

MEDICAL EDUCATION/MEDICAL STUDENT

The power of anecdotes on resident HVCCC curriculum

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A formal high value, cost-conscious care (HVCCC) curriculum was implemented at a community hospital-based university-affiliated residency program starting January 1, 2014, based on the recommendations of the American Board of Internal Medicine's (ABIM) Choosing Wisely campaign. The program included a competition requiring each resident to write a HVCCC case based on an actual patient experience. Residents completed a questionnaire assessing their understanding of HVCCC near the end of the program. Residents subsequently reviewed two actual cases that had vividly described unexpected adverse outcomes ('anecdotal' cases). Postexposure data were collected and the results were analyzed.

Keywords: *high value; cost-conscious care; defensive medicine; anecdotes*

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According to the World Health Organization in 2012, the United States spent more on health care per capita (\$8,895), and more on health care as percentage of its GDP (17.9%), than any other nation in the world. Health care expenditures are projected to reach nearly 20% of the US gross domestic product by 2020 (1). In 2010, the Institute of Medicine reported that approximately 30% of healthcare costs (more than \$750 billion annually) is spent on wasted care, care that is potentially avoidable and would not negatively affect the quality of care if eliminated (2). The Accreditation Council for Graduate Medical Education (ACGME's) original six core competencies that drove residency training provided little or minimal emphasis on facilitating residents' understanding of cost-conscious care. However, the 2013 implementation of ACGME milestones in internal medicine addressed this important issue as a resident evaluation subcompetency in System Based Practice (SBP3 identifies forces that have an impact on the cost of health care, and advocates for, and practices cost-conscious care) (3). Given the economic burden imposed by current or projected cost of health care, it seems very important to educate and enlighten future physicians about high value, cost-conscious care (HVCCC), and should be incorporated as a seventh general competency (4, 5). There is a growing perception that the concept of HVCCC should be incorporated in training as habits and learning developed by physicians during the initial years of training tend to persevere (6). Several organizations like the American Board of Internal Medicine (ABIM) and American

College of Physicians (ACP) have emphasized the importance of teaching the principles of HVCCC in residency programs across the country. Several residency programs have developed curricula for HVCCC for resident training, with the fundamental principle that it is vital to recognize the difference between value and cost. It is also pivotal to understand cost as not just the monetary price of the tests or treatments but something that includes all benefits and harm of the tests or treatments. An ideal HVCCC curriculum should not focus exclusively on reducing costs; rather, it should teach residents to consider value by balancing benefits with harms and costs.

Defensive medicine

This term defines a way of practicing medicine that is primarily driven by overtesting and overtreatment as a perceived mechanism to protect against the threat of liability and self-protection against potential law suits. Fear of litigation is described as the main driving force behind the defensive medicine. Several physicians who are practicing today adopt an attitude that every patient represents a potential lawsuit (6). A similar temperament is also very prevalent among the residents and medical students, possibly because of the way they see the practice of day-to-day clinical medicine. These protective, fear-of-lawsuit attitudes result in physicians adopting behaviors that increase health care costs through the practice of defensive medicine. The practice of defensive medicine can be seen either as an avoidance behavior (avoiding high risk

patients) or as an assurance behavior (overtesting on patients as a mechanism for physician self-assurance). Defensive medicine is costly: the Institute of Medicine estimated that 30 cents out of every dollar spent on health care is on tests or interventions that are performed due to a threat of liability (2). Gallup reports that one in four dollars spent in health care can be attributed to defensive medicine – about \$650 billion annually (7).

Choosing Wisely

Choosing Wisely is an initiative of the ABIM Foundation. This campaign aims to help physicians and patients engage in conversations to reduce overuse of tests and procedures as well as supporting physician efforts to help patients make smart and effective care choices. The purpose of this campaign is to encourage wise choices by clinicians in order to improve health care outcomes, provide patient-centered care that avoids unnecessary and even harmful interventions, and reduce the rapidly expanding costs of the US health care system. Consumer Reports and several other consumer oriented organizations have partnered with ABIM to educate and provide patients with information to make wise decisions (8).

Overview of the study

Aim of study

A formal HVCCC curriculum was implemented in our residency program. Our study was designed to gauge the effect of HVCCC education on residents. Our hypothesis was that anecdotes of cases with adverse outcomes would act as barriers to effective practice of HVCCC. Therefore another aim of the study was to evaluate the power of these anecdotes on the HVCCC curriculum and education of the residents.

Sample

The sample consisted of 24 internal medicine residents at a community hospital university-affiliated residency training program. Out of the 24 internal medicine residents, 16 participated completely in the study. Eight residents did not participate in the final assessment because they had graduated from the program by the time the follow-up survey was done.

Materials and methods

Formal HVCCC education for the core faculty was done via a faculty development session in December 2013. In January 2014, all residents were asked to write up a case that they experienced about patient harm that occurred because of non-implementation of the principles of HVCCC. All residents wrote cases and these were discussed among the residents and faculty. The HVCCC curriculum was consciously implemented by the core faculty in the residency training for next 6 months in various settings

including morning teaching conferences, inpatient rounds, outpatient clinic sessions, noon conferences, and grand rounds. The residency program also conducts a monthly examination for the residents and this was modified to include questions highlighting the principles of HVCCC. A detailed questionnaire which includes understanding of HVCCC and Choosing Wisely campaign before implementation of curriculum was done in January 2014.

The following questions were included in the initial questionnaire:

1. How would you rate your knowledge of HVCCC?
2. How aware are you of the Choosing Wisely campaign?
3. Did the assignment of writing a HVCCC case help you reflect on the way that medicine is practiced today?
4. Do you think you benefitted from reading actual cases from your colleagues about HVCCC and their thoughts about the same?
5. Do you believe that defensive medicine will impact your practice of the principles of HVCCC?
6. Do you think this knowledge and exercise with HVCCC will influence the way you would practice medicine?

In July 2014, all residents were exposed to two actual anecdotal case reports with adverse outcomes that occurred over the prior 6 months.

Anecdotes of cases with adverse outcomes

Case 1

A 28-year-old male who is a non-smoker, a non-alcoholic, and with no history of drug abuse presented to the emergency room (ER) with chest pain. He denied any significant stressor and had no family history of coronary artery disease. His initial troponin and Electrocardiogram (EKG) was negative. Urine drug screen was also negative. His chest pain resolved and the patient desired to get further workup as an outpatient. He was discharged from the ER with recommendation to get an outpatient stress test. Eight hours later he presented back to the ER in cardiac arrest and died despite intensive resuscitation. His autopsy showed massive posterior and inferior wall myocardial infarction.

Case 2

A 45-year-old male has a transient episode of slurring of speech with weakness in the right arm at 7 a.m. He recovered within a few minutes and was totally normal. At the insistence of his grandmother, he came to the ER at 4 p.m. (roughly 9 hours after his symptoms resolved). He has a CT scan which showed a fairly significant basal ganglia bleed. He was emergently transferred to a tertiary care center for close neurosurgical monitoring.

These two cases were evaluated to see if they acted as deterrents to the practice of HVCCC. A detailed questionnaire about the understanding of HVCCC and factors impeding the practice of HVCCC was asked in July 2014. This post anecdotes exposure questionnaire included questions about the HVCCC teaching that the residents received, personal encounters with anecdotal cases with adverse outcomes and the influences of these anecdotal cases on the concepts of HVCCC in clinical practice was obtained.

The postanecdotes exposure questionnaire included the following questions:

1. Did reading/studying of these two anecdotal case reports influence your concept of practice of medicine with principles of HVCCC?
2. Do you believe that experience with anecdotes like this is why the practice of medicine is defensive?
3. Grade the amount of teaching from your faculty about anecdotes versus the practice of HVCCC?
4. Have you ever encountered these types of cases in clinical practice?
5. How often in your clinical experience do you encounter this kind of anecdote with unusual and unexpected outcomes?
6. Do you change your medical decision after knowing the cost of the tests or procedures?
7. In retrospect, how often do you think that you should have ordered or performed a particular test?

These results were then analyzed.

Results

Just over half (56%) of residents described their knowledge of HVCCC as 'good' or 'very good' prior to the program; this figure increased to 94% by July 2014. Most residents (88%) indicated that the act of writing the case facilitated their reflection on medical practice. Residents subsequently shared their HVCCC cases with each other. Most (94%) residents also cited reading other residents' cases as helping them understand HVCCC principles; a quarter (25%) of residents indicated that sharing cases had significantly increased their understanding. Over a third (37%) of residents indicated that the HVCCC program would significantly influence their practice whereas another 56% indicated that it would 'somewhat' influence practice.

The potential benefits of HVCCC education can be offset by an established predisposition toward defensive medicine. Three-quarters (75%) of residents reported that the two 'defensive' cases influenced their feelings about HVCCC practice. More than two-thirds (69%) felt that such defensive cases inevitably lead to a defensive stance in practice. Of particular relevance, more residents reported that they were more likely to hear about defensive

cases from their faculty (37%) than cases demonstrating HVCCC principles (19%). Reflecting on the relationship between defensive medicine and HVCCC practice, 94% of residents felt that defensive medicine would dampen the practice of HVCCC principles.

Discussion

The goal of the study was to understand the mindset and the knowledge of HVCCC practices prevalent in residents of a community hospital. Our study results have the potential to represent the education that residents are receiving in a community-based university-affiliated hospital and this can ultimately serve as a reference to modify Graduate Medical Education (GME) training. Although the sample size of the participants/residents was small, one can argue that most of the teaching that the residents received was personalized, and furthermore the structure of residency programs in community hospitals across the country is almost similar. We anticipate that the barriers for HVCCC practices obtained in the results will likely be similar to those found in the larger health care systems as the practice of clinical medicine is essentially similar.

Our findings underscore the power of the anecdote – the case report – in graduate medical education. By reflecting upon actual patients and their own experiences, residents were able to deepen their understanding HVCCC. This is not surprising; cognitive psychologists have documented the power of autobiographical memories: people are much better at recalling events that they have personally experienced rather than those they learned about second hand (9). In our situation, their own HVCCC cases provide residents with a stronger cognitive basis for learning the HVCCC concepts. The power of the anecdotal cases with adverse outcomes to offset HVCCC recommendations highlights another common phenomenon in cognitive psychology: the negativity bias. Research has demonstrated that individuals have a tendency to better recall negative information (e.g., the depiction of anecdotal cases) than positive information (10). In public health, the power of 'fear appeal' messages in facilitating positive health behaviors have been identified for over half a century (11). In general, individuals are more motivated to enact behaviors when they receive a description of the negative outcome of not performing a behavior than, for example, omitting a test that leads to a patient death due to an undetected condition (12). To facilitate HVCCC practice, it may be useful to identify more vivid and motivation examples of the negative outcomes of not engaging in HVCCC.

Another consideration which may have limited the persuasiveness of our HVCCC cases relative to anecdotes involves patient age. Most of the patients in our HVCCC anecdotes were older patients (age 65 or higher). There were, however, some examples of patients in the younger age group too (overall age range 25–93 years, with median

age being 72 years. In contrast, the patients in the anecdotes were younger with ages 28–45 years. Research studies using fictional patient cases have documented the existence of an age bias among physicians when diagnosing and treatment certain conditions (13).

The unique but unfortunate truth about the practice of clinical medicine is that some unexpected adverse outcomes are inevitable. Although some of these adverse outcomes are truly unexpected, a significant proportion of the adverse outcomes can be attributed directly to defensive medicine practices that includes both overtesting and overtreating patients. On the surface, our study seems to indicate that residents in training are more willing to accept adverse outcomes as a consequence of overtesting or overtreating as opposed to adverse consequences associated with missing a rare case or having a case with unexpected devastating outcomes. Our study indicates that this ‘negativity bias’ is at least partially influenced by the practice of the teaching attending physicians. The role of teaching faculty in the education of residents and students cannot be minimized, and therefore significant faculty education and development should focus on properly balancing the principles of HVCCC and the harms associated with overtesting and overtreating with the genuine concerns related to unexpected adverse outcomes in some patients.

Limitations

As the study was conducted in a community-based university-affiliated academic hospital, the results that were obtained may not be generalizable to all health care settings. However, community hospitals often serve as the primary facilities that are easily available to the majority of the American population.

Conclusions

Our study highlights the fact that anecdotes of sudden and unexpected adverse outcomes in patients stick significantly in the minds of physicians and residents. Additionally and rather disturbingly, anecdotes of adverse outcomes in patients because of overtesting and overtreating (non-implementation of the principles of HVCCC) are rapidly overpowered by vivid anecdotes of unexpected adverse outcomes in a select minority of patients. We conclude that significant faculty development and training and constant resident engagement are necessary to over-

come the ‘negativity bias phenomena’ that can quickly overcome several months of dedicated HVCCC training in residency programs.

Conflict of interest and funding

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