

## *Virtual Mentor*

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### **CASE AND COMMENTARY**

#### **Patient Care and Student Education, Commentary 1**

Commentary by Caleb Alexander, MD

#### **Case**

Dr. Harvey was admitted yesterday to the general medical service of a teaching hospital. This is his third admission in 8 months. One prior admission was, like this one, due to exacerbation of long-standing chronic obstructive pulmonary disease (COPD). The other admission was prompted by dizziness and fainting brought on by his poorly controlled diabetes. Mr. Harvey is 57 years old and African American. Management of his health is complicated by obesity and (as he confessed to Miss Rogers, the third-year medical student who interviewed him when he arrived on the unit) his continued smoking.

A chest X-ray ordered in the emergency department before Mr. Harvey's admission shows results consistent with pneumonia. Blood culture results are not back yet. Antibiotic treatment administered intravenously is indicated, but Mr. Harvey's peripheral circulation is poor and several attempts this morning to place the IV in his arms failed. Becoming somewhat irritable with the attempts, Mr. Harvey complained that, "No one in this place can ever find my veins."

Dr. Gage, the senior resident, decides that a subclavian central line should be placed to gain intravenous access. Then antibiotics, fluids, and other medications, if needed, can be easily and effectively administered without continuing to poke at Mr. Harvey's peripheral veins.

Dr. Gage is supervising 2 third-year medical students who are in week 6 of their 8-week internal medicine rotation. The students are Mr. Crane and the previously mentioned Miss Rogers who has interviewed Mr. Harvey. Dr. Gage has established good working relationships with both students, who are highly motivated and competent. Dr. Gage takes her role as educator seriously and wants to be confident that students gain the experience and, to the extent possible, the skills they should while under her supervision.

Mr. Crane has successfully placed central lines on several occasions during his rotation. Miss Rogers has been unsuccessful on 2 attempts with different patients. Each time Dr. Gage stepped in (using her 3 sticks and you're out rule). For a couple of reasons, Mr. Harvey is a good patient for Miss Rogers next attempt. His condition is not emergent; he is accustomed to the teaching hospital routine, and has taken Miss Rogers' into his confidence. He considers her to be "on his side." On the

other hand, his obesity makes the procedure more difficult than usual. Because of his multiple health problems, complications, should Miss Rogers' puncture his lung, would be life-threatening. He is already irritable about the inability of those at this hospital to "find his veins." Mr. Harvey is a Medicaid patient, and Dr. Gage is sensitive to the potential for Medicaid patients to shoulder more than their share of student and intern "practicing." Were she acting solely as clinician and not as educator, Dr. Gage would ask Mr. Crane to place the line.

Miss Rogers knows that she should succeed at placing a central line before completing her internal medicine rotation, and time is running out. She is on her way in to inform Mr. Harvey about the procedure and its risks and to obtain his consent for it. She identified herself as a student when she first introduced herself and interviewed him. They seem to communicate well. If Dr. Gage asks her to attempt to place the line, she wonders, how much will she have to tell Mr. Harvey about her past attempts. When she goes into Mr. Harvey's room, he is chatting with his grown daughter who has just arrived to see what's going on with her father.

Three commentaries on this case follow.

### **Commentary 1**

Mr. Harvey is a patient with emphysema who has now been diagnosed with pneumonia and admitted to a teaching hospital. We are informed that the placement of a central venous catheter is clinically indicated, and at issue is the question of *who* is to place it and *under what circumstances*. This case illustrates a common dilemma for house officers and attending physicians in teaching hospitals. The primary challenge is how to best balance the potential tension that exists between the goals of providing the best standard of care to individual patients and fostering a learning environment where medical students and residents acquire the knowledge and technical skills that are critical to their developing into competent physicians. What degree of excess risk is acceptable for a patient to assume in order to offer training for novice students? Can this excess risk be quantified in particular circumstances? What are the factors that mediate this increased risk and how can they be minimized? Do the principles of informed consent require that Mr. Harvey be advised of the identity and technical competency of the person who will place the central line?

### **See One, Do One, Teach One.**

Teaching hospitals serve an important function within our society by offering physicians-in-training the opportunity to learn the skills that they must have to become competent practitioners while attempting to provide an exceptional standard of care to individual patients. Society has an interest and investment in this process.

Naturally, achieving technical competency among physicians is a gradual process marked by several transitions. Medical students begin with lectures and anatomy lab and only after their first years in medical school do they move to the clinical

setting where they participate directly in patient care. While models exist to help those in training achieve technical proficiency at different procedures (eg, practicing suturing on fruit) few would argue that these suffice at providing the exposure necessary to achieve competency.

The oft quoted expression "See one, do one, teach one" is used as a guide for many hesitant physicians-in-training as they consider their preparedness to perform bedside procedures. While the ratio of 1:1:1 is not steadfast, the transitive nature of education that it reflects is noteworthy. Those with less experience first observe a procedure, then perform one, and finally reach a stage of teaching the procedure to the next person with less experience as the cycle begins anew.

Returning to the case, there are 2 principal issues that Dr. Gage, the senior resident, must consider. First, who is to attempt the central line placement? Second, what information should the process of informed consent include? In considering these issues, Dr. Gage should consider the potentially competing goals of maximizing patient safety while fostering an educational climate for her trainees.

### **Who Is to Attempt Central Line Placement?**

Several factors are important for the team to consider as they make this decision. What are the student's and house officer's comfort with the student performing the procedure? How acutely ill is the patient and how quickly is the procedure required? What are the patient's and family's wishes regarding who is to perform the procedure? How technically difficult is the procedure? Finally, what are the likelihood and severity of potential complications and how are these modified by the greater technical experience of more senior physicians? While perhaps the least quantifiable, the most important global measure that a senior house officer should consider in deciding who is to perform a procedure is his or her own intuition as to the appropriateness of the teaching moment. Unusual amounts of anxiety, a feeling of haste, and poor technical details (eg, lighting, height of bed, position of patient, failure to identify important physical landmarks) are the best indicators of a highly risky procedure. In this case, the combination of Mr. Harvey's comorbid conditions, the life-threatening nature of a potential complication (pneumothorax), and Miss Rogers' own perceived pressure to successfully place a central line before her rotation ends, each should give Dr. Gage pause regarding the wisdom of having her attempt the procedure at the current time.

### **What Should Mr. Harvey Be Told?**

Let us assume that Dr. Gage and Miss Harvey carefully consider the factors discussed above and conclude that indeed this is a good opportunity for Miss Rogers to attempt the procedure. What information should Mr. Harvey be told in order to provide an informed consent? Standard components of informed consent, such as the indications, risks, benefits, and alternatives to the procedure can be discussed. The key question in this setting is how much information Mr. Harvey needs to be provided regarding the identity and technical competency of the person who is to perform the procedure. Not telling Mr. Harvey about who is to perform

the procedure would deny him important information that might modify his decision. On the other hand, to tell him who is to perform the procedure while denying him knowledge of that person's technical competency seems inadequate. How then would he use the information regarding this person?

The challenge to the team is that assessing technical competency and talking about it with patients can be a difficult task. These challenges are magnified by such other common obstacles to informed consent as the acuity of illness that often characterizes the hospitalized patient. It is arguable whether a detailed discussion of Miss Rogers' prior experience with central line placement (ie, that she has failed in 2 prior attempts) is necessary. First, such discussion risks raising disproportionate anxiety on the part of both Mr. Harvey and Miss Rogers regarding the procedure. Second, it is unclear whether Mr. Harvey (or the medical team) has the requisite knowledge to interpret the information provided—how common is it to fail an attempt at catheter placement, how does this likelihood change over someone's training and across different patients, what are the implications of a failed attempt with regard to potentially life-threatening complications such as pneumothorax?

Rather than discuss Miss Rogers' prior experience with central line placement, Mr. Harvey should be informed of the proposal that Miss Rogers, a medical student, will be the person attempting the procedure under the close supervision of Dr. Gage. Additionally, any questions that Mr. Harvey may have about Miss Rogers' experience should be addressed honestly and directly.

### **The Bottom Line**

Virtually all senior house officers will be challenged during their training to balance the health care needs of their patients with the educational needs of their junior colleagues. Sensitivity to the mediators of procedural risk, in conjunction with an adequately thorough informed consent, should be the trainee's primary guide in achieving this balance.

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*The people and events in this case are fictional. Resemblance to real events or to names of people, living or dead, is entirely coincidental. The viewpoints expressed on this site are those of the authors and do not necessarily reflect the views and policies of the AMA.*

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