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Value-Based Health Care in Undergraduate Medical Education

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Abstract

Problem

Value-based health care (VBHC) is an innovative framework for redesigning care delivery to achieve better outcomes for patients and reduce cost; however, providing students with the skills to understand and engage with these topics is a challenge to medical educators.

Approach

Here the authors present a novel, VBHC curriculum integrated into a required course for post-core clerkship students—launched in 2018 at Harvard Medical School and taught in conjunction with Harvard Business School faculty—that highlights key principles of VBHC most relevant to undergraduate medical education. The course integrates VBHC with related health disciplines, including health policy, ethics, epidemiology, and social medicine, using a case-based method. Students practice active decision-making while learning key concepts to address value in clinical practice.

Outcomes

Since the course's inception in March 2018, 95 students (87%) completed the standardized course evaluation; the majority said VBHC content and pedagogical style (i.e., case-based learning) enhanced their learning. Students' critiques focused on too little integration with other disciplines (e.g., social medicine, ethics), the physical space, and inadequate time for debates about potential tensions between VBHC and other course disciplines.

Next Steps

The authors believe that by exposing medical students to the principles of VBHC, students will fulfill the expectations of graduating physicians by excelling as critical thinkers, collaborative team members, and judicious care providers throughout their residency, clinical practice, and beyond. Future VBHC curricula expansions may include elective coursework, intensive seminar series, and formal dual degrees.

Problem

Over the past decade, Porter has crafted a value-based health care (VBHC) delivery framework, defining VBHC as health outcomes important to patients relative to the cost of achieving those outcomes over the full cycle of care.[1] Redesigning systems to maximize value requires focusing on each patient's health conditions and goals, rather than on individual health services. Porter's VBHC framework requires understanding management principles, including strategy, operations, leadership, and teamwork, to deliver integrated patient care for well-defined conditions or patient populations that maximizes outcomes.

The National Academies of Science, Engineering, and Medicine recognized the role of VBHC when it defined high-value care as "the best care for the patient, with the optimal result for the circumstances, delivered at the right price."[2] The United States spends more on health care than any other country, but in many cases does not achieve better outcomes, highlighting the need for enhanced VBHC.

Health Systems Science (HSS) is a more recent, evolving area of medical science whose primary goal is to educate students to be "systems-ready." In HSS, value-based care is one of twelve core domains enhanced by skills from other cross-cutting topics, including evidence-based medicine, teamwork, and leadership, designed to teach students to inform policy and work effectively in the US-based health system.[3] The American Medical Association acknowledged the growing role of HSS in medical practice and recently developed, in collaboration with the National Board of Medical Examiners, a dedicated HSS student assessment. Graduating medical students are expected to meet predetermined milestones for related entrustable professional activities (EPAs), including how to retrieve evidence to advance patient care, collaborate as members of

interprofessional teams, and contribute to a culture of improvement (https://www.aamc.org/download/482214/data/epa13toolkit.pdf).

VBHC is distinct from HSS due to its focus on the principles of strategy and management decision-making. It also differs from strict cost-reduction strategies; rather, cost-reduction is a secondary aim in VBHC arising from the achievement of favorable patient-centered outcomes and efficiencies over the cycle of care. Clinical examples of VBHC exist in both primary and subspecialty care. To illustrate, a major urban medical center developed a program to provide VBHC for its ever-increasing number of patients with heart failure by creating an integrated practice unit (IPU) for them.[4] They selected a first-floor location for easy patient access where the center collocated heart failure cardiologists, cardiac surgeons, radiologists, advanced practice nurses, pharmacists, nutritionists, social workers, and case managers. Each patient had a single physician who served as team lead and coordinated all care and communication. The clinical team met weekly to discuss care plans. The teams used existing reports of clinical and patient-reported outcomes to guide improvement. They used accurate costing information to guide pricing and efficiency and to develop bundled prices for a year of medical care for a patient with heart failure.[4] The heart failure IPU coordinated care with the patient's primary care physician to ensure that each patient received the right care, at the right time, in the right location, from the right person. The entire system used one electronic health record to facilitate work flow data collection, to measure and improve outcomes, to enhance efficiency, and to manage costs. Integrated care for patients with heart failure is increasing as more centers are redesigning the care of these patients.

While national entities (e.g., Centers for Medicare and Medicaid Services) and other countries (e.g., Sweden) are instituting VBHC, VBHC curricula in undergraduate medical education (UME) remain sparse and non-uniform. Some programs have adopted brief didactic sessions during core clerkships to teach basic principles of VBHC by linking clinical assessments and decisions to downstream effects.[5] Other programs have begun to implement multi-year delivery science curricula that address patient-centered care, leadership, and team-based care,[6] but these programs remain in their early stages.

VBHC frameworks can be taught to address the competencies that medical schools are already required to teach. Here we describe our experience with the Harvard Medical School (HMS) VBHC curricula, which was designed to emphasize the skills necessary to maximize value to patients. We also share students' critique of the course to date and provide lessons learned as insights to enhance future offerings.

Approach

Teaching VBHC in UME: Timing

Although VBHC is applicable to both UME and graduate medical education (GME), foundational principles are best introduced to medical students to develop important skills, knowledge, and attitudes central to modern clinical practice. The VBHC pedagogical approach is comparable to longitudinal ethics training: trainees gain some specific skills (e.g., obtaining informed consent) by the end of UME training, while they develop others (e.g., conducting complex goals-of-care conversations) throughout GME. While introducing principles early in UME is important, the VBHC framework may resonate more strongly with senior medical students following significant clinical exposure, as patient encounters bring abstract principles to life.

Educational intervention: Pedagogical approach

In 2015, HMS introduced a new curriculum, "Pathways." All students must take two four-week courses: Essentials of the Profession I (during the 1st year of medical school) and Essentials of the Profession II (during the 3rd or 4th year of medical school, after a minimum of 12 months of clinical rotations). Essentials I covers foundational topics in clinical epidemiology and population health, health policy, social medicine, and medical ethics. Essentials II includes advanced topics in these disciplines, places even greater emphasis on integration and clinical relevance, and features a novel collaboration with Harvard Business School (HBS) faculty to teach VBHC.

Faculty apply the HBS case method; that is, they provide detailed information about a single organization to focus in-class discussion around a key element of VBHC. The case method requires significant pre-class case preparation. Students apply costing methods to real data, analyze similarities and differences among care delivery models, and evaluate and critique the rationale behind protagonists' decisions. The assignments emphasize conceptual and metacognitive knowledge. In class, an experienced faculty member guides large-group discussions to develop important VBHC points. In some sessions, the protagonist from the featured case is present to discuss the key challenges he or she faced.

The HBS case method is similar to case-based collaborative learning. Some similarities include substantial pre-class preparation and readiness assessment exercises, individual responses to case-based questions, and robust group discussion to draw out class insights[7]; however, the pedagogical strategies differ in that the HBS case method gives students freedom to explore topics they deem most germane, rather than using preformulated questions to guide discussion in a structured fashion. Additionally, the case method does not aim to illustrate a single correct

decision, but rather captures the complexity of decision making in health care delivery by placing the student in the role of decision maker.

Educational intervention: Key curricular topics

For the Essentials II course, faculty have chosen four VBHC cases taught in two-hour blocks. During these blocks, students participate in structured large-group discussions guided by faculty members through the HBS case method, as described above. Prior to class, students have thoroughly read the cases, responded to preparatory thought questions, and have potentially taken advantage of the opportunity to read curated supporting materials from the primary literature. The first case in Essentials II focuses on Texas Children's Hospital. Students take an in-depth look at how the organization has achieved dramatic improvement in mortality and long-term neurodevelopmental outcomes for children with pediatric congenital heart disease. The case highlights use of an integrated care model, changes to team structure and culture, and the collection of clinical and patient-reported outcomes. The second case focuses on Oak Street Health, a for-profit primary care practice that provides care to elderly patients from resource-poor settings who are eligible for both Medicare and Medicaid. This case allows students to discuss providing value in both primary care and for-profit environments. The third case involves Boston Children's Hospital where time-driven, activity-based costing is used to measure the true costs of care across the full care cycle for a medical condition. The final case focuses on OrthoChoice, a regional program in Sweden that uses bundled reimbursement for joint replacement to improve outcomes and control costs. For all 4 cases, students in Essentials II discuss the following:

- how and why organization leaders did what they did;
- key decision points for clinicians;

- the process of building IPUs and measuring health outcomes that matter to patients;
- the challenges and results of collecting, risk adjusting, and reporting outcomes;
- tradeoffs of common payment methods (e.g., fee for service, capitated, and bundled payments);
- the interaction of VBHC principles with clinical epidemiology, social medicine, health policy, and ethics;
- how VBHC can be used to minimize health disparities by improving care integration and transparency, addressing social determinants of health, and maximizing the use of resources.[8]

Outcomes

Since the inception of the course in March 2018, 95 of 109 students (87.2%) completed the HMS standardized course evaluation. Of 70 students who commented on the strengths of the course, 13 (18.5%) specifically identified the VBHC sessions as adding value. Regarding specific feedback about the VBHC sessions, 31 of 43 (72.1%) students had positive comments. Overall, students said the VBHC content and pedagogical style (i.e., the case-based learning) enhanced their learning. Critiques included too little integration with the other disciplines (e.g., social medicine, ethics); using an auditorium as the learning space (i.e., students suggested using tables instead to facilitate discussion); and not enough time to debate potential tensions between VBHC and social medicine (e.g., how VBHC addresses health inequities).

Next Steps

Here we have described a novel, required educational intervention to teach the principles of VBHC to post-core clerkship medical students and equip them with tools to promote VBHC in clinical settings. Based on our experience, we offer the following insights.

Given finite time available within UME curricula, content should be tailored to a developmentally appropriate level, build upon early clinical experiences, and apply across specialties. Our curriculum covers six key topics: (1) defining VBHC; (2) examining how care is organized and delivered based upon specific patient conditions and in primary care; (3) measuring outcomes that matter to patients; (4) evaluating costs of care for specific conditions; (5) paying for value; and (6) applying basic management principles of leadership and working with teams (see Figure 1). Additional topics to consider include the role of health insurers, stakeholder accountability, information technology, and health care in U.S. and overseas resource-limited settings.

Students may benefit from the integration of VBHC curricula with other core HSS domains after significant clinical experience. Co-localizing VBHC topics with health policy, epidemiology, social medicine, and ethics allows students to develop a robust set of tools with which to approach novel health systems challenges. For example, studying these disciplines through the VBHC curriculum allows students to assess how patient-centered outcomes and value may promote health equity. The case method provides students with an opportunity to use inductive reasoning to extrapolate generalizable VBHC principles from individual scenarios. It places students in the role of the case protagonist, facilitating an approach to actively considering challenging questions and capturing the complexity of decision making.

Availability of appropriately trained faculty remains a challenge to implementing VBHC curricula. A recent survey demonstrated that only 51% of LCME-accredited medical schools are affiliated with a "health policy entity."[9] Implementing the case method may require institutional investment in faculty development; HBS offers a complete curriculum, case method resources, and seminars for instructors (https://hbsp.harvard.edu/home/).

One key limitation at present is that students perceive a disconnect between the principles of VBHC taught in the classroom and the lack of value-based integrated care delivery practices in clinical rotations. Incorporating VBHC into clerkships would help merge formal and hidden curricula. Giving students the opportunity to observe differences between traditional care delivery models and IPUs that apply VBHC principles (e.g., the Neurologic Institute at Cleveland Clinic) is an example of bridging abstract principles and actual practice. Another key next step is to evaluate (e.g., using Bloom's Taxonomy), the long-term effects of our educational intervention on students' ability to apply the VBHC principles in a clinical setting. Finally, we recognize the need to critically examine the value and role of VBHC in promoting health equity. Additional opportunities for advanced training in VBHC (e.g., elective coursework, intensive seminar series, formal dual degree programs), may be requested by interested students. For example, Dell Medical School at the University of Texas at Austin has partnered with the McCombs School of Business to offer a Masters in Health Care Transformation (https://www.mccombs.utexas.edu/Master-of-Science-in-Health-Care-Transformation). HMS offers a joint MD/MBA degree. Such programs reflect institutional accountability for training leaders that will pursue critical transformations in the health care system over the coming decades.[10]

Fundamentally, the goal of the curriculum described here is to provide students with knowledge and skills to better understand the principles of VBHC and integrate them in their future practice of medicine.

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Figure Legend

Figure 1

Figure illustrating what the authors identify as the core components of value-based care appropriate for the undergraduate medical education (UME) level, the ideal timing of course content, and an effective pedagogical method for teaching the principles of value-based care. Q&A signifies question and answer session.

Figure 1

Teaching Value-Based Health Care at the UME Level		
What to teach	**When** to teach	**How** to teach
1. Basic definitions 2. Models of integrated care 3. Outcomes measurement 4. Cost measurement 5. Alternative payment methods/ paying for value 6. Management and leadership principles	•1. After the clinical year 2. In conjunction with related disciplines: • Health policy • Epidemiology • Social medicine • Ethics	Using the case method: • *Read* the case • *Prepare* case questions • *Watch* video lectures • *Analyze* relevant articles • *Discuss* the case with a facilitator, compiling key answers on the board • *Hear from* live and video protagonists • *Participate* in Q&A with protagonists and facilitators