Teaching and Evaluating High-Value Care Through a Novel Case-Based Morning Report Curriculum

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Abstract

Introduction: It’s the responsibility of medical educators to train residents to be responsible stewards of finite health care resources. Thus, we developed an interactive morning report curriculum that focuses on high-value care (HVC) decision making using real-world cases. In addition, we developed a novel evaluation tool to assess residents’ application of cost-conscious care principles through the use of an HVC scoring algorithm. Methods: For each HVC morning report session, a resident presents a case that they encountered recently. Prior to their presentation, the resident reviews guidelines and meets with a physician with expertise in the field to determine the best practice for the case with regard to what imaging, laboratory studies, procedures, and/or consultations were necessary to arrive at the correct diagnosis and treatment course. The resident presents the case while indicating what they would order based on the information provided. Following the session, an HVC score is determined for each participant by awarding points for appropriate, cost-conscious utilization of resources. Points are deducted for unnecessary overuse of health care services and inappropriate underuse of services. Results: Over the course of the 2014-2015 academic year 34 internal medicine residents participated in at least one HVC Morning Report session. The number of participants reporting that their knowledge of health care costs was poor, dropped from 70% on the precurriculum survey to 29% of the postcurriculum survey. Discussion: The HVC Morning Report Curriculum was successful in improving resident knowledge of HVC and comfort with cost effective decision making. Due to the real-world nature of the cases presented, there was a great deal of variability in the complexity of the cases presented by residents. Future directions might include developing a collection of high-yield cases for increased standardization of the learning.

Keywords

Morning Report, Teaching Rounds, Health Care Costs, High-Value Care, Cost of Care, Value-Added Care

Educational Objectives

By the end of this module, the learner will be able to:

1. Define and discuss the importance of high-value health care.
2. Explore existing resources for learning, understanding, and applying HVC principles.
3. Engage in a case-based, interactive HVC morning report curriculum to improve knowledge, understanding, and application of HVC principles in patient care decision making.
4. Interpret a HVC case-based scoring form to assess their application of HVC principles.
5. Utilize HVC principles to become a more responsible steward of limited health care resources.

Introduction

Our nation’s healthcare system is threatened by unsustainable rises in healthcare costs. Recent data shows that the United States spends approximately 17% of our GDP on healthcare which far exceeds the percentage spent in other industrialized nations. Furthermore, it has been estimated that approximately 30% of our healthcare spending is wasteful. Despite this high level of spending, our nation’s healthcare
system compares unfavorably to other industrialized nations on multiple domains with significant disparities in access to care, efficiency, and equity.\(^2\)

In recent years, multiple national physician organizations have raised awareness to the unsustainable rises in healthcare spending and have called for efforts to reduce inappropriate overuse of healthcare resources. For example, the Institute for Healthcare Improvement (IHI) developed the Triple Aim which advocates for improving population health and patient satisfaction while also reducing costs.\(^3\) Thus, the IHI Triple Aim provides direct relationships between value, patient safety, quality of care, and improvement science. In 2012, the American Board of Internal Medicine (ABIM) released the Choosing Wisely\(^6\) campaign.\(^4\) For this campaign, the ABIM partnered with multiple specialty societies to determine evidenced-based recommendations for the most appropriate care based on the patient’s individual situation. The Choosing Wisely\(^6\) recommendations are intended to spark conversations between providers and patients to ensure that the right care is delivered at the right time. In addition, the American College of Physicians (ACP), in conjunction with the Association of Academic Internal Medicine (AAIM), published an online, case-based, interactive High Value Care (HVC) curriculum.\(^5\) This curriculum focuses largely on reducing overuse and encourages high value medication prescribing and quality improvement.

As medical educators, we must raise awareness of cost-conscious care amongst our learners and train our residents to be responsible stewards of finite healthcare resources. Studies have shown that physicians have a poor understanding of healthcare costs and that providing cost data changes ordering behavior.\(^5,7\) In addition, there is evidence that the residency training environment influences physician ordering behavior and high value decision making.\(^8,9\) The Accreditation Council of Graduate Medical Education (ACGME) Milestones Project formally highlights the importance of assessment of resident competence in cost effective care (SBP3).\(^10\) Despite the need to formally teach and evaluate residents in high value care, only 15% of Internal Medicine programs have a formal curriculum to teach these skills according to a survey of Internal Medicine program directors in 2012.\(^11\) A few resources addressing high value patient care previously have been published in MedEdPORTAL. For example, Moriates et al. published their work in which they developed a nonprofit organization, Cost of Care, Inc. to create a “Teaching Value and Choosing Wisely\(^6\) Competition”.\(^12\) Their goals of sponsoring this competition included identifying champions of HVC in health professions education, catalyzing new methods for teaching HVC, and promoting ideas that might be readily adapted to other institutions. We believe that our work is consistent the purpose of their initiative and offers an innovative educational approach by using actual, real-world cases for instruction and through the use of a novel evaluation tool to assess residents’ application of HVC principles.

Prior to implementation of our HVC curriculum, we surveyed Internal Medicine residents at our institution to determine their baseline knowledge of healthcare costs and attitudes towards cost-conscious care. Survey results revealed that our residents agreed that physicians should be aware of the costs of various labs, imaging, and procedures and should factor that knowledge into decision making. Nonetheless, residents reported poor access to information regarding costs of care and noted uncertainty with their skills of factoring cost into medical decision making.

In order to address this need, we developed a case-based, interactive morning report curriculum that focuses on high value, cost-conscious healthcare decision-making. In addition, we developed a novel evaluation tool to evaluate residents’ application of cost-conscious care principles through the use of a HVC scoring algorithm. This HVC evaluation tool provides feedback to each participate on his/her abilities to provide cost-conscious patient care and allows each resident to track his/her progress in high value care decision making over time.

**Methods**

In order to collect baseline data on knowledge of healthcare costs and attitudes toward high value care amongst resident learners, we designed a brief survey (Appendix A) which can be distributed and collected prior to implementation of the HVC Morning Report Curriculum. To introduce your learners to the topic of High Value Care and the HVC Morning Report format, we recommend holding a 45-minute
resident conference to review the introductory slide set (Appendix B). It is important that the conference room has a computer with a projection device.

After all participating residents were introduced to the topic, we provided them with the Resident Presenter Guide (Appendix C). It is important for the presenting resident to select an appropriate high-yield case for the HVC Morning Report Series to be most effective. The Resident Presenter Guide was developed to provide practical guidance for appropriate case selection. We recommend that the presenting resident read through this guide thoroughly prior to selecting a case.

We schedule approximately two High Value Care (HVC) Morning Report sessions per month. For each HVC morning report session, a resident is scheduled to present a case that he/she encountered recently in the hospital or ambulatory setting. Prior to his/her conference presentation, the resident reviews published guidelines and meets with a local attending physician with expertise in the field. Together, they determine the “best-practice” for the selected case in regards to what imaging, laboratory studies, procedures, and/or consultations were necessary to arrive at the correct diagnosis and treatment course.

On the HVC Presenter Form (Appendix D), the resident indicates the diagnosis as well as an itemized list of all imaging, laboratory studies, procedures, and consultations determined to be best practice for the selected case. The resident records the cost of each item on the list according to cost information listed in the Healthcare Bluebook®. The resident documents a “Total Best Practice Cost” on the form by calculating the sum of the determined minimum required diagnostic workup. Finally, the resident reviews what actually happened with the case to determine if significant waste was involved in the evaluation and overall care of the patient and records that on the form, if applicable. It is important that residents have access to a cost information mobile application and/or website such as the Healthcare Bluebook®. In addition, the presenting resident will need time to meet with an attending to discuss his/her selected case, complete the HVC Presenter Form, and prepare a slide presentation of the selected case.

In preparation for the HVC Morning Report session, the resident also should determine appropriate pre-designed breakpoints in the case. The breakpoints are places in the case where decisions must be made regarding what labs, imaging studies, procedures, and/or consultations need to be ordered. These pre-designated breakpoints will allow each conference participant to complete a HVC Participant Form during the presentation which will be used for scoring purposes.

Each HVC Morning Report session requires approximately 45 minutes in a room with a computer and projection device. Facilitators should bring a copy of the HVC Participant Form (Appendix E) for each of the attendees. During each session, the presenting resident begins the case presentation and pauses at one or more pre-designated breakpoints. During these breaks, each participant completes the HVC Participant Form where he/she indicates what imaging, laboratory studies, procedures, and/or consultations that he/she would order based on the case information provided to that point. Of note, the tests that the participant orders may or may not have been ordered by the treating physician in the actual case. As the case presentation continues, it is not necessary for a participant to order the same test on a subsequent breakpoint if he/she ordered that test on a previous breakpoint. At the conclusion of the case presentation, each participant records what he/she feels is the most likely diagnosis based on the information provided. Following the case discussion, the HVC Participant Forms are collected and a “High Value Care Score” is determined on the HVC Scoring Form (Appendix F) for each resident based on his/her responses.

All of the HVC Participant Forms are collected and reviewed individually, and each resident is awarded points for diagnostic accuracy as well as appropriate, cost-conscious utilization of imaging, laboratory studies, and consultation. Points are deducted for unnecessary overuse of healthcare services and inappropriate underuse of services as determined by clinical guidelines and local expert opinion on the specific case. Three variables are used in determination of the HVC score for each participant including 1.) Diagnostic Accuracy 2.) Ordering of Minimum Recommended Diagnostic Workup and 3.) Resident Cost vs. Best Practice cost. Points from these three variables are totaled to determine the HVC score for each resident for that particular case.
For example, a resident is awarded 3 points if he/she documented the correct diagnosis for the case and 3 points are subtracted if he/she indicated an incorrect diagnosis. Next, a resident is given 3 points if he/she ordered all of the recommended diagnostic workup according to the previously determined minimum best practice diagnostic evaluation. Three points are subtracted if the resident did not order all of the recommended diagnostic workup. This variable serves as a balancing measure to ensure that a resident is held accountable for ordering the necessary tests to make the diagnosis and not rewarded for inappropriate underuse. Cost information is listed for each diagnostic item ordered by the participant using the Healthcare Bluebook® as a reference. These itemized costs are added to determine the total cost of the resident workup. Subsequently, each resident’s total cost then is compared to the Best Practice Cost that was determined by the presenting resident after consultation with a local expert. The participant is awarded 4 points if his/her total cost was ≤ 100% of the determined Best Practice Cost. The participant is penalized 1 point if his/her total cost is 101-120% above Best Practice Cost and is penalized 4 points if his/her total cost is > 120% of Best Practice Cost. Finally, a total “High Value Care Score” is calculated for each resident by totaling the points from the three variables included above.

If a program chooses, all of the HVC scores can be entered into a centralized database that allows one to follow trends in HVC scores over time. This can be done in Microsoft Excel® and may require administrative assistance. In addition, we track average HVC scores by PGY class in our database which allows us to compare the HVC scores of each resident against the aggregate score of his/her peers. Each resident has an opportunity to review their HVC score trend data with a member of our program leadership during their semi-annual review.

Lastly, a brief follow-up survey (Appendix G) is designed to measure changes in resident knowledge of healthcare costs and attitudes toward high value care decision making by comparing to the pre-curriculum responses. This survey can be distributed and collected at the end of the academic year following implementation of the HVC Morning Report Curriculum.

For this submission, we have included a Sample HVC Morning Report Case PowerPoint (Appendix H). This slide set contains a sample HVC Morning Report case that was presented as a part of our curriculum. This sample case can be used to initiate the curriculum and allow everyone to become familiar with the HVC Participant and HVC Scoring Forms.

Results
Our High Value Care Curriculum was delivered over the course of the 2014-2015 academic year to the Internal Medicine Residency Program at Carolinas Medical Center in Charlotte, NC. Approximately two HVC Morning Report sessions were scheduled per month which allowed each upper level resident to present at least one HVC Morning Report session over the course of the academic year. Pre-curriculum surveys of our residents indicated poor knowledge of costs of various labs, imaging studies, and procedures. In addition, our residents noted high levels of uncertainty with skills of factoring cost into medical decision making. Finally, residents reported unfamiliarity with HVC resources and poor access to information regarding costs of care on the pre-curriculum survey.

Based on resident post-survey data, the HVC Morning Report curriculum was successful in improving knowledge of high value care and comfort with cost effective decision making. For example, 94% (n=34) of residents agreed that the HVC curriculum improved their knowledge in regards to healthcare costs as well as increased their awareness and application of HVC principles. On the pre-curriculum survey, 70% of respondents indicated that their knowledge of healthcare costs was "poor." Following the HVC curriculum, however, the percentage of respondents indicating that his/her HVC knowledge was "poor" fell to 29%. On the post-curriculum survey, correct responses regarding the costs of a CT angiography of the chest, basic laboratory studies including CBC and BMP, brain MRI with and without contrast, and trans-thoracic echocardiography each improved by over 50% compared to pre-curricular survey responses.

Furthermore, on the post-curriculum survey, 83% of residents responded that the HVC morning report series had a positive impact on his/her patient care decision making process. In addition, the percentage
of residents responding that they factored costs in patient care decision making "often" or "always" increased from 30% to 78% following the HVC curriculum. Furthermore, 80% of respondents felt that the HVC scoring sheets provided useful feedback in regards to application of HVC principles.

Discussion

We found that our HVC Morning Report curriculum was successful in improving resident knowledge of high value care and comfort with cost effective decision making. Appropriate case selection and presentation is very important for this conference series to be successful. Therefore, it is necessary to provide resident and faculty development in these areas. For this reason, we developed a resident presenter guide that provides some helpful hints on case selection and organization of the case presentation. For our HVC series, we found that more straight-forward cases often work better than more complex patient presentations and allow for easier scoring of the participant responses.

In our curriculum, we used actual cases seen by our residents in the hospital or ambulatory setting. Of course, using actual cases (with all their associated complexities) can lead to variable opinion regarding what should be considered the best practice evaluation for any particular case. Nevertheless, we feel this uncertainty is more reflective of real life practice and should be considered a positive aspect of the curriculum.

It is also important to reinforce the concept that "cost" and "charge" are two very different things. We used the Healthcare Bluebook as our reference for cost information since it is widely available and standardized. While the Healthcare Bluebook is able to track relative costs of various elements of care, the actual amount charged to the patient is often vastly different (and usually higher that the cost reported in the Healthcare Bluebook). One could consider using other sources such as Medicare/Medicaid claims data which may provide cost information that is closer to the actual charge.

We also found that the collection of the participant forms, data entry of participant responses, and completion of the HVC scoring form was somewhat time consuming for one individual. It is helpful to have an administrative assistant available for data entry and to have several faculty members trained on how to score the participant responses in order to complete the HVC scoring form accurately. Alternatively, you could reserve a few minutes at the end of each session and instruct participants to score their own work at the completion of the conference.

We noticed a great deal of variability in the complexity of the cases presented by the residents. Thus, it was somewhat misleading to follow HVC score trends over time because the HVC scores for each session often were determined by the complexity of the case presented.

Ultimately, it may be beneficial for a program to collect a repository of appropriate, high yield cases that can be presented periodically as a part of the HVC morning report series. Assimilating a series of high yield cases may allow for better interpretation of participant responses, more uniformity in HVC scoring, and improved ability to track residents’ progress in HVC scores over time.

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References

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