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# Introduction to Health Systems Science: Experiential Learning Through Patient Interviews in the Emergency Department

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## ABSTRACT

Increased complexity in health care delivery is now a problem of national proportions. Traditional medical education fails to sufficiently prepare students for the realities of practicing medicine in the 21st century. To address this critical problem, health systems science (HSS), which focuses on the broader system of care, has emerged as the “third pillar” of undergraduate medical education complementing the basic and clinical sciences. The authors identified a need to increase the amount and quality of HSS education in a way that would engage students and provide a platform to learn how patients interact with the health care system. UNITED (Understanding Needs in the Emergency Department) was thus designed and implemented to introduce preclinical medical students to HSS through patient interactions in the emergency department (ED). EDs serve as America’s health care “safety net” and there is no lack of opportunity to learn how the current system of care does and does not work for patients. Qualitative analysis of students’ written reflections revealed the following themes of the UNITED experience: 1) medical students question their understanding of the health care system after listening to patients’ stories, 2) focused patient interviews about the health care system provides a unique perspective of the patient experience not found elsewhere in the preclinical curriculum, and 3) discussing the realities of being a patient in the U.S. health care system is an emotional experience for students. Based on these data, the authors concluded that asking preclinical students to interview patients about their experience in the health care system leads to emotional activation and a subsequent stated desire to improve care delivery.

## NEED FOR INNOVATION

For over a century, undergraduate medical education (UME) has adhered to the “two-pillar” model focused on the basic and clinical sciences. As a result, medical students often state a lack of understanding of the structure and function of the U.S. health care delivery system as well as the roles that professional organizations, regulatory bodies, health policy, and politics play in shaping the health care landscape.<sup>1</sup> The lack of formal medical education in these domains has

led to difficulties creating and sustaining a patient-centered system of care. Instead, a chaotic and disjointed system that too often does not meet the standards of first-world health care exists. Nowhere are these failures more apparent than in U.S. emergency departments (EDs), where emergency medicine (EM) physicians care for anyone, anywhere, anytime. To create a system of care better aligned to meet the needs of our patients, foundational knowledge in these areas is required for future physicians to understand how

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DMW’s spouse is a co-founder and co-owner of Certus Critical Care, Inc., a medical device company. They currently have no devices on the market. NTS, AD, and KJ report no conflict of interest.

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systems-level complexity impacts individuals and populations, so that we can transform our system into one that works better for our patients and those who care for them.<sup>2</sup>

## BACKGROUND

In 2013, the American Medical Association identified a need for education in health systems science (HSS) to better align UME with emerging health system needs. Now considered the “third pillar” of medical education, HSS focuses on the broader context of U.S. health care delivery including organizational structures and processes, policy, economics and management, clinical informatics and health information technology, population health, value-based care, and health system improvement.<sup>3</sup>

Since the introduction of HSS, many schools have initiated curricula including didactic programs and clinical experiential learning opportunities intended to provide context and motivation for learners.<sup>4</sup> However, leading HSS educators note ongoing challenges fully integrating HSS into UME, specifically highlighting the challenge of students’ mixed receptivity.<sup>5</sup>

## OBJECTIVE OF INNOVATION

To increase the amount and quality of HSS education, we developed and piloted an experiential learning curriculum called UNITED (Understanding Needs in the Emergency Department). The primary goals were to introduce second-year medical students to concepts in HSS through semistructured patient interviews in the ED and to engage students in HSS education by exposing them to challenges real patients face in our current health care delivery system.

## DEVELOPMENT PROCESS

UNITED was situated during the second year of medical school after initial introduction to patient interviews but prior to beginning clinical rotations. Its setting in the clinical environment allowed students to become immersed in health care delivery. This approach relied on transformative learning theory, during which the students’ point of view was transformed through exposure to a new experience and critical reflection of the experience.<sup>6</sup>

The ED was selected for the following reasons: 1) it serves as a gateway for access to health care as well as

the safety net for patients suffering from common failures of our health care delivery system; 2) many patients receiving care in the ED are particularly vulnerable yet eager to share their stories; and 3) patients often spend a significant amount of time waiting and are, therefore, available for student interviews.

## IMPLEMENTATION

The UNITED curriculum consisted of four parts—an introductory lecture, a physician-led ED “UNITED experience,” a group debrief session, and a written reflection assignment. All participants were volunteers from the second-year class, which included 140 students. Due to time and space limitations, the pilot was restricted to 24 students of 74 volunteers. UNITED was then piloted over a 1-week period at the UC Davis School of Medicine. The UC Davis Institutional Review Board Administration determined this project to be minimal-risk research and therefore exempt. Each of the four parts of UNITED is described below.

### Introductory Lecture

The session opened with the telling of *The Star Thrower* by Loren Eiseley, which set the stage for UNITED’s reliance on storytelling.<sup>7</sup> We explained the goals of UNITED and encouraged students to discover patients’ needs and care gaps by listening to patients’ stories with empathy. Students were provided with a series of suggested questions for different patient types to uncover how the health care system does and does not work for individual patients (see Data Supplement S1, Appendix S1, available as supporting information in the online version of this paper, which is available at <http://onlinelibrary.wiley.com/doi/10.1002/aet2.10512/full>).

### UNITED Experience

Students attended ED shifts led by an EM faculty member with specialized knowledge in HSS education and a social worker who provides clinical services in trauma, hospice, and primary care. Students were paired with a classmate and then met with patients identified by the faculty member to ask them about HSS related topics. Students interviewed patients from different races, genders, sexual identities, and ethnicities as well as from the complete spectrum of socioeconomic status. Although the students saw only one to three patients during their ED experience, they shared their stories with their classmates during the debrief,

**Table 1**  
Themes and Representative Quotes

Theme	Representative Quotes
Medical students question their understanding of the health care system after listening to patients' stories.	<ul style="list-style-type: none"> <li>• "I felt that I had a pretty good grasp of the complex issues that plague our medical system in the US due to my many experiences working in health care. .the UNITED experience gave me the opportunity to sit down with patients and ask the types of questions that rarely get asked in the ED. It allowed me to see the issues through a new lens."</li> <li>• "Access to care is usually inhibited by insurance and lack of transportation, but this was a woman who had both resources and still could not get the services that she needed in a timely manner."</li> <li>• "This patient had health coverage through Medi-Cal but told us that she was unable to get into an office to establish care with anyone due to months-long waits and inconsistent appointment availability. She used the ED for all health issues, emergent or otherwise."</li> </ul>
Focused patient interviews about the health care system provide a unique perspective of the patient experience not found elsewhere in the preclinical curriculum.	<ul style="list-style-type: none"> <li>• "It was interesting to hear his long history of struggling with trying to get insurance, paying out of pocket for appointments, and having constant visits to the ED."</li> <li>• "She noted that in her experience, what [kind of insurance] you have gets you seen faster."</li> <li>• "It wasn't until she tried to kill herself that she got the services that she so desperately needed. Is this really the system we want?"</li> </ul>
Discussing the realities of being a patient in the U.S. health care system is an emotional experience for students.	<ul style="list-style-type: none"> <li>• "Despite any inconvenience, all these patients were still ecstatic about the health care they were receiving. There was nothing but high praise for the doctors in the ER and the level of care that they got. There is something pretty special that is happening in the ER."</li> <li>• "Towards the end of our discussion, it was depressing and felt like as a doctor, we too have to navigate a system to best serve our patient."</li> <li>• "Overall, this was a very valuable experience that enriched my understanding of health care systems, policies, insurance and that stimulated my attention towards critically approaching the health care system in order to make a progressive benefit for patients and the state of medicine in the future."</li> <li>• "Overall, I thought it was a great experience, especially seeing the nonclinical health care that our patients have to go through. I think that it would be great to continue this program."</li> </ul>

which allowed for greater reflection on their own experience while providing the opportunity to hear about the other patients interviewed by their classmates.

### Group Debrief

After all students completed their ED shifts, they reconvened for a facilitated group discussion. The conversation café structure was utilized to facilitate the organization of individual experiences into themes during three rounds of discussion.<sup>8</sup>

### Written Reflection

Students were assigned a written reflection paper in which they were asked to respond to the following questions: What surprised you about the experience? What did you learn and how will you apply this in your clinical years?

## OUTCOMES

Students submitted a total of 15 reflections after the debrief session; some reflections were the work of

paired students. We performed a qualitative study of students' written reflections. Three reviewers (NTS, DMW, and AD) coded each reflection independently using the streamlined codes to theory model for qualitative inquiry and then compared and agreed on the codebook through multiple adjudication discussions.<sup>9</sup> Ninety-eight codes were identified, with 19 codes identified five or more times in the reflections (see Data Supplement S1, Appendix S2). The primary themes that emerged are discussed below and representative quotes are found in the Table 1.

### Medical Students Question Their Understanding of the Health Care System After Listening to Patients' Stories

Many students reported understanding the U.S. health care system before participating in UNITED. Reflections frequently described how the patients' stories challenged the students' preconceived notions of health care delivery. Students reflected on the reality that health insurance does not equate with health care access. Many reflections discussed the difficulties

patients faced when attempting to navigate the complex health care system.

### **Focused Patient Interviews About the Health Care System Provide a Unique Perspective of the Patient Experience Not Found Elsewhere in the Preclinical Curriculum**

Student reflections described patients' challenges with fragmented care and how the ED serves as the gateway to health care for many, which was eye opening to students. Students often reflected on patients' concerns with waiting room time, financial barriers to care, and the perceived value of health insurance. Students shared patients' experiences regarding their inability to access care in a timely manner, especially when seeking psychiatric care, which was particularly poignant for many students. They frequently commented on the uniqueness of this experience in the curriculum, because it made abstract concepts learned in the classroom real.

### **Discussing the Realities of Being a Patient in the U.S. Health Care System Is an Emotional Experience for Students**

Student reflections included a high level of emotional language, as noted by the identification of 15 distinct emotions. Students often reflected that patients felt positively about the care that they received in the ED that day, despite the negative feelings they had toward inefficient health care overall. Students reflected positively on the UNITED experience, even though some conversations with patients uncovered difficult circumstances that the students found troubling. Students expressed a myriad of emotional responses to the patient stories and asserted their need to address systems-level issues in future practice.

## **REFLECTIVE SUMMARY**

Through patient interviews in the ED, students had the opportunity to learn about HSS concepts that were too abstract to understand prior to this experience. After coding student reflections and identifying themes, we concluded that asking preclinical students to interview patients about their experience in the health care system led to emotional activation and a subsequent stated desire to improve care delivery. This reinforces the value of experiential HSS education in providing students with the foundation needed to understand and work within our complex health care system.

Pioneers in HSS education have noted multiple barriers to successful implementation of HSS including student engagement.<sup>5</sup> However, review of student reflections revealed high levels of student engagement with UNITED, which we believe were due to the careful way the content was framed and delivered. By allowing the patients to frame HSS in personal terms, students' interest in underlying systems-level issues was piqued. Furthermore, students received personalized attention from an attending EM physician and social worker as they processed patients' stories. This high-touch approach ensured that students felt safe, respected, and empowered as they explored the many ways our system of health care delivery fails to meet the needs of so many of our community members.<sup>10</sup>

Limitations included that UNITED was piloted in one hospital, although we suspect that the patient experience is similar throughout our region. Student reflections of their experience were written after the large-group debrief, which may limit our ability to include truly organic responses to the patients' stories.

In conclusion, we found that a preclinical HSS curriculum centered on patient interviews successfully engaged learners with HSS and resulted in a broadened understanding of challenges patients face in the U.S. health care system. The next steps include expansion of UNITED to serve as the key patient experience of a longitudinal, required HSS course at UC Davis School of Medicine.

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### **Supporting Information**

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The following supporting information is available in the online version of this paper available at <http://onlinelibrary.wiley.com/doi/10.1002/aet2.10512/full>

**Data Supplement S1.** Supplemental material.

**Data Supplement S2.** Supplemental material.