Graduate Medical Education and Patient Safety: A Busy—and Occasionally Hazardous—Intersection

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A patient admitted to a teaching hospital with a mild episode of acute pancreatitis initially improved, but then her condition deteriorated and she subsequently died. The initial deterioration probably reflected bowel obstruction, as shown on an abdominal radiograph that an on-call intern forgot to review. This diagnostic delay was compounded by poor communication that resulted in a medical student inserting a feeding tube—rather than a nasogastric tube—to decompress the bowel, followed by failure to recognize how ill the patient had become. The case highlights the hazards of patient handoffs as well as the importance of clear communication techniques and knowing when to ask for help. The discussion also shows the vicious circle that results when attending physicians fail to provide effective supervision: Not only is safety compromised but trainees lose the experience of being supervised. Consequently, trainees have no models of effective supervision on which to draw when they become supervisors. They then fall into the same trap as those who taught them, busying themselves with direct patient care and providing supervision only as time allows.

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"Quality Grand Rounds" is a series of articles designed to explore a range of issues related to health care quality and patient safety. The articles present actual cases using a format that integrates traditional medical case histories with results of root-cause analyses and, where appropriate, anonymous interviews with the involved patients, physicians, nurses, and risk managers. Cases do not come from the discussants' home institutions. This is the 13th and final case in the series, which began in the 4 June 2002 issue.

SUMMARY OF THE CASE

An 88-year-old woman was admitted to a teaching hospital early in the academic year with a mild episode of acute pancreatitis. After initial clinical improvement, the patient's condition deteriorated and she subsequently died. Her death was partly attributable to a delayed diagnosis of small-bowel obstruction and illustrated problems in sign-outs and handoffs, the supervision of trainees, and knowing when to call for help.

THE CASE

Mrs. L., an 88-year-old woman with a history of hypertension and angina, woke up shortly after midnight with epigastric pain and vomiting. Her serum lipase level was substantially elevated at 2000 U/L, and a computed tomography scan of her abdomen revealed mild inflammation at the head of the pancreas and multiple small gallstones. She was admitted with a diagnosis of acute pancreatitis and was prescribed bowel rest, intravenous fluids, and small doses of morphine. The next day, Mrs. L.'s pain had markedly lessened and her serum lipase level had decreased to 136 U/L, so her diet was advanced.

On hospital day 3, Mrs. L. reported increased epigastric pain after breakfast. Intravenous fluids were resumed, and she was given nothing by mouth. Her pain again improved quickly, so the team restarted a clear liquid diet that same evening. On hospital day 4, a Friday before one of the first weekends in the academic year, the patient had no appetite. Her intern wondered whether the patient's abdomen had become more distended but noted no other concerning findings.

On afternoon sign-out rounds, the attending physician, Dr. A., thought that the patient's stuttering course warranted reassessment and took the team to her bedside. The patient was in no distress, but her abdomen felt firmer and more protuberant. Dr. A. instructed the intern to recheck the serum lipase level and to obtain plain films of the abdomen. If the radiographs revealed ileus or obstruction, the attending physician wanted the on-call intern, Dr. I., to place a nasogastric suction tube.

WEEKEND EFFECTS

The initial management of the patient reflects the treating clinician's understandable expectation of a rapid recovery from "mild pancreatitis." A common cognitive trap is "anchoring bias," in which the clinician's first impressions exert undue influence (1, 2), preventing consideration of alternative diagnoses even in the face of substantial disconfirming evidence. The attending physician avoided this trap when he recognized that the patient's hospital course had diverged from his initial expectation and that it warranted reassessment. Moreover, Dr. A. harnessed a valuable teaching opportunity by bringing his team to the patient's bedside, rather than merely instructing them to pursue additional diagnostic testing.

This bedside assessment occurred on Friday afternoon before "one of the first weekends in the academic year,"

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bringing to mind the "July phenomenon," the purported increase in complications associated with the arrival of new trainees. Although anecdotes abound, the literature does not clearly identify treatment in July as a risk factor for poor outcomes (3–7). The upcoming weekend, however, should be mentioned. Two studies (8, 9) have found increased deaths on weekends for patients whose treatment depends on rapid availability of services and personnel. In addition to the potential lack of available services, weekends involve extended periods of physician "cross-coverage." In 1 study, such coverage increased the risk for preventable adverse events 3-fold (10). Thus, Dr. A. probably regarded Friday's bedside evaluation as an important opportunity for team members on call for the weekend to "lay eyes" on Mrs. L.

The Case, Continued

The results of the serum lipase test, which were in the normal range, were returned from the laboratory early Friday evening. Abdominal radiographs were taken at 4:30 p.m. but were not reviewed.

Call at this hospital did not occur as a team. One intern (sometimes accompanied by a medical student) took call for each medical team. A senior resident from 1 of the teams would be "in house" as a backup for all of the interns but also would see new patients in the emergency department or from other services. Dr. R., the senior resident on Mrs. L.'s team, had not been on call with Dr. I. Friday night but was on call Saturday. When Dr. R. arrived Saturday morning, she immediately asked about the abdominal films and the patient's overnight course. Dr. I. acknowledged that he had forgotten to review the films. After signing out the other patients to the new on-call team, Dr. I. reviewed the radiographs with a radiologist who noted distended loops of small and large bowel with air-fluid levels in the small bowel, consistent with ileus or mechanical obstruction. Dr. I. paged Dr. R., who was busy seeing patients in the emergency department. Dr. R. asked whether Mrs. L. still looked stable; Dr. I. said yes. Dr. R. told him to make sure Mrs. L.'s nurse inserted a nasogastric tube promptly. If the nurse could not do it, Dr. I. should do so himself.

A few minutes later, Dr. R. met with Dr. A. (the attending physician), who had been in the hospital since 7:00 a.m. seeing patients admitted to his service the night before. Because of an unexpected problem with child care, Dr. A. was rushing to leave the hospital by late morning. Before leaving, he planned to ask Dr. R. about any new issues on the "old" patients and perform an urgent surgical consult. He would return to complete his rounds in the late afternoon.

Dr. A. asked Dr. R. about Mrs. L. The resident described Dr. I.'s oversight and stated that Dr. B. (the on-call intern) or Ms. S. (the on-call medical student) would promptly insert a nasogastric tube. After instructing the resident to have whoever placed the tube page him if the patient looked worse than she had on the previous day, Dr. A. completed his surgical consult and left the hospital.

Sign-Outs and Handoffs

Forgetting to follow up on the abdominal radiographs may have partially resulted from Dr. I.'s inexperience as a July intern. However, similar failures are expected at all levels of practice. Surely every clinician has found himself or herself driving home at the end of a long day only to remember an important radiograph that was not reviewed, a consult that was not done, or an urgent patient telephone call that was not returned. Such "slips" represent expected failings of human memory, not deficiencies of knowledge or skill (11).

Structured rounding and sign-out systems provide solutions to the problem of relying on human memory to manage long "to-do" lists and track key clinical information. One hospital implemented a computerized sign-out system that combined available data from the existing clinical information system, such as current medications and allergies, with more detailed information entered by residents, such as problems and "to-do" lists (12). Before the sign-out system, cross-coverage represented a significant risk factor for preventable adverse events (hazard ratio, 5.2 [95% CI, 1.5 to 18.2]). After implementation, this hazard ratio decreased to 1.5 and was no longer statistically significant. Another institution implemented a similar computerized sign-out system and significantly reduced the number of patients the team forgot to see on rounds (2.5 vs. 5 overlooked patients/team per month; $P < 0.001$) (13).

Information technology offers another method of facilitating follow-up for important test results. Clinical laboratories and hospitals with advanced information systems are increasingly looking for ways of "pushing" important test results to clinicians instead of clinicians having to "pull" them (14). Developing such functionality for electronic records will probably confer demonstrable benefits, as with the computerized sign-out systems discussed previously. As potentially attractive as these computerized solutions are, they do not address the deeper problem of poor communication (15, 16). At some point during the rounds-turned-bedside evaluation, Dr. A. mentioned that the abdominal radiograph should be reviewed later that evening. He probably regarded it as self-evident that this review (to exclude bowel obstruction) was urgent and thus probably did not emphasize to Dr. I. that reviewing this radiograph represented the single most important "to-do" item for him on call. Even ignoring the possibility that an inexperienced intern might not immediately appreciate the urgency of this follow-up item, the absence of robust and standardized communication practices in most clinical settings provides numerous opportunities for errors due to ineffective information transfer.

Residents in 1 study (16) highlighted the problems that arise as a result of wide variation in sign-out practices,

from basic elements of format, such as whether communication occurred in person or through annotated patient lists left in on-call rooms, to elements of content, such as documenting medication changes and important changes in clinical status. Thus, the adoption of standard sign-out formats to ensure the communication of all pertinent information may prove as important as acquiring computerized rounding aids (12, 13). The situation–background–assessment–recommendation (SBAR) format has been recommended as a template for improving communication among clinical personnel (17). However, in some settings, such simple techniques as summarizing key points may suffice. For instance, once the team had left Mrs. L.'s bedside, Dr. A. might have said, "We've just reviewed the abdominal examination for a patient with suspected bowel obstruction. Now let's review the plan for tonight."

THE CASE, CONTINUED

Ms. S., a fourth-year medical student taking call that day, offered to convey the need to insert the nasogastric tube to Mrs. L.'s nurse because she wanted to learn how to perform the procedure. Mrs. L.'s nurse offered to teach her. Unfortunately, through a communication error, the nurse thought a feeding tube had been requested and the medical student did not appreciate the difference.

At 1:00 p.m., the nurse contacted the on-call intern, Dr. B., because the patient's level of consciousness had decreased and her respiratory status had worsened. Dr. B. was surprised to find Mrs. L. somnolent with diaphoresis, tachycardia (heart rate, 105 beats/min), hypotension (blood pressure of 90/66 mm Hg), and an oxygen saturation of 93% on 2 L via nasal cannula. Her abdomen was distended and tympanitic but not tender. The nurse was present during the assessment and mentioned that the insertion of the feeding tube had occurred without complication. Dr. B. remembered that the plan had been to place a nasogastric tube for suctioning, not a feeding tube. She removed the feeding tube and then inserted a nasogastric tube herself. Dr. B. obtained blood cultures, an electrocardiogram (which showed no ischemic changes), and serum lipase level (which remained normal). She then paged Dr. R., the supervising resident, to inform her about the change in Mrs. L.'s condition, the error involving the feeding tube, and the actions she had taken.

THE TENSION BETWEEN SERVICE AND SUPERVISION

In the preceding discussion, we recommended summarizing the patient plan as a routine form of closure during rounding discussions but stopped short of a more specific recommendation, such as the use of "repeat back." However, something like a "repeat back" protocol, as recommended to prevent errors in telephone communication of critical laboratory results and verbal orders (18, 19), would probably have been useful in this case. The intern might have briefly reviewed the management of bowel obstruction and the motivation for placing a nasogastric tube in this setting, and then, by way of summary and clarification, asked the student to repeat back the plan to insert a nasogastric tube and the indication for doing so.

In addition to underscoring the importance of communication issues, these most recent developments in the case show pervasive problems with supervision in teaching hospitals. This case exemplifies the traditional layers of supervision—attending physicians supervise residents, who supervise interns, who in turn supervise medical students. Despite the crucial roles supervision plays in developing trainees' clinical skills and in ensuring patient safety, best practices for supervision (that is, how to balance the need for attending oversight with the educational value of trainee autonomy) have received surprisingly little theoretical consideration or empirical evaluation (20). One study (21) found that residents who thought that their faculty were more often present on the floors reported greater satisfaction with those attending physicians and better medical care and autonomy.

Probably more important (but even less studied) than the tension between supervision and autonomy is that between supervision and service. As shown in this case, clinical service demands compromised the ability to supervise at each level of the training hierarchy. The attending physician had new patients to see and an urgent surgical consult to perform (in addition to an unexpected personal matter), so he could only meet briefly with the resident. The resident had new consults in the emergency department, so she relied on telephone updates from the interns. The interns had so many patients to assess that supervision of the medical student during insertion of the nasogastric tube was delegated to the patient's nurse.

Increases in service needs pose well-recognized threats to education because of decreased time available for teaching. Less recognized is the erosion of supervision as an activity and a skill. In a recent Accreditation Council for Graduate Medical Education Bulletin, a commentator noted, "Program directors frequently encounter residents who perform extraordinarily well in their early training, but become only mediocre supervisors, as if their superior approach to doing the work of patient care inhibits their ability to teach others how to do it. They would rather do the work themselves" (22). We see ourselves and colleagues increasingly falling into this trap: In response to greater responsibilities for direct patient care, we simply perform the work ourselves. The result is that "while there is clearly more attending presence, there has not necessarily been more teaching" (23).

We learn 2 things from good teachers: the content of what they teach and their methods of teaching. Similarly, from good supervisors, we benefit both from their supervision and their models of how to supervise. Thus, when attending physicians take on more direct patient care, the educational loss for trainees comprises not just decreased autonomy but loss of role models for effective supervision. Without such models, trainees then fall into the same trap

as they assume supervisory roles. On busy services, residents efficiently perform "scut" to protect overloaded interns but consequently spend less time with the interns. This well-intentioned pattern leaves the interns with no model for how to balance their service demands with the educational and supervision needs of medical students. Thus, the intern in this case passed on to the nurse the opportunity to teach the medical student how to perform nasogastric intubation. Although this involvement of the nurse represents a refreshing example of interdisciplinary collaboration, it also reflects the degree to which service demands have eroded the act of supervision and the modeling of how to supervise effectively—at attending physician and trainee levels.

The Case, Continued

Dr. B. returned to check on the patient. The recently placed nasogastric tube had not drained, which surprised her. She asked the nurse to join her at the bedside. The nurse then realized that she had inadvertently attached the tube to the nozzle for tracheal aspiration rather than to the nozzle intended for nasogastric tubes. Once the tube was attached to the appropriate wall suction, there was a substantial amount of bilious drainage.

At 5:00 p.m., the nurse paged Dr. B. because the patient was now barely responsive, had a blood pressure of 85/45 mm Hg, and had no urine output. Dr. B. instructed the nurse to give a 500-mL bolus of normal saline and initiate transfer to a monitored unit. Dr. B. arrived minutes later. After a brief assessment of Mrs. L., she paged Dr. R. to ask whether the patient's code status was known. Dr. R. was surprised to hear how sick the patient had become and promptly joined the intern at the bedside. Dr. R. agreed with the plan to transfer Mrs. L. to a monitored unit but worried that the patient might require urgent intubation. Dr. R. explained Mrs. L.'s unexpected turn for the worse to Mr. L., the patient's husband, who had been at his wife's bedside since morning. Mr. L. expressed surprise at the sudden flurry of activity and the news that his wife might die imminently, especially considering how well she had looked at admission. However, he added that he understood that people sometimes developed complications during hospitalization. He informed Dr. R. that his wife had expressly stated that she did not want "heroic measures," even briefly. Mrs. L.'s status was therefore documented as "do not resuscitate." Approximately 30 minutes later, her blood pressure became undetectable and she stopped breathing. On the basis of the discussion with her husband, no attempts at resuscitation were made.

Knowing When to Call for Help and Feeling Comfortable Doing So

A striking feature of this case and several others in this series (1, 24–26) is the cascade of errors—the forgotten abdominal radiograph, the mistakenly inserted feeding tube, the erroneous attachment of the nasogastric tube to continuous tracheal suction—perfectly illustrating James Reason's "Swiss cheese" model of major adverse events (27). Even when the focus is restricted to graduate medical education, this case highlights multiple problems (**Table**). However, recurring themes include communication, supervision, and inexperience, all of which underlie the problem of knowing when to call for help.

All clinicians require the ability to recognize when they need help. Attending physicians must know when to call in consultants from other specialties or when to ask colleagues in their own specialty for a second opinion. Trainees must recognize when they need help from a more senior trainee supervisor or attending physician. In hospital settings, there is the added variable of time: "Should I run the case by the attending physician in the morning or call him or her right away?" In some cases, inexperience prevents awareness that one needs help at all. In other cases, however, one may recognize the need for help but choose not to solicit it.

One factor that contributes to reluctance to seek help is workload. Residents and attending physicians rely on interns and students to monitor the progress of patients at a level of detail that they simply cannot because of the workload of the team. This workload in turn can create a sense that calls for help are unwelcome—that attending physicians and senior residents are so busy with their own responsibilities that they prefer not to receive requests for help unless patients are in extremis. The tradition of praising trainees as "strong" if they can handle heavy workloads with relatively little supervision further increases the possibility that interns or students will hesitate to call for help even when they recognize the need to do so (29). Other aspects of health care culture, such as steep hierarchies (30), probably make trainees reluctant to voice concerns in critical situations.

Although inexperienced interns may not know when to call for help, inexperienced supervisors may not recognize when such calls have been made. The senior resident, Dr. R., probably had enough experience that, had she been at the bedside, she would have appreciated the gravity of Mrs. L.'s deterioration and initiated earlier, more aggressive evaluation and treatment. However, she may not have had enough experience to sense—when Dr. B. paged her to tell her about Mrs. L.'s condition and her actions—how concerned the intern was about the patient's status. On the basis of our discussions with Drs. B. and R., it seems likely that if Dr. R. had explicitly asked, "Would you like me to see the patient?", Dr. B. would have said, "Yes." Here we see the effects of the loss of supervisor role models. One wonders how many busy attending physicians had ever paused in the middle of their work to ask Dr. R. the same question earlier in her training. Or, even more important, how many attending physicians ever recognized that Dr. R. seemed concerned about a patient and simply suggested, "Let's go see the patient together"? Without past experi-

Table. **Categories of Contributing Causes to the Adverse Outcome in This Case***

Variable	Contributory Factors	Proposed Solutions
Communication and culture	Not explicitly identifying Mrs. L.'s abdominal radiograph as a crucial "to-do" item for the on-call intern Failure to communicate clearly to the medical student the indication for the nasogastric tube Failure to articulate clearly the need for help (e.g., the intern assessing the patient's deteriorating condition) Probable reluctance of the intern to explicitly call for help before the patient's condition became critical	Structured communication Summarize each patient's plans during rounds and explicitly identify priority items Use "repeat back" or SBAR formats Increase self-awareness among trainees to internal warning signs of the need to call for help Teamwork training Culture change (less emphasis on "being strong" and less steep hierarchies)
Supervision and inexperience	Attending physician and resident charged with supervising interns were stretched thin by patient load and competing responsibilities Intern similarly stretched thin by service load did not have time to supervise the medical student inserting the nasogastric tube Inadequate supervision compounded by trainees not knowing when to call for help Supervisors may have missed subtle calls for help	Emphasis at all levels (attending physician and trainee) of the need to balance clinical service and supervision Importance of modeling effective supervision at the attending physician level and teaching this skill to trainees Specific training in effective techniques for supervision
Task and technology factors	Reliance on human memory and unstructured paper-based aids for managing sign-out items contributed to oversight involving the abdominal radiograph Reliance on the most junior members of the team to perform important triage tasks	Computerized sign-out systems Use of simulators to better prepare trainees to respond to critical changes in patient status
Workload scheduling	Heavy workload for attending physician eroded supervision of resident, who in turn was too overworked to supervise interns Large number of patients (n = 25) covered overnight by 1 intern probably contributed to his forgetting to follow up on the abdominal radiograph Unexpected child-care issue resulted in Dr. A. having to leave the hospital for much of the day without another attending physician to supervise his team	Investment in greater staffing on teaching units Decisions about workload at all levels must allow time for supervision and education, not just direct patient care Backup call systems for attending physicians
Institutional context	Pressure to decrease work hours for trainees without concomitant increased availability of other personnel to cover service needs	Provide subsidies to pay for additional personnel or implement systems to compensate for increased discontinuity

* Categories of contributing factors have been adapted from the toolkit for conducting root-cause analyses produced by the Veterans Affairs National Patient Safety Center (www.va.gov/ncps/rca.html) and the London Protocol for analyses of critical incidents (28). The specific factors and proposed solutions represent those related to graduate medical education and supervision. Other issues (e.g., human factors problems, such as the interconnectability of tubes for tracheal and nasogastric suction equipment) are not included here. SBAR = situation–background–assessment–recommendation.

ences of effective supervision, Dr. R. would have little opportunity to develop the ability to sense when trainees under her supervision need help.

Another factor in this case may have been that Dr. R. focused on the fact that Dr. B. had identified explanations for the deterioration of Mrs. L.'s condition—the erroneous placement of a feeding tube and attachment of the nasogastric tube to tracheal suction—and had taken appropriate actions to rectify these problems, rather than considering the possibility that the patient's condition had nonetheless deteriorated substantially. Ironically, Dr. A., the attending physician, had probably fallen into a similar trap earlier when Dr. R. informed him that the abdominal radiograph was not reviewed overnight. Dr. A. focused on the fact that a problem had been identified and a remedial plan was developed, rather than considering that Mrs. L.'s condition might already have deteriorated to the point that he should either reassess the patient himself or ask Dr. R. to do so. For Dr. A., with 8 years of experience as an academic hospitalist, the problem was not inexperience as a clinician or supervisor but the pressure to finish his rounds promptly to deal with an unexpected personal problem.

This last point raises an issue that will probably receive increasing attention over the next few years: the impact of resident work-hour regulations on the work patterns of their supervisors. As one commentator wrote, "[G]one are the days when attendings graced the ward for two hours to wax academic over the handful of new admissions. Now the attendings are present all day, every day, including weekends, writing daily notes on all 35 patients. A few sense their lives sliding back to some of the woes of residency: chaotic days, long hours, sacrificed evenings and weekends" (31). Reductions in resident work hours may increase work stress and intensity for attending physicians, but quality of life for residents probably improves (32, 33). However, the degree to which reductions in work hours improve patient safety or educational outcomes for residents remains unclear (32, 34). Many residents feel that they have even more work to accomplish in less time (35). Moreover, approaches to reducing work hours invariably increase the number of patient handoffs. In the absence of effective support systems (12), this greater discontinuity of care increases the risk for adverse events (10, 36).

The focus on achieving compliance with the Accreditation Council for Graduate Medical Education work-hour rules will consume the attention of training programs over the next several years. The short-term goals of these efforts consist of reaping the intended benefits of these regula-

tions—fewer errors due to fatigue—without increasing other safety problems, such as those engendered by more patient handoffs (10, 12, 36). However, longer-range goals must include the development of new models for resident education and supervision (23). The time in which house-staff and students were on the wards to "learn from their mistakes" has thankfully passed. Increased supervision is now expected by patients, legislators, lawyers, and regulators. The mere presence of attending physicians, however, is not the same as effective supervision. As shown by this case, increasing clinical workloads for attending physicians can eliminate the opportunity to exercise and model effective supervision. We must aim for a new training model in which attending physicians effectively discharge their oversight responsibilities while preserving sufficient intellectual autonomy for trainees. Finally, just as the traditions of "learning from their mistakes" and "see one, do one, teach one" must become things of the past, so must the culture that lauds "strong" residents who function independently and brands others as "weak," inhibiting residents from asking for help when they feel overwhelmed or uncertain about how to proceed.

The Institution's Response

The case was presented at a weekly conference for the inpatient medical service. These rounds had quality and safety issues as their focus, but they included no formal mechanism for identifying issues for follow-up. The service chief was absent the day this case was discussed, as were (by coincidence) many of the case's key participants. The discussion focused largely on the initial oversight involving the abdominal radiograph. Computer sign-out systems were mentioned, but those in attendance perceived that the hospital would not support the development of such a system until after it had completed implementation of a computerized provider order-entry system (expected to take several years).

Although disappointing, this unimpressive response probably represents the norm. Many hospitals have abandoned traditional morbidity and mortality rounds. Where such rounds do occur, they usually do not highlight safety problems, especially in departments of medicine (37). Moreover, follow-up is usually haphazard, depending on whether a clinician with administrative clout becomes sufficiently engaged to pursue 1 of the issues raised by the case.

The lack of disclosure of the error to the patient's husband also probably represents the norm, despite regulatory mandates and, in some jurisdictions, legislative requirements. Although some argue that full disclosure of errors will not increase malpractice costs, little evidence supports this claim (38). For trainees, however, fear of censure from supervisors probably exceeds the fear of litigation. In a well-known study, only 54% of residents reported their most serious error to their attending physician (39). A more recent study reported only a slightly higher percentage of 63% (40). In both cases, negative emotional responses correlated with residents' perceptions of their training environment (for example, judgmental attending physicians).

One of the key tenets of the patient safety movement is avoiding this "culture of blame." Even when blame is not a factor, most programs have no formal mechanism for supporting trainees after a major error, despite the recognized psychological impact such errors can have on physicians (41). In fact, we had the impression when we interviewed Dr. I. that he held himself largely responsible for the events in this case, but that no attending physician (including Dr. A.) had discussed these events or Dr. I.'s feelings with him. Training programs will increasingly need to educate attending physicians about how to support residents through the process of disclosing major errors to patients (including modeling such disclosure themselves) and providing psychological support for residents as they deal with the aftermath of such errors.

Conclusion

In summary, this case highlights several pervasive problems in academic medical centers. A forgotten task, suboptimal supervision, failure to call for help, and large individual workloads coalesced to contribute to a patient's death. If even 1 of these issues had been handled optimally, the outcome might have been different. The importance of this case lies in the potential for improvement—improved sign-out systems, better communication practices, and training models that balance effective supervision with direct clinical service and also maintain trainee autonomy. Such improvements will not only benefit today's patients but will probably benefit generations of patients to come through the multiplier effect of the supervisor–trainee relationship.

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