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# The Impact of a Student-Led High Value Care Competition on Medical Student Knowledge, Attitudes, and Practice

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## Abstract

**Background:** Integrating value-based care into medical education poses a significant challenge to academic medical institutions. Studies show that incorporating high value care education early in medical training is critical for fostering cost-conscious care. Although prior initiatives have incorporated principles of high value care into the clinical setting, there are limitations in improving the critical thinking of student clinicians at the individual level. However, student-run clinics offer a unique, hands-on opportunity for medical students to apply high value care and quality improvement principles to improve patient care.
**Methods:** Medical students collaborated with the University of Florida College of Medicine's (UFCOM) Equal Access Clinic Network (EACN) and the UFCOM administration to design and host a High Value Care Competition. The competition prompted participants to develop project proposals that improve value-based care delivery at EACN.
**Results:** Six teams and one individual (17 students) participated in the first iteration of the competition. A survey administered one week following the competition reflected that the majority of the teams were inspired to think more critically about the healthcare system and connect with like-minded students, faculty, and stakeholders. Surveys administered after nine months reflected progress in project implementation, attesting to the success of the High Value Care Competition in increasing student involvement with value-based care. Project redundancy, lack of stakeholder engagement, and external time pressures were identified as obstacles.
**Conclusions:** This study engaged students in considering value-based care, with most participants reporting increased system awareness and collaboration. Future iterations will focus on arranging a pre-competition consultation with EACN stakeholders, and connecting teams with faculty mentorship. We intend to offer this competition as an optional capstone project for students interested in the Health Systems Science curriculum, as well as expand the competition to other student-run health programs at the university.

## Introduction

Integrating value-based principles into medical education is an increasingly prominent focus at many academic medical institutions.[1] The principles of value-based care focus on optimizing a patient's health outcomes by balancing clinical benefits with costs, including potential harms. However, institutions face multiple obstacles to integrating these principles into patient care, due to existing clinical workflows, compensation systems that reward a high volume of procedures and tests, and a surplus of specialists that shifts the focus away from primary care.[2] Nevertheless, educating future physicians to embrace and practice value-based care early in their medical training is of great importance. Chen et al. demonstrated that physicians who train in lower-spending regions of the nation tend to practice in a less costly manner, even after they move to practice in a higher-spending region.[3]

This highlights the importance of integrating high value care (HVC) training into early medical education, as it greatly influences physicians' practice patterns. High value care is a care delivery method that optimizes patient outcomes at a contained cost. While this approach is usually taken by physicians in the clinical setting, it stands to reason that incorporating value-based care education in medical school can lay an important foundation for high-value decision making.[2]

The prohibitive cost of medical care in the United States and the resulting focus on high value care has led medical schools to begin to incorporate value-based care delivery principles into their curriculum in preclinical coursework and clinical rotations.[4] A few medical schools have incorporated application of HVC principles into the internal medicine clerkship by empowering their students to serve as "high value care officers" who lead discussions of HVC with other medical staff.[5] There has also been a push to model successful initiatives to embed quality improvement and patient safety in medical school curricula across the nation. Although prior innovative educational initiatives have served to incorporate HVC principles into the clinical setting, most initiatives are limited in scope to improving decision-making of clinicians at an individual level. Student-run clinics are an environment where students are empowered to develop and implement systems-based improvements. These clinics represent an untapped resource for students to apply the principles of value-based care delivery with a broader impact.

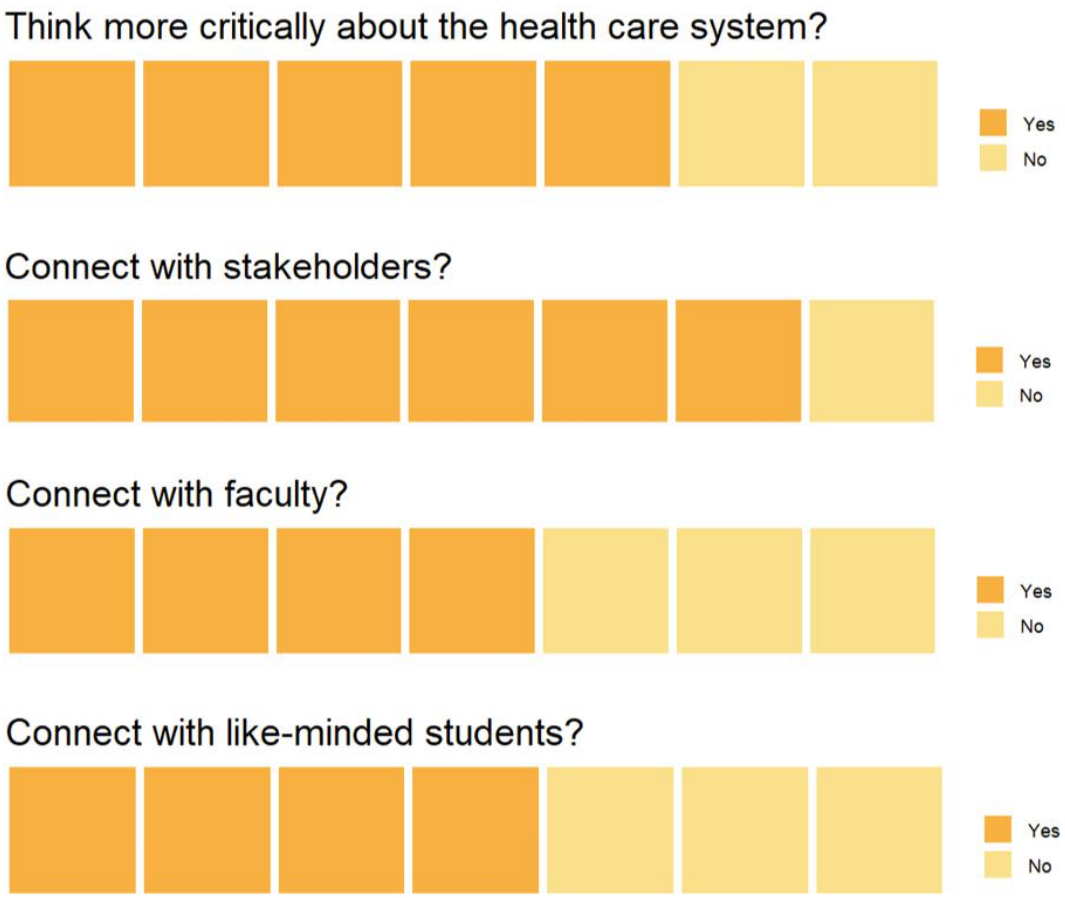
There are over 110 student-run clinics across the country.[6] These clinics provide authentic learning opportunities for students to deliver medical care to underserved populations at little to no cost to the patients. However, there is fragmented literature published on the infrastructure of these student-run clinics, resulting in unclear health outcomes in most areas of patient care delivery.[7] No studies to date have explored the impact of an organized initiative to apply value-based care and quality improvement principles in a student-run clinical setting.

The University of Florida College of Medicine (UFCOM) developed a High Value Care Competition, aimed to encourage medical students to develop innovative solutions to improve patient care at the institution's student-run clinic while also integrating concepts of value-based medicine. This competition aligns with the medical school's Health Systems Science (HSS) pillar, an educational pillar that includes value-based health care. By giving students the opportunity to implement their projects in a clinical setting, this novel initiative leverages student-led free clinics as a unique setting for students to gain real-world experience with quality improvement and high value care.

## Methods

Equal Access Clinic Network (EACN) is a group of four student-run free clinics sponsored by UFCOM that provides a wide range of medical services to underserved members of the local community. EACN opened its doors for patients in 1992 as a single primary care site, and has since grown to serve 2300 patients annually through primary care and a wide array of specialties. The High Value Care Competition was conceived as a collaboration between medical students passionate about value-based care and medical educators, to identify and implement high value care (HVC) projects to improve patient care at EACN. The competition, which included modest cash prizes funded by the UFCOM office of medical education, was introduced during a course on health outcomes and policy and advertised for several months through student body emails and Slack (Slack Technologies, San Franscisco, CA) announcements to recruit participants (Appendix A). Additional outreach was conducted by linking announcements to existing HVC curricular content and direct outreach to members of an elective discovery pathway, Quality Improvement and Patient Safety (QIPS). This is one of several pathways that allow students to explore healthcare with a scholarly approach and complete a capstone project. The QIPS discovery pathway focuses on quality improvement, high value care, and patient safety. The methodology taught in this pathway overlaps with many of the components that students were encouraged to include in their presentations for the competition. Participants were allowed to work in teams of up to four members.

***Figure 1.*** Post-competition survey results: "Did the HVC Competition help me..."




*A chart depicting the results to the questions "Did the High Value Care (HVC) Competition help me..." from the one-week post-competition survey. One box represents one group of students.*

All were provided evidence-based educational materials pertaining to QI and HVC to reintroduce concepts covered in UFCOM's HSS curriculum and support project development, along with a list of EACN student clinical leaders for optional consultation about care deficits within individual clinic sites. The specific charge was to develop project proposals that apply HVC at EACN. Submission requirements for the competition required (1) use of HVC principles to identify a problem of interest within EACN, (2) selection of a target population or demographic, and (3) use of SMART goals to develop proposals that can be easily implemented as a quality improvement project. SMART is an acronym first used in business management in the 1980s to create goals that are specific, measurable, attainable, results-oriented, and time-bound. It has since been implemented in various healthcare and quality improvement settings as a tool to set specific goals.[9] Students had two months to develop a proposal to be presented at the competition using a maximum of 10 slides. Interest forms were used to connect students to EACN stakeholders as they were starting to develop their ideas.

The competition took place in the early evening of a week without exams in the lecture hall with light refreshments provided by the through funding from the Medical College Council at UFCOM. Students presented their proposals to a panel of judges, along with an audience of peers and professors. Each team had 15 minutes for both the presentation and questions. The panel of judges included the medical student director of EACN, a physician-leader from the QIPs track, and the medical education dean.

Judges individually scored each presentation using a rubric (Appendix B) designed for the

competition. Each presentation was scored on a scale from 1 to 5 (strongly disagree to strongly agree) for each component of the SMART goal, the problem's importance and relevance in the community, the population impacted by the problem, and the benefits and projected outcomes of addressing this problem. After internal discussion amongst the judges, first, second, and third place winners were announced. All participants were offered faculty mentorship for implementation of their projects and pursuit of resulting scholarship.

Following the event, two surveys were conducted at one week and nine months post-competition. Surveys were analyzed using descriptive statistics. The one-week survey assessed the perceived impact of the HVC Competition on views of the healthcare system, ability to connect with students, faculty, or EACN stakeholders who have shared interests, and prior QI involvement. The one-week survey was scheduled close to the competition to minimize recall bias. The survey at nine months addressed adequacy of mentorship, membership in the QIPS discovery pathway, and interest in participating in future competitions. Both surveys required one participant from each team to provide updates on project status, reflections on barriers to successful project implementation, and narrative feedback on improvements for subsequent competitions. To minimize response bias, three rounds of reminders were sent at each time point, resulting in all teams filling out the one-week survey and 6 out of 7 teams filling out the nine-month survey. This study was UF Institutional Review Board-exempt based on the low-risk nature of participating in an online survey not involving collection of sensitive information.

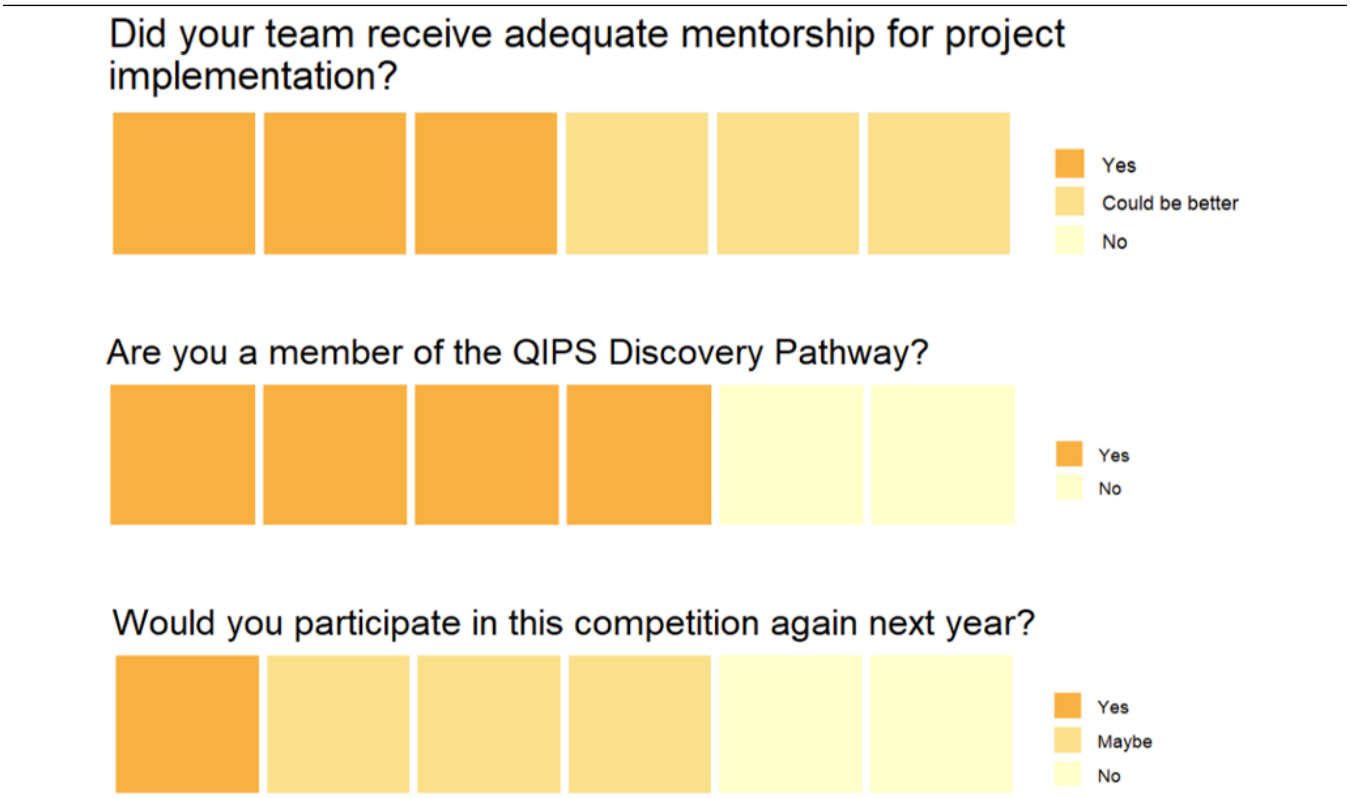
## Results

Six teams and one individual (17 total students) participated in the competition. Three groups focused on valuing patients' time by streamlining the clinic experience, two addressed improving access to psychotherapy, one focused on improving after-visit communication forms, and one was a research needs assessment proposal. Results of the survey conducted one week following the competition include that most groups (5/7) stated that the competition helped them think more critically about the healthcare system. Among the participants, 6/7 groups engaged with stakeholders, 4/7 groups connected with faculty members, and 4/7 built connections with like-minded peers (Figure 1). A majority (4/7) of groups had not been involved in quality improvement research prior to the High Value Care Competition. The team of one student stated in the survey she was unable to continue her project and is therefore not counted in the subsequent results.

A survey was then administered nine months following the competition. All remaining teams (6/6) responded to the survey. Half of the teams (3/6) reported inadequate mentorship and guidance for project implementation. Despite this, these teams successfully implemented their projects leading to a reduction in patient wait time by 10%, an increase in free therapy night referrals, and a presentation at the Florida Academy of Family Physicians conference. The other half of the teams reported receiving adequate mentorship and guidance for project implementation (Figure 2). Among the teams that successfully implemented their projects, two received mentorship through the QIPS discovery pathway - one had previous involvement with QIPS, and the other was introduced to QIPS through connections formed during the HVC competition. Lastly, four of six teams expressed an interest in participating in this competition again. Reported barriers from teams include redundancy of goals with other groups (2/6), outside time pressure (2/6), and lack of stakeholder buy-in (2/6).

Additionally, semi-structured interviews with medical education faculty and EACN leadership involved in the competition and subsequent project implementation were used to explore additional avenues for improvement. These interviews identified the strengths of the competition as the "earlier exposure of medical students to how we actually implement change and how we work within the confines of healthcare policy and administration to ensure that not only patient needs but also provider needs and health system needs are satisfied." This hands-on exposure was expected to increase student confidence and give them the tools necessary to spearhead projects later in their careers.

***Figure 2.*** Long-term reflection on impact of competition




*A chart depicting the results of the nine-month post-competition survey. One box represents one group of students.*

Suggestions for improvement included encouraging the development of projects that aligned with the goals and mission of the student-run free clinic and that could be incorporated well into existing workflow, given the limitations of working within a resource limited setting. There was concern that some projects were "very novel and new, which can be exciting, but also came with a higher probability for failure" as opposed to projects designed with the existing systems in mind.

This HVC competition was successfully implemented, increased involvement of students with value-based care and led to adoption of several projects with early evidence of improvement in care related outcomes. Many studies also explore the implementation of value-based care in the clinical setting. For instance, a study on Medicare Advantage enrollees highlighted that value-based contracting - a payment model in healthcare where providers are paid based on the value of care, rather than volume of care-resulted in more outpatient visits and fewer emergency department visits. This model includes full-risk capacitation, where a provider receives a fixed payment per patient, regardless of the cost of workup or care that the patient needs) as well as revenue gainsharing, where providers share in the savings generated by reducing costs or improving care). This approach resulted in a 6% survival benefit and a 32.8% lower hazard of death among elderly patients with chronic comorbidities.[10]

For the 2023 iteration of the competition, we implemented several changes to address the reported barriers noted in Table 1. To reduce project redundancy, a pre-competition survey was sent out to participants to identify any topic overlap. To address lack of stakeholder engagement, the organizers arranged for team consultations with the EACN Project Development Lead, who commented on the projects' feasibility and directly connected teams with clinic site officers. Given the increased longevity and implementation rates of projects that included faculty mentorship, teams that were interested in further developing their products after the competition were connected with experienced QI faculty members to facilitate brainstorming and project implementation. These

***Table 1.*** Student-defined barriers to successful implementation

| Barrier | Supporting Quotes |
|---|---|
| Overlap | "We ran into … trouble, however, when the other QI team at that clinic was also giving out summary forms as part of their project… we discontinued our project to avoid redundancy." |
| Lack of stakeholder engagement | "There should be better stakeholder engagement in the competition. We ran into issues where [there was] conflict with some of the clinic directors." |
| | "The clinic itself seemed under stress from all the changes as well." |
| Outside time pressure | "Right now, since the 4th years have matched, one of the members is raising a newborn, and I am studying for Step 1, the project progress is at somewhat of [a] halt. " |
| | "Waiting until elective time before starting new projects." |

*Results from one week and nine-month post-competition surveys.*
*QI: quality improvement; Step 1: United States Medical Licensing Examination Step 1.*

changes should allow the teams to complete their projects more efficiently and effectively.

## Conclusions

The HVC competition successfully engaged students in value-based care, leading to project adoption and early outcome improvements. In future iterations of this project, we plan to expand the reach of the competition by integrating aspects of the initial project proposals into the HSS curriculum, while keeping the competition as an optional capstone for students who wish to further implement their proposals. Additionally, we will include other student-run health programs at UFCOM as potential sites for implementation, i.e. the Street Medicine program. We also plan to expand this competition on a larger scale to address the lack of a standardized approach in teaching high value care in medical school. We hope to collaborate with medical institutions across the country and encourage the use of a competition to teach value-based care at their local student-run clinics. The relatively large size of the EACN as compared to other student-run free clinics may have made it easier to incorporate multiple winning projects. Iterations of the competition at other schools could consider focusing on supporting a single winning project's implementation at their clinic or exploring additional sites for implementation. Involving the student-run free clinic early in the competition design process could both help facilitate stakeholder buy-in and create understanding about what scale and scope of projects would be feasible at their institutions. Most medical schools have student-run clinics that allow opportunities for medical students to care for patients with socioeconomic barriers to quality health care. These systems are a potentially powerful, yet underused training platform to implement HVC and QI principles in a real-world setting, which could improve patient care while giving students the opportunity to develop HVC practice habits early in their careers. Engaging students in HVC early lays the foundation for them to become physicians who strive to optimize health systems from the patient to the population level.

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**Disclosures**

The authors have no conflicts of interest to disclose.

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