

## “You Have to Know the End of the Story”: Motivations to Follow Up After Transitions of Clinical Responsibility

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### Abstract

#### Purpose

Physicians routinely transition responsibility for patient care to other physicians. When transitions of responsibility occur before the clinical outcome is known, physicians may lose opportunities to learn from the consequences of their decision making. Sometimes curiosity about patients does not end with the transition and physicians continue to follow them. This study explores physicians' motivations to follow up after transitioning responsibilities.

#### Method

Using a constructivist grounded theory approach, the authors conducted 18 semistructured interviews in 2016 with internal medicine hospitalist

and resident physicians at a single tertiary care academic medical center. Constant comparative methods guided the qualitative analysis, using motivation theories as sensitizing constructs.

#### Results

The authors identified themes that characterized participants' motivations to follow up. Curiosity about patients' outcomes determined whether or not follow-up occurred. Insufficient curiosity about predictable clinical problems resulted in the choice to forgo follow-up. Sufficient curiosity due to clinical uncertainty, personal attachment to patients, and/or concern for patient vulnerability motivated follow-up to fulfill goals of knowledge building

and professionalism. The authors interpret these findings through the lenses of expectancy-value (EVT) and self-determination (SDT) theories of motivation.

#### Conclusions

Participants' curiosity about what happened to their patients motivated them to follow up. EVT may explain how participants made choices in time-pressured work settings. SDT may help interpret how follow-up fulfills needs of relatedness. These findings add to a growing body of literature endorsing learning environments that consider task-value trade-offs and support basic psychological needs of autonomy, competency, and relatedness to motivate learning.

Physicians routinely transition responsibility for patient care to other physicians, but sometimes their curiosity or sense of responsibility does not end with the transition. Several studies identify adverse consequences of transitions for patient safety<sup>1-7</sup> and physicians' learning,<sup>8-18</sup> but few examine instances when physicians follow up with patients for whom they are no longer responsible.<sup>19-21</sup> When transitions of responsibility occur before the clinical outcome is known, physicians may lose opportunities to learn from the consequences of their decision making.

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Yet, some physicians pursue follow-up as part of their regular practice. What motivates them? Monitoring clinical outcomes and recalibrating diagnostic decisions based on follow-up is considered important for learning from experience and minimizing diagnostic errors.<sup>22-24</sup> However, this self-directed monitoring proves challenging for most physicians in today's work environment. Given the potential educational value of following up, we wanted to better understand how physicians characterize their goals for follow-up and how they choose which patients to follow after transitioning responsibility.

When motivation is framed as a goal-directed process, goals provide the impetus and motives initiate and sustain activities in pursuit of those goals.<sup>25,26</sup> This framing suggests a need to explore both physicians' goals and their motivational processes for following up on patients. Our need to understand

physicians' motives and goals stems from our assumption that follow-up helps physicians learn, and that stimulating trainees to follow up may be a strategy for education. The purpose of this research is to explore the phenomenon of physicians' follow-up activities and choices after transitioning responsibility for patients to other physicians to better understand what motivates them.

#### Method

We used a constructivist grounded theory approach<sup>27</sup> and conducted semistructured interviews with internal medicine (IM) hospitalist physicians and IM residents from a tertiary care academic medical center and/or its affiliated Veterans Affairs hospital. We chose to focus on these practice settings because transitions of responsibility occur frequently with no expectation of ongoing follow-up for transitioned patients. Academic hospitalists in this setting have direct patient care and

## Box 1

**Critical Incident Interview Triggers<sup>a</sup>**

1. Think about a time when, as a diagnostician, you worked through a challenging clinical case that was your responsibility and that others had not yet figured out. After your responsibility for this case ended and you handed it over to others, you learned that the final diagnosis was the *same* as you originally thought it might be.
2. Now think about a time when you worked through a diagnostically challenging clinical case that was your responsibility and that others had not yet figured out. After your responsibility for this case ended and you handed it over to others, you learned that the final diagnosis was *different* from what you originally thought it might be.

<sup>a</sup>Prompts sent to participants one day prior to interview.

supervisory teaching responsibilities as attending physicians. The institutional review board at Oregon Health & Science University approved the study.

The principal investigator (PI), a physician education researcher familiar with participants' work context but without supervisory or evaluative relationships with them, recruited participants via e-mail between January and June 2016. The IM program director or respective unit chiefs sent e-mails inviting all IM residents and hospitalists to participate in the study by contacting the PI directly. Participation was voluntary, and e-mails assured participants of privacy and confidentiality. The PI conducted, transcribed, and deidentified all of the one-hour interviews. Because we analyzed data iteratively alongside data collection, we made slight modifications to the interview guide, probing for disconfirming examples in later interviews. After the 16th interview, the PI conducted 2 additional interviews to ensure sufficient information to support themes the authors were identifying and check for alternative perspectives. The last two interviews offered no new insights, so the authors deemed the sample sufficient to address the study purpose.

We used critical incident technique (CIT) to explore the phenomenon of interest. In CIT, participants are asked to recall one or more memorable experiences and answer questions about them. CIT has been used to obtain firsthand reports of exemplary and problematic work tasks,<sup>28,29</sup> to prompt reflective writing in medical education,<sup>30</sup> and to uncover unexpressed and unmet needs.<sup>31</sup> Our CIT used two triggers to prompt recollections of specific clinical experiences, which participants received one day prior to the

interview (see Box 1). The data obtained from CIT, therefore, are participants' retelling of experiences as historically present. Subsequent interview questions explored more generally participants' motivations for following up, or forgoing follow-up, after transitioning responsibility for patient care.

Three authors analyzed the data: the PI (J.B.), an experienced health professions qualitative researcher (B.O.), and an emergency medicine education researcher (J.I.). We viewed our data with a general orientation toward motivation as a sensitizing concept.<sup>27</sup> We did not impose a particular theory of motivation and remained open to all potential themes.<sup>27</sup> On the basis of deidentified transcripts from the first two resident and hospitalist interviews, we developed open codes, which we each applied to one new transcript. We discussed and further refined code definitions, then individually applied them to additional transcripts until the coding structure appeared stable. J.B. then used Dedoose (SocioCultural Research Consultants, LLC, Manhattan Beach, California) to code all transcripts. Two additional experienced education researchers (D.I., O.t.c.) provided theoretical and methodological guidance. J.B. used analytic memoing and network displays to facilitate discussion of axial and selective coding with all authors.<sup>32</sup> We discussed our findings from the perspective of several motivational theories,<sup>26,33–36</sup> which led to the development of our conceptual model drawing from two theories, expectancy-value theory (EVT)<sup>34</sup> and self-determination theory (SDT).<sup>33</sup> Findings were presented iteratively to a nonparticipating group of hospitalists who agreed with the thematic representation.

**Results**

We interviewed 18 participants with varied levels of experience (Table 1). For representative data excerpts below, identification number and experience level are indicated for residents as R# and postgraduate year (PGY) level, and for hospitalists as H# and year range to preserve anonymity.

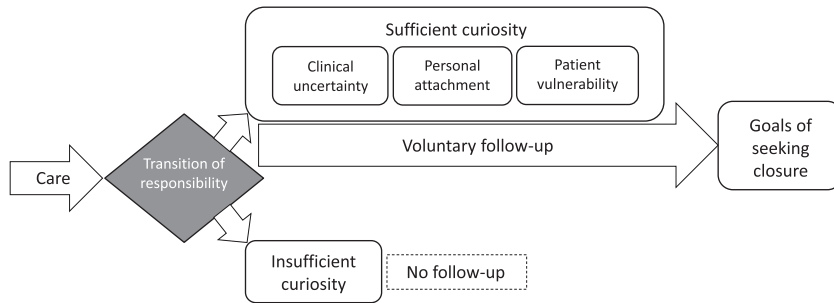
We identified curiosity after transitioning care as a condition to be satisfied for follow-up to occur. When participants were sufficiently curious about a patient's outcome, they pursued follow-up to seek closure for three possible reasons, alone or in combination: resolving clinical uncertainty, personal attachment to patients, and/or concerns about patient vulnerability. Contrarily, greater clinical certainty was associated with insufficient curiosity to invest time and effort in follow-up activities. These themes, and their relationships to one another, are displayed in Figure 1. We elaborate on these themes next.

**Table 1**  
**Characteristics of Participants**  
**Interviewed Between January and**  
**June 2016**

Participant characteristic	No.
<b>Total</b>	18
<b>Gender</b>	
Female	10
Male	8
<b>Hospital</b>	
University only	6
VA only	5
Both university and VA <sup>a</sup>	7
<b>Experience level, residents (n = 7)</b>	
PGY1	2
PGY2	3
PGY3	2
<b>Experience level, hospitalists (n = 11)</b>	
0–2 years	2
3–4 years	3
5–7 years	2
8–11 years	2
> 11 years	2

Abbreviations: VA indicates Veterans Affairs; PGY, postgraduate year.

<sup>a</sup>All residents worked in both settings; none of the hospitalists worked in both settings.



**Figure 1** A model of physicians' motivational processes for following up on patients after transitioning responsibility to another physician. After transitioning responsibility for patient care, physicians' follow-up occurred when curiosity about a patient's outcome exceeded the cost in time and effort of following up. Motives of clinical uncertainty, personal attachment, and/or patient vulnerability initiated voluntary activities directed toward goals of seeking closure.

### Transition of responsibility

Transitions of clinical responsibility from one physician to another occurred when patients were transferred from ambulatory or emergency department settings to hospitals, from night to day resident teams, between medicine and intensive care units, and when block rotation assignments ended. For all of the data reported here, participants' formal responsibility for patients had ended. Almost exclusively, follow-up occurred via the electronic health record (EHR). As one resident said, "even though I was more of an outsider looking at the chart ... it kind of provides the closure..." [R7;PGY3].

### Curiosity

Participants recognized the need to be selective in choosing which patients to follow up because of the multitude of competing demands. Curiosity, related to resolving uncertainty, motivated following up; but high levels of clinical certainty failed to motivate following up. Some acknowledged potential bias in relying on curiosity to determine which patients to follow up:

This is a bias in itself, but maybe 30%–50% of the inpatients I see ... there's not really a serious diagnostic dilemma ... and the question of course then is, "am I missing diagnostic dilemmas..." I probably don't follow up on all of those patients. [H10;3–4yrs]

**Insufficient curiosity.** Often stemming from repeated practice with high-frequency clinical problems, participants described "bread and butter" cases as those involving patients with common diagnoses, prototypical clinical presentations, and predictable responses to therapy. When participants had

determined the diagnosis and initiated a treatment plan prior to transitioning responsibility, these cases with greater clinical certainty did not lead to follow-up because the goal of closure had been satisfied. A hospitalist described patients who failed to inspire follow-up:

I guess patients who come in with something relatively straightforward clinically, usually something like urinary tract infection, pneumonia, or maybe congestive heart failure, ... things that seem a little bit clear, straightforward, they get treated, they feel better, they go home and I know that they have good follow-up and they're reliable and going to see their primary care doctor. [H8;0–2yrs]

**Sufficient curiosity.** Being curious enough about the patient or the clinical outcome triggered participants' conscious choices to follow-up. Many valued following up as a way to "refine the diagnostic process" yet cited multiple competing demands and acknowledged sacrificing other work or personal time in doing so. As one resident said, "I feel like it takes time but it refines me as a diagnostician and as a person.... I find this time really well spent" [R6;PGY3]. For situations stimulating curiosity, participants described being "just really curious to find out what happened" to patients. Being curious was also associated with emotions. Participants described cases of transitioned responsibility where something "doesn't sit right" [R1;PGY1] or situations that "make me a little bit nervous" [H8;0–2yrs].

### Motives for follow-up

When probed, sufficient curiosity was related to three motives that served

as triggers for following up: clinical uncertainty, personal attachment, and patient vulnerability.

**Clinical uncertainty.** Unfinished diagnostic processes, unresolved clinical questions, unpredictable outcomes, and unfamiliar clinical problems at the point of transitioning responsibility characterized clinical uncertainty. For all participants, lingering uncertainty signaled opportunities to learn. As one resident described:

I was curious if my assessment was correct, if I predicted the course, which I didn't. It was a learning moment. So, curiosity really drives me. I think that's the underlying trigger ... and then it leads to more reflection, a learning objective that I could use in the future. It provides a little closure. [R6;PGY3]

Residents more often than hospitalists specifically described following patients' illness trajectories and "cases I've never seen before."

I think anybody who I've diagnosed with a fairly poor prognosis ... whether it's cancer or some sort of terminal disease, I try to go back. That's usually not while they're still an inpatient, but just to see if they're still around and try to get a sense of the course of some of these disease processes. [R5;PGY2]

For hospitalists, diagnostic uncertainty triggered a desire to verify or revise knowledge, or generally pursue self-improvement. Seeing the full picture after a transition of responsibility prompted one participant to remark, "[it] just helps me rethink [this clinical presentation] ... almost like tightening your standard deviation" [H11;3–4yrs]. Another said, "I would check in on somebody when I am rotating off service the day before a really interesting consult I know is going to come ... or if there's still totally an open question..." [H16;8–10yrs].

In situations of diagnostic uncertainty, some participants expressed the desire to seek diagnostic verification. One hospitalist described follow-up after transitioning responsibility to an ICU physician:

We were worried about him ... because he was sort of a crash type of transfer [to the ICU]. By that time, the C. diff stool sample had come back negative. And we're like, "this is still the best fit for this hypothesis, what's going on with him?"

So, we followed his case electronically over the next day and a half until we secured the diagnosis and found out what was going on with him. [H16;8–10yrs]

**Personal attachment.** A bond or personal connection with a patient or participants' investment in the person triggered follow-up out of a desire to know how a patient fared. Sometimes follow-up occurred "more because I was interested in him than the rest of the case" [H15;8–10yrs]. Other times, the diagnostic challenge created an opportunity for attachment.

I would check the chart pretty much every day actually. I think I was so fascinated by that case ... and then also because I'd gotten to know the patient and family. He had a lovely family who was very attentive. Two kids who were about my age, and I was interested, just really curious to find out what happened. [H10;3–4yrs]

A resident described her connections with patients motivating follow-up as "... something about their personality, their family, whether it's kind of a sad story, but something where you just hope it kind of all works out" [R2;PGY2]. Similarly, a hospitalist reflected on how quickly personal attachments with patients form, saying:

Sometimes I have a personal connection with a patient. I like them. And I just want to sort of check in. I have this personal investment, a relationship that we had over a brief period of time. It's sort of amazing how you can develop this very intense relationship with a person you've only known for 3 or 4 days in the hospital. And also on some level, I'm just curious, "what happened to them?" [H8;0–2yrs]

Both hospitalists and residents conducted most of their follow-up through reading about patients in the EHR. However, as one hospitalist described, "I often would drop by and visit patients on the wards ... the ones that I connect with.... I will mostly keep visiting on the wards after I'm off service" [H18;>11yrs].

Although most participants described bonds with patients as motivating some of their follow-up activities, one participant expressed concern:

I think when it comes down to that emotional bonding, you start to run the risk of it pushing nosiness.... I really try to make sure I am doing something that is useful for the patient when I'm getting back into [the chart]. [H16;8–10yrs]

For this hospitalist, following up needed to have purpose to be legitimate. This participant did not see a bond or personal connection as legitimate in and of itself.

**Patient vulnerability.** Awareness of risks to patients' well-being also triggered follow-up. Several participants described "worrying" about patients' vulnerability in a health care system with multiple discontinuities. They perceived patients to be especially vulnerable at transition points where important details could fall through the cracks. Participants followed up "because I didn't like how the [test result] was trending" [R3;PGY2] or to see "they did get [a follow-up appointment] in a reasonable time period" [H12;5–7yrs].

Inadequate social supports also contributed to patients' vulnerability. One hospitalist said, "Sometimes I'm interested in patients that have very difficult social situations ... and I'm worried that something happened to them" [H8;0–2yrs]. One hospitalist distinguished bonding from advocating for vulnerable patients:

... Because of the socioeconomic issues at play, sketchy discharges are often not the ones I particularly bonded with, to be quite honest with you. This is often a person with substance abuse and a personality disorder who might be very challenging to work with [and] is also the person, I think, with the highest-risk discharge.... I think the question I'm trying to answer when I get into [the chart] ... is there something I can do to help either this patient or a patient in the future? [H16;8–10yrs]

Some participants expressed discomfort with a perceived loss of control over the outcome after transitioning responsibility. Describing worry about discharging patients before uncertainty is resolved, one hospitalist said, "... for me, [it's] more disconcerting when I don't quite know what's happening but the patient wants to leave the hospital and follow up with their outpatient doctor," which was "a little bit scarier as a hospitalist" [H8;0–2yrs].

#### Goals of seeking closure

Participants' reflections on curiosity revealed clinical uncertainty, personal attachment, and patient vulnerability as triggers to follow up, and motivated participants to pursue their goals of

seeking closure. For clinical uncertainty, closure involved going back to "try to get a sense of ... the course of some of these disease processes" [R5;PGY2] or following "his case electronically until we secured the diagnosis" [H16;8–10yrs]. For personal attachment, closure involved wanting to find out what happened to patients or "know the end of the story" [H10;3–4yrs]. For patient vulnerability, closure involved ongoing monitoring of patient care after responsibility had been transitioned because of worry that critical test results could get "lost" in the mix of multiple teams "transitioning off" [R6;PGY3] or perceiving patients with psychosocial challenges to be "the highest-risk discharge" [H16;8–10yrs].

#### Discussion

We identified seven themes italicized below (and shown in Figure 1) that characterized IM residents' and hospitalists' motivations to follow up on patients after transitioning responsibility to others. Curiosity about patients and their outcomes was a threshold condition that determined whether or not follow-up occurred as participants weighed benefits of follow-up against the time required. *Insufficient curiosity* resulted in choices to forgo follow-up, and participants' explanations for this lack of follow-up mapped to the single subtheme of *greater clinical certainty*. *Sufficient curiosity* guided choices about which patients to follow; three subthemes motivated participants toward goals of *seeking closure: clinical uncertainty, personal attachment* to patients, and/or concern for *patient vulnerability*.

These subthemes are not new to the profession. Uncertainty is ever-present in clinical settings.<sup>29</sup> Physicians describe making connections with patients as fundamental to sustaining humanistic attitudes and creating meaning for them as professionals.<sup>37</sup> Advocating for vulnerable patients is a long-standing value of the profession,<sup>38</sup> recently confirmed as a core competency,<sup>39</sup> and a quality improvement focus.<sup>40</sup> Yet, understanding how these concepts work as motives for follow-up is a different matter. We are aware that a variety of motivation theories are available to help us explore these findings further.<sup>26</sup> We selected two theories of motivation, EVT<sup>34</sup> and SDT,<sup>33</sup> to interpret our

findings because of the strength of evidence that participants' follow-up choices involved trade-offs and were intrinsically motivated by desire to find out what happened to patients. We elaborate on these interpretations next.

Identifying trade-offs fits with the EVT of motivation.<sup>34</sup> This theory may explain how participants prioritized specific patients for follow-up in their time-constrained work environments. EVT posits that perceptions of competence and task difficulty influence individuals' beliefs about the probability of success. Competence refers to feeling self-efficacious for taking action. Once individuals believe they are competent to pursue a goal (e.g., learning through closing the loop), the task (e.g., following up) will have characteristics that, when taken together, determine whether or not the goal is pursued. These characteristics—intrinsic, utility, and attainment value<sup>34</sup>—relate how the task is valued relative to the cost of carrying out the task. Intrinsic value refers to the enjoyment one gets from performing the task, such as learning from resolving unanswered clinical questions. How well the task relates to one's goals determines its utility value, such as perceiving ongoing learning as a professional responsibility. Attainment value refers to the personal importance of the task for confirming one's self-concept—for example, as physician-as-detective, physician-as-humanist, and physician-as-advocate. Cost captures the negative aspects of carrying out the task, such as taking time away from other professional responsibilities or self-care. Tacit weighing of these task characteristics likely influenced how participants made follow-up choices. When task characteristics were implicitly summed up and exceeded the time and effort necessary to pursue follow-up, participants expressed this valuation as “being curious.” When task characteristics were less valuable to them, the cost exceeded the effort required and participants were insufficiently curious. Thus, curiosity served as a threshold concept for considering the benefit of the follow-up task against the time available to pursue follow-up.

Participants in our study confidently reported their ability to distinguish between predictable and unpredictable

patient care problems. Problems with greater clinical certainty had lower task value and failed to motivate follow-up. Perhaps the predictable clinical problems our participants encountered matched closely to their existing illness scripts for these diagnoses, leaving little room for perceived opportunity to learn. Contrarily, participants' follow-up efforts in cases of clinical uncertainty may suggest motivational goals of building new or revising existing illness scripts.<sup>41</sup> Building clinical knowledge and diagnostic acumen has high attainment value for physicians, which may explain why our participants invested considerable time in follow-up activities when they were clinically uncertain. Further, unpredictable clinical problems varied by experience level, with novice participants describing more common diagnoses (e.g., lung cancer) and experienced hospitalists describing rare diagnoses (e.g., intravascular lymphoma) as problems piquing their curiosity. These differences suggest that clinical uncertainty evolves, and curiosity thresholds shift over time.

Participants were free to choose which cases they wished to follow. Their nearly uniform description of “being curious” about many clinical cases suggests that participants were intrinsically motivated to follow up. According to SDT, satisfying inherent psychological needs of autonomy, competence, and relatedness leads to enhanced intrinsic motivation to pursue novel or challenging tasks for learning.<sup>33</sup> In this framework, the concepts of autonomy (having choices) and competence are similarly described in EVT. We considered the SDT concept of relatedness to help us make sense of participants' motive of personal attachment. Relatedness refers to desires of belongingness or connection with, or being valued or cared for by others. As traditionally described in SDT, relatedness is a social construct referring to participating in significant relationships with others. This may include patients, if connection with them adds to satisfying physicians' relatedness needs, which may be the case with thankful patients or those who add meaning to the physician's work in a social sense.<sup>42,43</sup> In a more recent description of the concept, relatedness is also about feeling significant to others.<sup>44</sup> Thus, our participants may have

pursued follow-up to fulfill their needs to experience themselves as giving or contributing to their patients.

Personal connections with patients served to motivate follow-up, yet participants carried out follow-up almost exclusively through chart review without patients' awareness. The EHR facilitates new ways of connecting with patients in ways that did not exist when SDT was first described. It is possible that participants' relatively brief face-to-face relationships establish enough of a connection that technology-facilitated follow-up thereafter satisfies some relatedness needs. If so, this may represent a technology-mediated cultural evolution of the meaning of relatedness. Not all participants pursued follow-up motivated by personal attachments, and one expressed an alternative view, cautioning against “nosiness.” We believe our findings warrant further investigation to better understand underlying goals related to participants' personal attachment to patients that motivated chart monitoring.

Our findings may inspire supervising physicians to require trainees to follow up on patients to help them learn by closing the loop. Similarly, residency education and continuous professional development programs may be tempted to consider incorporating follow-up activities into their formal curricula. As tempting as that might be, we urge caution. Imposing requirements to follow up may be problematic, as such actions may undermine, not encourage, self-determined learning. Instead, we suggest taking an autonomy-supportive approach.<sup>45</sup> In this view, supervising physicians would provide opportunities to choose which patients to follow up with, minimize external incentives or controls, avoid judgmental language, and encourage residents and physicians to take responsibility for following up to learn of the consequences of their earlier decisions.<sup>42,43,45–47</sup> Physicians will always have more patients they *could* follow up with than time will allow. From an EVT perspective, those responsible for designing educational interventions may wish to consider the impact of trade-offs physicians make when they respond to or ignore motives for learning from following up.<sup>34</sup> Reducing barriers to follow-up might

lower the threshold for curiosity and thus support potential learning from a larger number of patients. Work and learning environments providing time for valued follow-up activities may reap learning benefits shown elsewhere.<sup>47</sup>

Our study has limitations. We interviewed IM residents and hospitalists at a single academic medical center. These face-to-face interviews allowed us to explore in depth their experiences of following up, but our findings may be context specific. We encourage readers to consider whether the findings resonate in their settings. Our use of a physician interviewer familiar with IM hospital-based work environments was useful for exploring nuanced details, but also might explain why we had difficulty eliciting incidents where participants failed to bond with or rejected attachment to patients. Participants may not have wanted to talk about patients they didn't like in front of the physician interviewer. By using critical incident reporting, we were able to obtain specific examples from participants, which was helpful to our analysis. However, the technique relied on participants' historical retelling of events, which is subject to bias. Their choice of incidents may not be representative and their examples may not have elicited other motives for pursuing follow-up, or other reasons to forgo follow-up. Directly observing physicians' experiences with transitions or debriefing with them shortly thereafter would likely add a different perspective to our findings. Finally, we intentionally sought participant representation from a wide spectrum of experience, although we did not analyze our data to deliberately make comparisons by level of experience. This could be explored in future studies.

The themes we identified, and the relationships among them, provide new insight into IM physicians' choices about following up on patients for whom they were no longer responsible. Sufficient curiosity about unresolved issues at the point of transition triggered follow-up. Clinical uncertainty, personal attachment, and patient vulnerability motivated physicians' actions. Our interpretation of these findings through the lenses of EVT and SDT adds to a growing body of literature strongly endorsing the importance of learning environments

that consider task-value trade-offs and support the basic psychological needs of autonomy, competence, and relatedness to motivate learning.<sup>26,33,34,42-47</sup> Most existing research addresses motivation in medical students; our findings extend this discussion of complex motivational processes to residency education and continuing professional development. That our participants used the EHR to conduct most of their follow-up raises important questions about modern physician-patient relationships, yet it was clear that these physicians often sacrificed their personal time in pursuit of follow-up. When sufficiently curious, participants were clearly motivated to know the end of the story.

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## References

- 1 Lofgren RP, Gottlieb D, Williams RA, Rich EC. Post-call transfer of resident

- responsibility: Its effect on patient care. *J Gen Intern Med.* 1990;5:501-505.
- 2 Gottlieb DJ, Parenti CM, Peterson CA, Lofgren RP. Effect of a change in house staff work schedule on resource utilization and patient care. *Arch Intern Med.* 1991;151:2065-2070.
- 3 Laine C, Goldman L, Soukup JR, Hayes JG. The impact of a regulation restricting medical house staff working hours on the quality of patient care. *JAMA.* 1993;269:374-378.
- 4 Petersen LA, Brennan TA, O'Neil AC, Cook EF, Lee TH. Does housestaff discontinuity of care increase the risk for preventable adverse events? *Ann Intern Med.* 1994;121:866-872.
- 5 Rajaram R, Chung JW, Jones AT, et al. Association of the 2011 ACGME resident duty hour reform with general surgery patient outcomes and with resident examination performance. *JAMA.* 2014;312:2374-2384.
- 6 Patel MS, Volpp KG, Small DS, et al. Association of the 2011 ACGME resident duty hour reforms with mortality and readmissions among hospitalized Medicare patients. *JAMA.* 2014;312:2364-2373.
- 7 Denson JL, Jensen A, Saag HS, et al. Association between end-of-rotation resident transition in care and mortality among hospitalized patients. *JAMA.* 2016;316:2204-2213.
- 8 Bernabeo EC, Holtman MC, Ginsburg S, Rosenbaum JR, Holmboe ES. Lost in transition: The experience and impact of frequent changes in the inpatient learning environment. *Acad Med.* 2011;86:591-598.
- 9 Philibert I, Friedmann P, Williams WT; ACGME Work Group on Resident Duty Hours. Accreditation Council for Graduate Medical Education. New requirements for resident duty hours. *JAMA.* 2002;288:1112-1114.
- 10 Gagnon J, Melck A, Kamal D, Al-Assiri M, Chen J, Sidhu RS. Continuity of care experience of residents in an academic vascular department: Are trainees learning complete surgical care? *J Vasc Surg.* 2006;43:999-1003.
- 11 Melck AL, Weber EM, Sidhu RS. Resident continuity of care experience: A casualty of ambulatory surgery and current patient admission practices. *Am J Surg.* 2007;193:243-247.
- 12 Ledwidge SF, Bryden E, Halestrap P, Galland RB. Continuity of care of emergency surgical admissions: Impact on SpR training. *Surgeon.* 2008;6:136-138.
- 13 Nakayama DK, Thompson WM, Wynne JL, Dalton ML, Bozeman AT, Innes BJ. The effect of ACGME duty hour restrictions on operative continuity of care. *Am Surg.* 2009;75:1234-1237.
- 14 Vidyarthi AR, Arora V, Schnipper JL, Wall SD, Wachter RM. Managing discontinuity in academic medical centers: Strategies for a safe and effective resident sign-out. *J Hosp Med.* 2006;1:257-266.
- 15 Szymczak JE, Brooks JV, Volpp KG, Bosk CL. To leave or to lie? Are concerns about a shift-work mentality and eroding professionalism as a result of duty-hour rules justified? *Milbank Q.* 2010;88:350-381.
- 16 Sun NZ, Gan R, Snell L, Dolmans D. Use of a night float system to comply with

- resident duty hours restrictions: Perceptions of workplace changes and their effects on professionalism. *Acad Med.* 2016;91:401–408.
- 17 Bump GM, Zimmer SM, McNeil MA, Elnicki DM. Hold-over admissions: Are they educational for residents? *J Gen Intern Med.* 2014;29:463–467.
  - 18 Holmboe E, Ginsburg S, Bernabeo E. The rotational approach to medical education: Time to confront our assumptions? *Med Educ.* 2011;45:69–80.
  - 19 Wright SM, Durbin P, Barker LR. When should learning about hospitalized patients end? Providing housestaff with post-discharge follow-up information. *Acad Med.* 2000;75:380–383.
  - 20 Lang VJ, Mooney CJ, O'Connor AB, Bordley DR, Lurie SJ. Association between hand-off patients and subject exam performance in medicine clerkship students. *J Gen Intern Med.* 2009;24:1018–1022.
  - 21 Young E, Stickrath C, McNulty MC, et al. Internal medicine residents' perceived responsibility for patients at hospital discharge: A national survey. *J Gen Intern Med.* 2016;31:1490–1495.
  - 22 Ericsson KA. Acquisition and maintenance of medical expertise: A perspective from the expert-performance approach with deliberate practice. *Acad Med.* 2015;90:1471–1486.
  - 23 Dhaliwal G, Detsky AS. The evolution of the master diagnostician. *JAMA.* 2013;310:579–580.
  - 24 Schiff GD. Minimizing diagnostic error: The importance of follow-up and feedback. *Am J Med.* 2008;121(5 suppl):S38–S42.
  - 25 Schunk DH, Pintrich PR, Meece JL. *Motivation in Education.* 3rd ed. London, UK: Merrill Prentice Hall; 2010.
  - 26 Cook DA, Artino AR Jr. Motivation to learn: An overview of contemporary theories. *Med Educ.* 2016;50:997–1014.
  - 27 Charmaz K. *Constructing Grounded Theory.* Los Angeles, CA: Sage Publications Ltd.; 2014.
  - 28 Flanagan JC. The critical incident technique. *Psychol Bull.* 1954;51:327–358.
  - 29 Farnan JM, Johnson JK, Meltzer DO, Humphrey HJ, Arora VM. Resident uncertainty in clinical decision making and impact on patient care: A qualitative study. *Qual Saf Health Care.* 2008;17:122–126.
  - 30 Branch WT Jr, Pels RJ, Hafler JP. Medical students' empathic understanding of their patients. *Acad Med.* 1998;73:360–362.
  - 31 Gustafson DH, Taylor JO, Thompson S, Chesney P. Assessing the needs of breast cancer patients and their families. *Qual Manag Health Care.* 1993;2:6–17.
  - 32 Miles MB, Huberman AM, Saldana J. *Qualitative Data Analysis: A Methods Sourcebook.* Los Angeles, CA: Sage Publications Ltd.; 2014.
  - 33 Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol.* 2000;55:68–78.
  - 34 Wigfield A, Eccles JS. Expectancy-value theory of achievement motivation. *Contemp Educ Psychol.* 2000;25:68–81.
  - 35 Dweck CS, Leggett EL. A social-cognitive approach to motivation and personality. *Psychol Rev.* 1988;95:256–273.
  - 36 Pintrich PR, Conely AM, Kempler TM. Current issues in achievement goal theory and research. *Int J Educ Res.* 2003;39:319–337.
  - 37 Chou CM, Kellom K, Shea JA. Attitudes and habits of highly humanistic physicians. *Acad Med.* 2014;89:1252–1258.
  - 38 ABIM Foundation, ACP-ASIM Foundation, European Federation of Internal Medicine. *Medical professionalism in the new millennium: A physician charter.* *Ann Intern Med.* 2002;136:243–246.
  - 39 Sherbino J, Bonnycastle D, Côté B, et al. Health advocate. In: Frank JR, Snell L, Sherbino J, eds. *CanMEDS 2015 Physician Competency Framework.* Ottawa, Ontario, Canada: Royal College of Physicians and Surgeons of Canada; 2015.
  - 40 Davis MM, Devoe M, Kansagara D, Nicolaidis C, Englander H. "Did I do as best as the system would let me?" Healthcare professional views on hospital to home care transitions. *J Gen Intern Med.* 2012;27:1649–1656.
  - 41 Custers EJ. Thirty years of illness scripts: Theoretical origins and practical applications. *Med Teach.* 2015;37:457–462.
  - 42 ten Cate ThJ, Kusrkar RA, Williams GC. How self-determination theory can assist our understanding of teaching and learning processes in medical education. *AMEE guide no. 59.* *Med Teach.* 2011;33:961–973.
  - 43 Kusrkar RA, ten Cate ThJ, van Asperen M, Croiset G. Motivation as an independent and a dependent variable in medical education: A review of the literature. *Med Teach.* 2011;33:e242–e262.
  - 44 Ryan R, Deci E. *Self-Determination Theory. Basic Psychological Needs in Motivation, Development and Wellness.* New York, NY: Guilford Press; 2017.
  - 45 Kusrkar RA, Croiset G. Autonomy support for autonomous motivation in medical education. *Med Educ Online.* 2015;20:27951.
  - 46 Kusrkar RA, Croiset G, Ten Cate TJ. Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Med Teach.* 2011;33:978–982.
  - 47 Vansteenkiste M, Simons J, Lens W, Sheldon KM, Deci EL. Motivating learning, performance, and persistence: The synergistic effects of intrinsic goal contents and autonomy-supportive contexts. *J Pers Soc Psychol.* 2004;87:246–260.