satisfying patients' information needs can have emotional effects on patients. Clinicians perceive showing patients their biopsy specimens could be empowering and improve patients' confidence in the care they receive. As one clinician stated, "I think that for those [interested] patients, meeting with a pathologist would at least . . . make them feel a little bit more empowered that . . . they understand a little bit more about what's happening" (gastroenterology, senior attending 24). Another clinician commented that meeting with a pathologist could improve patients' confidence in their care, which may be useful for patients who need to make a treatment decision: "There's a number patients who . . . would like to see that visually or discuss that with them [pathologist] and that may help them [patient] feel more confident about their own care, perhaps, especially those patients that are struggling with a decision" (plastic surgery, junior attending 8). Similar to the feelings of confidence and empowerment,

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one clinician noted that meeting with a pathologist could give them a feeling of ownership over their disease process. "This is something that they [patients] would be very interested in sort of taking ownership of their own disease process" (orthopedic surgery, junior attending 9).

Clinicians caution that patients' information needs and desires must be balanced by the potentially harmful aspects of a PEC. Pathology diagnoses are often written in highly technical language that is not easily digestible by patients and could be confusing for patients or cause them to fixate on potentially minor or irrelevant details of the pathologic diagnosis. One clinician noted, "I think a lot of the technicalities of the diagnosis and what the patient sees in terms of why they have a diagnosis and things of that nature, may be a little bit above their head" (hematology/oncology, fellow 11). Clinicians worried that having a pathologist try to explain these technical diagnoses "might add more confusion" (pulmonary critical care fellow, 2). Some clinicians had reservations about their patient meeting with a pathologist due to potential confusion and information overload TABLE 2. Clinicians also cautioned about the potential for PECs to distress patients: "I definitely have patients that I think are very overwhelmed with their cancer diagnosis and actually more information is worse" (hematology/oncology, fellow 12).

Domain 2: Integrating the Pathologist Into the Care Team

Although Clinicians Value Pathologists' Expertise, They Are Concerned That Pathologists Will Not Be Able to Effectively Communicate With Patients

The clinicians in this study primarily saw clinicians/themselves as experts in translating the pathologic diagnostic report into words and concepts that patients could understand: "I think being that person to bridge the pathology report to the patient . . . is the purpose of the clinician. . . . It's also that we need to provide the information to them [patients] in a language that they can understand" (dermatology, midcareer attending 33) TABLE 3. Clinicians see pathologists as the traditional "doctor's doctor" (ie, someone best positioned to discuss diagnosis with the clinician but not in a position to discuss or explain a diagnosis with the patient). Clinicians see direct patient communication as outside of pathologists' scope of expertise. As one clinician noted, "They [pathologists] don't have the clinical experience on discussing . . . pathology results with patients. They definitely discuss amongst themselves and you know they have the tumor boards and what these things mean in . . . their own language" (dermatology, midcareer attending 33). Because pathologists do not train in direct patient communication during residency, most clinicians do not feel they would be able to communicate clearly and in plain language that patients would understand. Another clinician notes concerns about the ability of pathologists to not only communicate clearly but also to communicate empathetically and compassionately.

> Pathologists in general do not do a tremendous amount of doctor-patient communication interaction where compassion and empathy are the cornerstones of doing it extremely well … it's not so much what information is shared … a lot of it really is, how is it shared and what is the communication and compassion ability of the physician who discloses the information. (emergency medicine and hospice and palliative care, senior attending 13).

TABLE 3 Potential Impact of PECs on the Care Team as Described by Treating Clinicians

Theme	Representative Quotes
Although clinicians value pathologists' expertise, they are concerned that pathologists will not be able to effectively communicate with patients.	"I feel as though those discussions [conveying results, discussing treatment and prognosis] are best left to the oncologist and I certainly respect and value my pathology colleagues' contributions, but I think it's really in the, in the course of making the diagnosis . . . I don't think it's necessary for them to be the messenger of the results."
	"Many pathologists don't like patient interaction—that's why they went into pathology. And so the bedside manner is another sort of issue for some people."
	"I feel like we already have . . . 'shades of gray' conversations with patients about pathology and imaging and the clinical scenario . . . [and the pathologist may be] another cook in the kitchen interpreting that."
	"They [pathologists] oftentimes know in general what the treatment will be, um but I think it will be very hard for them to not make not make recommendations on treatment and just discuss the pathology."
Clinicians worry about the logistics of adding a PEC visit into an already complex system of medical care.	"I think logistically just the challenge of setting up those types of appointments, it's hard enough to book appointments just to see providers at our clinic, and the clinic workflow is inefficient . . . and so I think if you were to throw something like this in the mix, people would get behind and you'd end up having less time with your patient."
	"And I have a feeling that if we open that Pandora's box [PECs], it would, to be selfish, probably give me a lot more work because people would, that would kind of, patients are already asking lots of questions, which is wonderful, but it would kind of open the door to many more questions that are not necessarily going to positively influence their care."
If PECs are performed well, clinicians believe there is potential for improved efficiency and quality of care.	"Yeah, so I think it would um decrease the amount of time repeating and educating surrounding the pathologic diagnosis, which I would say is probably, you know, between 5 and 10 minutes for each new patient visit and would allow me to more rapidly get to talking about management strategies."
	"I think [explaining] what all those words mean [from the pathology report], and more of an in-depth understanding of exactly what the bone marrow showed [from a PEC] would be really . . . helpful for both the patient and the clinician to move along clinic discussions."
	"The pathology guides the treatment, so it does seem like it would be helpful to have a pathologist available. . . . As we talk about like multidisciplinary care, you know, that's a big thing in academic settings is like having members of different teams all coming together and pathologists are a huge part of that. So, I do think from like a patient side of things, that does like promote optimal care to have all of the different specialties weigh in."

PEC, pathology explanation clinic.

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In addition to concerns about pathologists communicating clearly and empathetically, clinicians were concerned that pathologists may not have the communication skills to set boundaries with patients and "stay in their own lane" if pathologists discussed a diagnosis with a patient. Even though one of the assumptions of an optimally practiced PEC is that the pathologist does not discuss treatment or prognosis with the patient, clinicians widely expressed concerns about the pathologist having the communication skills to set those boundaries.

> I think the challenges are going to be that the patients are going to ask about treatment. And they're going to ask, how does this impact my treatment? How does this change my treatment? What do you think I should have done? My doctor said to do this. What do you think? And … that's where I would get concerned. (gastroenterology, senior attending 24)

Clinicians explained that if the pathologist does not set appropriate boundaries during PECs and discuss aspects of care like treatment and prognosis, it could lead to additional work for the clinician following the PEC. Clinicians reinforced that for an interaction with a patient and pathologist to be successful, pathologists would need to learn how to set clear and consistent communication boundaries and have an "exit strategy" for how to address patient questions outside their area of expertise.

> I think that it's very natural for the patient to kind of push, you know, what's next. And so, coming up with … an exit strategy or some type of dialogue so the pathologist can say this is the diagnosis … [but] next steps will be … multidisciplinary discussion, whatever. (hematology/oncology, junior attending 19)

Most clinicians expressed strong views that for a PEC to be effective, the pathologist would need to communicate in a clear and empathetic manner and to set boundaries with patients. Many clinicians interviewed noted that pathology tends to be a field that attracts physicians uninterested in working with patients directly. Due to this belief, most clinicians felt pathologists would lack expertise in patient communication.

In select circumstances, however, clinicians note that they do not always have expertise in explaining some aspects of the pathologic diagnosis, and it would be useful to have a pathologist help communicate some particulars about the pathologic diagnosis. Clinicians perceive the pathologist as the true expert in diagnosis and the diagnostic process. As one clinician explains, "The pathologists . . . can explain pathology and what . . . pathology means . . . probably better than the primary care physician or the urologist" (emergency medicine and hospice and palliative care, senior attending 13). Particularly in circumstances where the diagnosis is rare, difficult, or unusual, clinicians are interested in closer integration with the pathologist and support direct communication between the patient and the pathologist.

Clinicians Worry About the Logistics of Adding a PEC Visit Into an Already Complex System of Medical Care

Clinicians noted PECs could be logistically challenging, leading to the potential for increased clinician workload and care fragmentation. Clinicians overall were not eager to have another physician in the already complicated and somewhat fragmented care team setting TABLE 3. Clinicians also noted the addition of another appointment for a patient may introduce logistical issues with scheduling and care coordination TABLE 3. Clinicians worried that pathologists interacting with patients could result in more work for clinicians in answering more diagnostic questions that may not be relevant to treatment and prognosis.

> And I have a feeling that if we open that Pandora's box [PEC], it would, to be selfish, probably give me a lot more work because … patients are already asking lots of questions, which is wonderful, but it would kind of open the door to many more questions that are not necessarily going to positively influence their care. (hematology/oncology, midcareer attending 31)

Finally, with pathologists doing extra work outside of their typical diagnostic roles, clinicians worried how they could be reimbursed for this time and how that would affect the health care system and pathology workflow.

> The real issue is that that's their time and is that reimbursable from a physician work standpoint. And how so? And what would insurers say? Maybe if they're doing … for free … [but] I'm guessing they're not [and it] should be reimbursed … but insurers may say, wait a minute, why do you need to talk to a pathologist, they have a report. (plastic surgery, midcareer attending 8)

If PECs Are Performed Well, Clinicians Believe There Is Potential for Improved Efficiency and Quality of Care

Despite the myriad concerns around pathologists' communication skills and logistical concerns, clinicians did note that there may be some benefits to having the pathologist more integrated into the care team. Many clinicians could envision a world where well-performed PECs led to a potential for improved efficiency for the clinician and overall improved quality of care. Well-performed PECs were conceptualized differently by each clinician but overall included factors such as the pathologist sticking to the best practice guidelines as previously described, the pathologist communicating clearly and empathetically, and a relatively seamless logistical integration of the PEC into the patient's medical care. Clinicians especially felt that if the pathologist skillfully communicated the patient's diagnosis prior to the clinic visit, the clinician would have more time in the visit to discuss treatment options and prognosis. As one clinician describes,

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> I think it would … decrease the amount of time repeating and educating surrounding the pathologic diagnosis, which I would say is probably … between 5 and 10 minutes for each new patient visit and would allow me to more rapidly get to talking about management strategies. (hematology oncology, junior attending 34)

Having an additional 5 to 10 minutes with each patient could allow for more nuanced and in-depth conversations regarding treatment options, which clinicians felt would be useful.

Some clinicians also explained that involving the pathologist more directly in the patient care team could lead to improved overall care quality. One clinician explained, "The pathology guides the treatment, so it does seem like it would be helpful to have a pathologist available. . . . As we talk about . . . multidisciplinary care . . . pathologists are a huge part of that. So, I . . . think . . . that does . . . promote optimal care to have all of the different specialties weigh in" (dermatology, midcareer attending 29). In tertiary care academic medical centers, many patients are coming with unusual cancers and receive changes in diagnosis when pathology is reread from an outside institution. Clinicians note that especially with complicated and difficult diagnoses, a deeper integration with the pathologist and explanations on the full report could be useful for both patients and clinicians, leading to improved overall quality of care TABLE 3.

DISCUSSION

The goal of this study was to characterize clinicians' attitudes toward PECs, an interaction whereby patients meet with their pathologist to discuss their report and view slides of their tissue using both quantitative and qualitative methods. Overall, 83% of clinicians had at least some level of interest in having their patient meet with their pathologist, which was relatively evenly divided between definitely interested, interested, and slightly interested FIGURE 2. Level of interest was not associated with clinician age, rank, or sex. The attitudes of treating clinicians toward PECs, as captured in the interviews, were nuanced, often resting on a balance of multiple competing interests. Clinicians noted that information can improve understanding and lead to empowerment but voiced concerns regarding cognitive overload and information leading to distress. Clinicians were intrigued by the idea of deeper clinical integration with the pathologist to improve clinician efficiency and quality of care but voiced significant concerns regarding pathologist communication skills and the logistics of the PEC. For purposes of organization, the discussion has been divided into the relevant domains and themes from the qualitative results.

Domain 1: Patient Impact

Clinicians Believe Highly Educated and Motivated Patients Are Most Likely to Benefit From PECs

Clinicians noted that likely only a small subset of their patients would be interested in or potentially benefit from a PEC. While there certainly may be complexities in who is interested and when, the view that only a small subset of patients would be interested in PECs has rather limited support in the literature.[9] Early work by Lapedis et al[8] showed that 85% of patients with cancer noted they were either definitely interested or interested in attending a PEC. Furthermore, in a pilot of PECs within a hematology/oncology clinic, Smith et al[11] reported that 100% of patients offered the in-office consultation with their pathologist were interested in participating. Additionally, Booth et al[5] have reported a higher than expected level of patient interest in PECs at their institution.

Clinicians perceived that highly educated and motivated patients would be the most likely to be interested in PECs. While this is a common perception, it is not entirely supported by early literature on PECs or literature on patient attitudes toward decision aids. In the largest multisite study of PECs, Jug et al[4] showed patients participating in a PEC had a mixed level of educational background. While there was a high percentage of participants with a postgraduate education (26.9%), those with less than high school diploma and those who had completed high school or a GED comprised nearly 20% of their population.[4] This suggests that there was interest in PECs across education levels. It is important to note that clinicians' beliefs in who wants to participate in PECs may potentially be influenced by some level of implicit bias toward certain groups of patients.[12,13] In the literature regarding attitudes toward decision aids, there is widespread belief that patients who are older, have less education, and are racial and ethnic minorities want to delegate decisions to their doctors and are not interested in engaging with decision aids.[12,14] This belief, however, is strongly refuted by research showing that most patients, including older patients and those with lower education levels, feel it is "extremely" or "very" important for patients to see decision aids when making a decision.[12,14] Further research into demographics of patients with cancer interested in PECs will be useful in better understanding who may be interested and who may stand to potentially benefit from a PEC. To ensure that studies are not biased toward particular demographic groups or highly educated or motivated patients, there must be robust efforts to recruit patients from a wide variety of backgrounds, including racial and ethnic minorities, older patients, and patients with lower education levels.

Patient's Pathology-Specific Information Needs Must Be Balanced With the Potential for Cognitive Overload and Emotional Distress

Clinicians' attitudes toward potential benefits around PECs centered on ethical principles of autonomy and informed consent. Autonomy is described as the patient's right to determine what is done with their own body.[15] A patient's ability to exercise autonomy is related to the principles of informed consent, including that the patient must receive a full disclosure of the medical information and comprehend the disclosure.[15] Clinicians pinpoint that meeting with a pathologist has the potential to improve the process of informed consent by helping patients to more fully comprehend their own diagnosis and the process of diagnosis, which may lead to improved patient emotional well-being and understanding.

Longitudinal studies document that a patient's information needs rise soon after diagnosis and remain high overall throughout

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treatment and survivorship.[16] Indeed, other studies note that 87% of patients with cancer want as much information as possible, good or bad.[17] Lack of information can lead to patient anxiety, distress, depression, uncertainty, and dissatisfaction, and it can negatively influence patients' treatment decisions.[17,18] Patients report that understanding terminology and context used in pathology reports is critical for their understanding of prognosis.[1] Difficulty understanding the pathology report can exacerbate anxiety around treatment decision-making and can negatively affect patients' ability to communicate effectively with members of their care team.[1] Clinicians note that pathologists, as experts in diagnosis, are in a position to potentially supplement patient information needs around diagnosis.

Furthermore, clinicians point out that PECs would include a visual component, the patient's slides, which may be a particularly useful tool in explaining diagnosis. Clinicians note that they frequently review radiology images with patients and find the visual representation helpful for patient education and comprehension. Indeed, visual representations including pictures when compared to text alone markedly increase attention to and recall of health education information.[19] Pictures can also increase comprehension and are especially beneficial in patients with low literacy.[19-22] The visual nature of PECs may prove to be a useful tool for patients with lower health literacy. Health literacy interventions, including decision aids, can lead to improved patient outcomes such as increased patient knowledge, increased patient satisfaction with treatment decisions, reduced patient anxiety, and better treatment adherence.[23-27]

Clinicians were particularly concerned with patients receiving too much information that could overload them and contribute to emotional distress. Clinicians pointed out that pathologic language is highly technical and, if not explained clearly, could add confusion to the patient's understanding of their disease. Clinicians quickly and astutely described the notion that information can be a "double-edged sword": although it might give some patients hope, it can also be discouraging.[28] Indeed, in a large qualitative study of patients with cancer, interviewees described times in which they had sought out information, as well as times when they had tried to avoid receiving more information.[28] While interviewees noted the high level of importance of information, what type of information was considered good or bad for a particular interviewee was entirely dependent on the individual and the particular moment of the disease trajectory they were in.[28] The clinicians' perception of nuanced and complex information needs for specific patients during specific time periods is a valuable concept that should be further studied in research on patient interest in PECs and the optimal timing of PECs.

Domain 2: Integrating the Pathologist Into the Care Team

Although Clinicians Value Pathologists' Expertise, Clinicians Are Concerned About the Pathologist's Ability to Effectively Communicate With Patients

Clinicians shared great concern for the pathologists' ability to communicate with the patient. Clinicians view their role as the bridge between the pathology report and the patient, and they feel that the pathologist best fits into the care team as the "doctor's doctor." As a group, pathologists were viewed by clinicians as physicians who prefer not to talk with patients, are introverted, and lack the ability to communicate information clearly and in a compassionate and empathetic manner. Indeed, this is a very common perception of pathologists by other physicians and medical students.[29] Pathologists themselves are very aware of this perception, and many cite it as a primary reason they are interested in participating in PECs.[9] Qualitative work by Dintzis et al[30] notes that pathologists self-report a lack of confidence in medical error disclosure communication skills with both treating clinicians and patients, and they cite that improved communication skills between the pathologist and treating clinicians could enhance transparency and promote disclosure of pathology errors. To our knowledge, there has only been one study evaluating pathologist communication skills during PECs.[4] In this study, nearly unanimously, patients rated pathologists' communication skills as excellent in both areas of clear communication ("talked in terms I could understand," "checked to be sure I understood everything") and empathy and compassion ("showed care and concern," "made me feel comfortable," "treated me with respect").[4] Although this early work shows that some pathologists are able to communicate clearly and compassionately with patients, it will be important to ensure that adequate patient communication training and feedback is available for pathologists interested in participating in PECs. In their seminal article on PECs, Gibson et al[3] outline a process for creating certified pathology navigators, who would initially be board-certified pathologists with additional training through a certificate program on communicating directly with patients.

Another area of significant concern for treating clinicians was the ability of the pathologist to set boundaries and communicate to the patient only about diagnosis. Clinicians worried that patients would ask pathologists questions about treatment and prognosis, and pathologists might give answers to those questions that were different from the treating clinician's assessment and that this could (1) confuse the patient and make medical decisions more difficult and (2) add to the clinician's already high workload as they needed to complete additional follow-up with patients due to the addition of a PEC. When pathologists were asked about their attitudes toward PECs, some noted concern for addressing patients' questions around treatment and prognosis.[9] In a small pilot of patients with prostate cancer, urologic oncologists who were interviewed following the intervention noted that pathologists were able to easily focus on diagnosis only with patients.[7] In designing and implementing PECs, the clinician's concern for pathologists to discuss only diagnosis with patients should be noted and carefully addressed.

Clinicians Worry About the Logistics of Adding a PEC Visit Into an Already Complex System of Medical Care

Clinicians worried that patients are already shuttling to many different doctors, especially in the case of cancer care, and that scheduling and coordinating an additional visit with a pathologist would

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be stressful for patients. Indeed, when patients are "ping-ponged" between multiple specialists for a single problem, this can lead to unnecessary delays in care, the potential for mixed messages between providers, and lower patient satisfaction.[31] Challenges with care team integration are often tackled by multidisciplinary care team clinics where patients come for one appointment to receive input from multiple medical providers, which reduces care fragmentation. When run thoughtfully, multidisciplinary care teams are associated with significant benefits to patients and improved overall quality of care.[32] Patients note that information from multiple sources, including second opinions from specialists, is important to avoid mistakes and fully understand their disease.[28] Nevertheless, these care teams are highly dependent on the way in which the teams are managed and led, and there must be vigilance to avoid overutilization of care without associated benefit to patients.[31] Clinicians' sentiment that integrating another member into the care team may be challenging should be examined closely in future work. Thoughtful consideration of patients' time and care coordination should be optimized, so that care fragmentation is limited and timely, and well-informed treatment decisions are prioritized. Concerns regarding reimbursement are out of the scope of this article but have been addressed by others who currently receive reimbursement for pathology services.[33,34]

If PECs Are Performed Well, Clinicians Believe There Is Potential for Improved Efficiency and Quality of Care

Clinicians share that better integration of pathology into the care team could reduce the burden on clinicians during their initial visit with patients. Typically, treating clinicians need to cover the patient's diagnosis, treatment options, and prognosis all in one visit. If pathologists were involved in explaining the patient's diagnosis before this visit, clinicians note that they may be able to have more time to explain treatment options and prognosis, and patients may be able to better process this information. Indeed, experts note that the initial in-person office visit to communicate malignant biopsy results is fraught with challenges, as patients struggle to absorb news of their biopsy result while also trying to engage in challenging conversations about treatment decisions.[35] Experts suggest that splitting this one visit into two visits may allow for improved shared decision-making, with patients making treatment decisions that more closely reflect their own preferences and values rather than those of their oncologist.[35]

Clinicians also share that better integration of the pathologist can contribute to improved quality of care by closing the communication gap that often exists between the pathologist, the patient, and the clinician. The pathology report is a critical tool that often determines prognosis and treatment, but pathology reports contain complex medical terminology, challenging framing, and inconsistent terminology.[1,36] Clinicians are positioned to be the bridge between the pathology report and the patient, but the inconsistent and complex terminology used in pathology reports can be difficult for even clinicians to always comprehend. This creates the potential for diagnostic miscommunication or omissions of data when interfacing with patients.[36] One study showed that 30% of the time, surgeons misunderstood the pathologists' reports.[37] In another study, 39% of clinicians/advanced practice practitioners reported not always understanding their pathologists' reports.[38] Clinicians explain that better integration of the pathologist into the care team would support quick resolutions of uncertainties relating to the pathologic report. Some clinicians note that through multidisciplinary care, PECs could support improved quality of care.

Limitations

This study had several limitations. First, this was a small study of 35 clinicians at a large tertiary academic medical center. Qualitatively, this study employed rigorous methods, but our ability to associate interest level related to quantitative factors such as rank, subspecialty, sex, or age was extremely limited. Future work should focus on including a diverse sample of clinicians when studying attitudes toward PECs. Second, snowball recruitment was used to reach our participants. This method allowed for a higher response rate in a hard-to-reach population.[39] However, this method is limited in that it is not a random sampling method, so there may have been selection bias in our sample of clinicians, and this study thus has limited generalizability. In addition, the average age of our participants was younger than the average age of clinical physicians in the general population (39 vs 51 years), which could introduce a bias toward a subset of clinicians who are generally more comfortable with new care modalities and/or more open to connecting with patients in "nontraditional" ways (social media, patient portals, etc).[40] Finally, additional selection bias may exist in that clinicians may have only responded to our e-mail interview invitation if they were interested or curious about interactions between patients and pathologists. To adjust for this, attempts were made to purposefully follow the opinions of those clinicians who were less interested, by specifically asking for recommendations of other clinicians who were thought to have a similar, uninterested, opinion. Additionally, regardless of interest level, in an effort to capture a wide range of perspectives, all participants were asked to comment on challenges as well as benefits.

CONCLUSIONS

As insurance companies begin to reimburse PECs[33] and societies such as the College of American Pathologists and the American Society for Clinical Pathology patient champions support the exploration of PECs,[41] it is essential that the attitudes of patients,[8] pathologists,[9] and clinicians be carefully considered, to ensure that this novel interaction is best received by these stakeholder groups and that any benefits to patients and their caregivers are maximized. The goal of this study was to understand clinicians' attitudes toward patient interactions with pathologists. Most clinicians showed some level of interest in having pathologists meet with their patients to discuss their pathologic report. The attitudes of treating clinicians toward PECs were complex, with clinicians often balancing pros and cons of the PEC based on characteristics and needs of individual patients, the communication skills of the pathologist, and the overall design and implementation of the PEC. Clinicians called attention to specific communication and logistical concerns while highlighting potential cognitive and emotional benefits to patients as well as potential benefits to clinician efficiency and the overall quality of care.

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REFERENCES

1. Austin EJ, Lee JR, Bergstedt B, et al. "Help me figure this out": qualitative explorations of patient experiences with cancer pathology reports. *Patient Educ Couns.* 2021;104:40-44.
2. Bonamici S. ***H.R.34—114th Congress (2015-2016): 21st Century Cures Act.*** 2016. https://www.congress.gov/114/plaws/publ255/PLAW-114publ255.pdf. Accessed September 17, 2022.
3. Gibson B, Bracamonte E, Krupinski EA, et al. A "pathology explanation clinic (PEC)" for patient-centered laboratory medicine test results. *Acad Pathol.* 2018;5:2374289518756306.
4. Jug R, Booth AL, Buckley AF, et al. Multisite quality improvement study of a patient-pathologist consultation program. *Am J Clin Pathol.* 2021;155:887-894.
5. Booth AL, Katz MS, Misialek MJ, et al. "Please help me see the dragon I am slaying": implementation of a novel patient-pathologist consultation program and survey of patient experience. *Arch Pathol Lab Med.* 2019;143:852-858.
6. Shachar E, Hasson S P, Fayngor R, et al. Pathology consultation clinic for patients with cancer: meeting the clinician behind the microscope. *JCO Oncol Pract.* 2021;17:e1559-e1566.
7. Bergholtz S, Kurnot S, DeJonckheere M, et al. The role of pathology explanation clinics as a treatment decision aid for men with prostate cancer (abs#1251). *Mod Pathol.* 2022;35:1355.
8. Lapedis CJ, Horowitz JK, Brown L, et al. The patient-pathologist consultation program: a mixed-methods study of interest and motivations in cancer patients. *Arch Pathol Lab Med.* 2019;144:490-496.
9. Lapedis CJ, Kroll-Wheeler L, DeJonckheere M, et al. Broadening the scope: a qualitative study of pathologists' attitudes toward patient-pathologist interactions. *Am J Clin Pathol.* 2021;156:969-979.
10. College of American Pathologists. Steps to start a patient-pathologist consultation program. https://www.cap.org/member-resources/articles/steps-to-start-a-patient-pathologist-consultation-program. Accessed March 8, 2022.
11. Smith L, Tolle B, Sherman W, et al. Pathologists discussing diagnoses with patients: a pilot study in lymphoma clinic (abs#2008). *Mod Pathol.* 2016;29:505A.
12. Wexler RM, Gerstein BS, Brackett C, et al. Patient responses to decision aids in the United States. *Int J Pers Centered Med.* 2015;5:7.
13. Street RL. Information-giving in medical consultations: the influence of patients' communicative styles and personal characteristics. *Soc Sci Med.* 1991;32:541-548.
14. Fowler FJ, Barry MJ, Sepucha KR, et al. Let's require patients to review a high-quality decision aid before receiving important tests and treatments. *Med Care.* 2021;59:1-5.
15. Varkey B. Principles of clinical ethics and their application to practice. *Med Princ Pract.* 2021;30:17-28.
16. Halbach SM, Ernstmann N, Kowalski C, et al. Unmet information needs and limited health literacy in newly diagnosed breast cancer patients over the course of cancer treatment. *Patient Educ Couns.* 2016;99:1511-1518.
17. Jefford M, Tattersall MH. Informing and involving cancer patients in their own care. *Lancet Oncol.* 2002;3:629-637.
18. Fallowfield LJ, Hall A, Maguire GP, et al. Psychological outcomes of different treatment policies in women with early breast cancer outside a clinical trial. *Br Med J.* 1990;301:575-580.
19. Houts PS, Doak CC, Doak LG, et al. The role of pictures in improving health communication: a review of research on attention, comprehension, recall, and adherence. *Patient Educ Couns.* 2006;61:173-190.
20. Mansoor LE, Dowse R. Effect of pictograms on readability of patient information materials. *Ann Pharmacother.* 2003;37:1003-1009.
21. Austin PE, Matlack R, Dunn KA, et al. Discharge instructions: do illustrations help our patients understand them? *Ann Emerg Med.* 1995;25:317-320.
22. Michielutte R, Bahnson J, Dignan MB, et al. The use of illustrations and narrative text style to improve readability of a health education brochure. *J Cancer Educ.* 1992;7:251-260.
23. Meherali S, Punjani NS, Mevawala A. Health literacy interventions to improve health outcomes in low- and middle-income countries. *Health Lit Res Pract.* 2020;4:e251-e266.
24. Stacey D, Légaré F, Lewis K, et al. Decision aids for people facing health treatment or screening decisions. *Cochrane Database Syst Rev.* 2017;4:CD001431.
25. Vahdat S, Hamzehgardeshi L, Hessam S, et al. Patient involvement in health care decision making: a review. *Iran Red Crescent Med J.* 2014;16:e12454.
26. Paasche-Orlow MK, Wolf MS. The causal pathways linking health literacy to health outcomes. *Am J Health Behav.* 2007;31:S19-S26.
27. McCaffery KJ, Holmes-Rovner M, Smith SK, et al. Addressing health literacy in patient decision aids. *BMC Med Inform Decis Mak.* 2013;13:S10.
28. Blödt S, Kaiser M, Adam Y, et al. Understanding the role of health information in patients' experiences: secondary analysis of qualitative narrative interviews with people diagnosed with cancer in Germany. *BMJ Open.* 2018;8:e019576.
29. Hung T, Jarvis-Selinger S, Ford JC. Residency choices by graduating medical students: why not pathology? *Hum Pathol.* 2011;42:802-807.
30. Dintzis SM, Clennon EK, Prouty CD, et al. Pathologists' perspectives on disclosing harmful pathology error. *Arch Pathol Lab Med.* 2017;141:841-845.
31. Makary MA. Multidisciplinary teams and clinics: better care or just more care. *Ann Surg Oncol.* 2011;18:2105-2106.
32. Lamb BW, Brown KF, Nagpal K, et al. Quality of care management decisions by multidisciplinary cancer teams: a systematic review. *Ann Surg Oncol.* 2011;18:2116-2125.
33. Joseph L [@lijjoseph]. Happy to report that insurance reimbursement for pathology consult clinic came through today! Thank you @BCBSMA for appreciating the value that #visiblepathologists bring to the patients @LGHWELL @Pathologists @ALBoothMD @TimAllenMDJD @DrMisialek @subatomicdoc @tjcummings22. Twitter. Published October 14, 2020. https://twitter.com/lijjoseph/status/1316369350375415808. Accessed July 1, 2022.
34. Karcher DS. Pathologists as clinical consultants. *Arch Pathol Lab Med.* 2022. doi: 10.5858/arpa.2022-0174-RA
35. Krishnan N, Fagerlin A, Skolarus TA. Rethinking patient-physician communication of biopsy results--the waiting game. *JAMA Oncol.* 2015;1:1025-1026.
36. Mirham L, Hanna J, Yousef GM. Addressing the diagnostic miscommunication in pathology. *Am J Clin Pathol.* 2021;156:521-528.
37. Powsner SM, Costa J, Homer RJ. Clinicians are from Mars and pathologists are from Venus. *Arch Pathol Lab Med.* 2000;124:1040-1046.
38. Heller DS. Areas of confusion in pathologist-clinician communication as it relates to understanding the vulvar pathology report. *J Low Genit Tract Dis.* 2017;21:327-328.
39. Valerio MA, Rodriguez N, Winkler P, et al. Comparing two sampling methods to engage hard-to-reach communities in research priority setting. *BMC Med Res Methodol.* 2016;16:146.
40. American Medical Association. For growing number of doctors, life in medicine extends into 70s. https://www.ama-assn.org/delivering-care/health-equity/growing-number-doctors-life-medicine-extends-70s. Accessed March 9, 2022.
41. American Society for Clinical Pathology. Featured events—ASCP patient champions. https://www.ascp.org/content/patient-champion/events. Accessed July 1, 2022.

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