

## ORIGINAL RESEARCH

# Empowering Medical Students to Practice Value-based Care: A Prospective Cohort Study of an Educational Intervention

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### *Abstract*

**Background:** Rising healthcare costs and a rapid shift from volume-based to value-based reimbursement demand further education of physicians to consider the benefits, harms, and costs of their interventions for patients. Focusing on medical students early in their career can promote cultural and process change that may increase their likelihood of practicing value-based care.

**Methods:** We designed and implemented a prospective cohort study of an educational intervention between January and June of 2014. A total of 22 students from the UCLA David Geffen School of Medicine were included. We collected pre- and post-intervention survey data to measure attitudes, self-perceived skills, and knowledge regarding value-based care.

**Results:** We found the educational intervention to be effective in promoting value-based care in our participants. After the educational intervention, there was a significant increase in students' reported likelihood of looking up the cost of a specific test or procedure prior to recommending it as part of the treatment plan ( $p < 0.001$ ), discussing the cost of a specific test or procedure with a patient ( $p < 0.001$ ), and discussing how the cost of a specific test or procedure would impact the finances of the patient ( $p = 0.021$ ).

**Discussion:** Our pilot value-based care educational intervention increased the likelihood that medical students investigated costs of interventions, and discussed costs and financial harms with their patients. There is significant need for the development and implementation of defined curricula addressing quality, cost, and value to help fill the current gaps in medical education. Dissemination of such curricula could improve the value of healthcare delivery.

### *Background*

Health care in the United States has been suffering from a gap between quality and cost for many years. The Institute of Medicine has investigated, documented, and operationalized the need for a health care system that prioritizes quality.<sup>1</sup> There is abundant evidence to suggest that although we spend more money on healthcare compared to other developed nations, this variability in spending does not correlate with improved health outcomes. Additionally, there exists significant geographic

variation in the U.S. regarding health care spending and quality of care.<sup>2</sup> It is estimated that up to 30 percent of Medicare costs could be saved without negatively affecting health outcomes and is thus overutilization of services resulting in unnecessary spending.<sup>2</sup>

Despite this ongoing crisis, there has been a lag in our efforts to educate medical students and physicians about quality, cost, and how they interact to create value.<sup>3</sup> Until recently, medical schools and residency programs did not incorporate teaching on value and the profound individual responsibility that each physician should be aware of regarding improving high quality, cost conscious care.<sup>4</sup>

Ongoing changes to the health care system demand further education of physicians to consider the benefits, harms, and costs of their daily interventions for patients.<sup>5</sup> There has been tremendous momentum in the identification and need for education of these topics, particularly at the stage of graduate medical education (residency) level and beyond.<sup>6,7</sup> There are minimal data regarding the attitudes, knowledge, and skills of medical students regarding value-based care.<sup>8</sup> Similarly, there are no data regarding the impact of educational interventions on the willingness or confidence of medical students to practice such care. We believe focusing on medical students early in their career may promote cultural and process change that will increase their likelihood of practicing value-based care. We designed, implemented, and evaluated an educational intervention that introduces value-based care to medical students.

### *Methods*

We designed a prospective cohort study of an educational intervention and received IRB exemption. Participation in the study was voluntary. We utilized a convenience sample by recruiting third year medical students from the UCLA David Geffen School of Medicine who were rotating on the inpatient internal medicine clerkship at Ronald Reagan UCLA Medical Center between January and June of 2014. The educational intervention occurred during a scheduled didactic block and students were asked to participate in person. All students who were invited to participate agreed and completed the educational intervention. A total of 22 students were included. The educational intervention was conducted three times,

approximately eight weeks apart, to three different groups of 7-8 rotating third year medical students.

The educational intervention consisted of clinical cases, interactive activities, and resources that highlight value-based care. The learning objectives were (1) To define value and value-based care, (2) To recognize factors and barriers that contribute to high versus low value care, (3) To learn strategies to practice value-based care as medical students, (4) To find resources that assist a student to practice value-based care, and (5) To acknowledge that value-based care is a critical competency for all physicians. The material was generated from a comprehensive literature review, based on available resources from the American College of Physicians (ACP) High Value Care initiative (specifically the ACP High Value Cost-Conscious Care Curriculum from 2013-2014) as well as the American Board of Internal Medicine (ABIM) Choosing Wisely campaign. The intervention was conducted in a group setting and lasted one hour. There was a concerted effort to generate personalized, concrete strategies for students to practice value-based care in their current role as medical students on inpatient ward teams. We collected pre-intervention and post-intervention survey data to measure attitudes, self-perceived skills, and knowledge regarding value-based care. The pre-intervention and post-intervention surveys contained identical questions. The survey was designed to take approximately 20 minutes to complete. Surveys were completed on paper. Most responses were on a 5 point Likert scale.

For analysis, we concatenated the strongly agree and somewhat agree categories into an agreement category, and concatenated the neutral, somewhat disagree, and strongly disagree categories into a neutral/disagreement category. McNemar tests were utilized to assess paired differences between pre-intervention and post-intervention survey responses.

## **Results**

Basic demographic information revealed that the medical students who participated in the project had varied interests within medicine (including those interested in academic medicine, applied anatomy, underserved populations, primary care, and acute care) and had different career plans including 40 percent of students who were interested in specialties with potential primary care careers (internal medicine, pediatrics, family medicine, obstetrics and gynecology, and psychiatry).

Overall we found the educational intervention to be effective in promoting knowledge and beliefs regarding the importance of value-based care. At baseline, only 33 percent of students either somewhat or strongly agreed that they have a role as medical students in controlling healthcare costs, but this increased to 81 percent after the intervention ( $p=0.002$ ) [Figure 1A]. Interestingly, prior to the intervention, 90 percent of students either somewhat or strongly agreed that they will have a role in controlling healthcare costs as a physician ( $p=0.317$ ), with no significant change over time [Figure 1B]. We found the educational intervention was most effective in encouraging students to think about cost. After the educational intervention, there was a significant increase in students' reported likelihood

of looking up the cost of a specific test or procedure prior to recommending it as part of the treatment plan ( $p<0.001$ ) [Figure 2A], discussing the cost of a specific test or procedure with a patient ( $p<0.001$ ) [Figure 2B], and discussing how the cost of a specific test or procedure will impact the finances of the patient ( $p=0.021$ ) [Figure 2C].

The majority of students within the intervention group, both before and after the intervention either somewhat or strongly agreed that they understood the factors that contribute to high versus low quality care and that they understood the factors that contribute to high versus low cost care. There were also no differences before and after the intervention in the reported knowledge needed to discuss issues regarding and contributing to value-based care with patients and the medical team, as well as the reported likelihood of discussing the benefits and risks of specific test or procedure with a patient or medical team member.

Approximately one-third of student participants (34 percent) reported never receiving any education on value-based, high quality and/or cost-conscious. Both prior to and after the intervention, over 90 percent of students reported interest in receiving additional training in value-based care as part of their medical school curriculum.

## **Discussion**

We created, implemented, and evaluated a pilot study of an educational intervention that introduces value-based care to third year medical students. The findings reveal that the educational intervention was effective at increasing students reported knowledge and skills related to understanding costs, looking up costs, and discussing costs with patients.

The importance of teaching medical students the concept of quality, cost, and value cannot be understated. In our study, we found a large gap (33 percent versus 90 percent) between students either somewhat or strongly agreeing that they have a role currently as medical students compared to their future role as physicians in controlling healthcare costs, hinting that we likely need to empower and prepare our medical students more during the third year of medical school to practice value-based care. It is precisely when medical students are learning how to formulate differential diagnoses, assessments, and plans that they need to be thinking about the downstream effects of their decisions, the systems in which they operate, and the responsibility they have to help limit unnecessary care and costs. Our study also served to remind us that teaching must be deliberate and purposeful to be effective. It is notable that approximately one-third of the third year medical students reported never receiving any education on value-based care despite required classes on these topics within the preclinical curriculum (i.e., first two years of medical school).

Our study was limited. A significant limitation is that the convenience sample of 22 students is small. However, this study served as a preliminary study for a larger study design that will capture a greater number of medical students and data related to value-based care education. The study was originally designed to have a control group consisting of third year

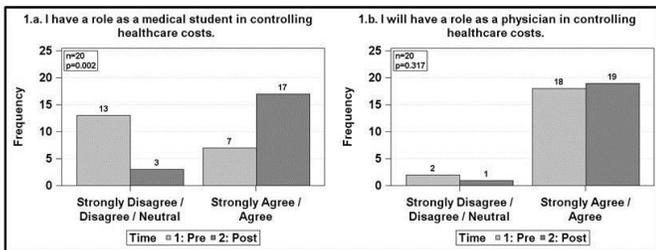
medical students from the same medical school rotating on inpatient internal medicine clerkships at different clerkship sites. The goal was to recruit control participants through email and have them completed surveys online. When this was attempted, eleven students (19 percent) participated.

We also found discussing cost to be challenging given the lack of transparency of charges and costs and the long-standing history of avoiding the discussion of money in medicine. Although the concepts can be taught, we received feedback that medical students wanted concrete numbers to understand these concepts. This is an area where academic institutions that house medical education programs can work with health system operations to increase transparency of costs for student and resident training. Finally, we were unable to measure the impact of our intervention on the actual skills of medical students and the impact of our education on real patient and system outcomes.

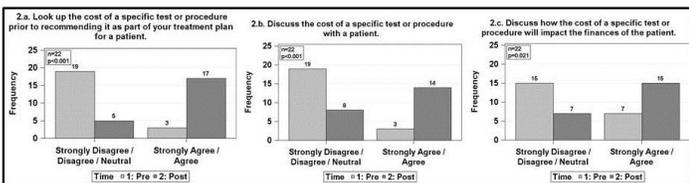
In this study we explored the knowledge, skills, and attitudes of medical students regarding value based care. Our future goal is to optimize this teaching initiative through sequential, iterative changes and implement the project for all medical students prior to entering their third year clerkships at UCLA. Since this study was conducted, we have made progress in integrating the education intervention into the medical school curriculum at our institution, but it remains a topic that is not formally taught to all medical students during their third year clerkships. It is our hope that structured, consistent exposure to value-based care education will help establish long term culture change among medical students to practice value-based care in their careers.

### Figures

**Figure 1:** A comparison of the perceived role in controlling healthcare costs as a medical student and future physician before and after the value-based care educational intervention.



**Figure 2:** A comparison of the responses to questions related to cost of medical students before and after the value-based care educational intervention.



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