Colorectal Cancer: What to Do When Logic and Good Intentions Are Not Enough

Dennis J. Ahnen

Published online: 23 April 2010
© US Government 2010

High-quality care is a near-universal goal of medical care systems and there is a growing consensus that performance quality should be measured and perhaps used as part of the basis for payment for services. Identification of valid performance measures and reliable means for measuring them are critical if such efforts are to improve patient outcomes.

The Veterans Health Administration (VHA) is, in many ways, ideally set up to both implement and evaluate quality improvement programs. The VHA system is the largest integrated delivery system in the US and has one of the most comprehensive electronic health record systems currently available. Over the last 20 years, the VHA has developed and steadily expanded the VistA system and its user interface the Computerized Patient Record System (CPRS). CPRS now includes an electronic medical record, a computerized physician order entry system, medical image viewing, diagnostic test results, and electronic pharmaceutical management among other features. The VistA system, in many ways, serves as a model of how a comprehensive electronic medical record system not only can assist providers by providing easy access to relevant patient data but can be used to study patient-care patterns and implement quality-improvement programs. For example, the VHA has incorporated alerts and automated

reminders at the point of medical decision-making (when orders are written) in an attempt to improve patient care.

The VHA has been a leader in efforts to incorporate performance measures into a comprehensive quality-improvement program and the program has been reported to be very successful. For example, in 2004 a RAND Corporation study measured the quality of medical care using a chart-based quality instrument consisting of 348 indicators. The study found that the VHA had substantially better quality of care than did a national sample [1]. Similarly, a 2009 Congressional Budget Office report [2] found that “the care provided to VHA patients compares favorably with that provided to non-VHA patients in terms of compliance with widely recognized clinical guidelines—particularly those that the VHA has emphasized in its internal performance measurement system.”

Two performance measures that have been incorporated into the VHA quality-improvement program are (1) the percent of patients with a positive fecal occult blood test who have a colonoscopy within 60 days, and (2) the percent of patients with an interval of 30 days or less from the time a consultation is requested until the patient is seen in consultation. These performance measures are well-intentioned and would seem to be intuitively valid as they are based on the reasonable premise that more efficient identification and work-up of potentially serious symptoms or signs would lead to better patient outcomes. Logic would tell us that at some level this premise is true since at the extreme, an infinite delay in the workup of a potentially serious sign or symptom would undoubtedly lead to a bad outcome in some patients. The uncertainty of such performance measures is in the details: how long a delay is too long and what is the spectrum of bad outcomes that could arise from a delay in evaluation? The study by Fischer et al. [3] in this issue of *Digestive Diseases and*

D. J. Ahnen (✉)
Denver Department of Veterans Affairs Medical Center,
Denver, CO, USA
e-mail: dennis.ahnen@ucdenver.edu

D. J. Ahnen
University of Colorado Denver School of Medicine, Denver,
CO, USA

Sciences nicely illustrates both of these points and perhaps more importantly illustrates how difficult it is to measure comprehensively the quality of care.

Fischer et al. [3] argue that colonoscopy is a limited resource within the VA system and that policies that affect its use should be evidence-based; an argument that seems reasonable for performance measures in general. To this end, the authors conducted a retrospective analysis that was tightly focused on defining variability in the interval between initial symptom or sign and the diagnosis of CRC and on whether increased delay in diagnosis was associated with a higher rate of detection of late stage (stage III and IV) CRCs. The authors abstracted records from 447 patients diagnosed with CRC from a consortium of 15 Veterans Affairs Medical Centers that are participating in the Cancer Care Outcomes Research and Surveillance Consortium (CanCORS), a large national observational study that is examining treatment and outcomes for patients with colorectal and lung cancer [4]. The authors took advantage of data collected through CanCORS and abstracted additional data from the VA electronic medical record VistA. They separated the CRC patients into three groups: those with a positive screening test, those with GI bleeding, and those with non-bleeding symptoms or other tests that led to a diagnosis of CRC. They reported that the mean time to diagnosis was 91 days for the screening-detected cancers, 74 days for the bleeding-detected cancers, and 73 days for cancers detected by evaluation of non-bleeding abnormalities, but there was a very wide range of intervals in all groups (0–731 days). The interval was longer in older patients, those with any comorbidity, and in those receiving their care in VAs within the Atlantic region. As would be expected, late-stage CRC was less commonly found in the screening group than in either of the symptomatic groups (35% vs. 52% and 55%; $p < 0.001$). Interestingly, stage at diagnosis was not related to the mean time to diagnosis; the prevalence of late-stage CRC was no different in the group that had a mean time to diagnosis of >180 days (47%) than in the group that had a mean time to diagnosis of <90 days (46%). The authors concluded that “our results do not support current policies for wait time benchmarks such as 60 days from a positive FOBT until colonoscopy or 30 days to see a new consultation.”

While the authors’ conclusion is true, the results, for several reasons, do not refute the performance measures either. First, stage at diagnosis may not be a valid endpoint to use to test the validity of these two specific performance measures. Stage at diagnosis could be affected by many factors other than the interval from symptom/sign to diagnosis. For example, variability in the time from diagnosis to treatment could mask an association between delay

in diagnosis and stage at diagnosis. Perhaps measuring time from symptom/sign to treatment would have been a better measurement to get at this larger question. It might also have been a more appropriate overall performance measure for the VHA since time from diagnosis of CRC to treatment is another VHA performance measure. Time from sign/symptom to diagnosis would be one measurable component of a larger performance measure and it would still be necessary to establish what would be an acceptable interval.

Stage at diagnosis does have implications for treatment decisions but it is also commonly used as a surrogate measure for survival since we know that there is a strong relationship between CRC stage and survival [5]. Progression of cancer from one stage to the next, however, is a relatively crude measure of disease progression and a delay of even several months in diagnosis might not be reflected in an overall change in cancer stage. There is also substantial variability in survival even within stages of CRC [4] so a delay in diagnosis could, at least in theory, affect survival without significantly changing the distribution of stage at diagnosis. Would measuring survival be a more valid outcome for the study? Probably not. CRC survival is affected by so many factors other than delays in time from symptom/sign to diagnosis that it is unlikely that one could detect a relationship between this specific factor and survival even if it were a contributor.

Another important issue is whether stage at diagnosis (or survival for that matter) is the only important outcome that could be affected by a delay in diagnosis. The authors are aware of this issue and clearly state that other outcomes “such as decreased patient satisfaction or increased anxiety” could not be investigated with their retrospective design. It seems a daunting task to reliably measure all of the potentially important outcomes that could be related to a specific performance measure, much less a series of performance measures, and then to somehow weigh the relative importance of each.

The major lesson for this reader from the study by Fischer et al. [3] is that testing the validity of an existing performance measure is complex and difficult. It is particularly difficult when the outcome measures are relatively crude, when they are affected by many factors, and when there are multiple relevant outcomes. This lesson has been voiced within the VA [6] and is one that should inform all organizations that are striving to improve patient care by establishing and monitoring specific performance measures. It is also a lesson that should be appreciated by those desiring studies intended to establish an evidence base for the measurement of the quality of medical care.

References

1. Asch SM, McGlynn EA, Hogan MM, et al. Comparison of quality of care for patients in the Veterans Health Administration and patients in a national sample. *Ann Intern Med.* 2004;141:938–945.
2. Congressional Budget Office Report. Quality Initiatives Undertaken by the Veterans Health Administration. August 2009 <http://www.cbo.gov/ftpdocs/104xx/doc10453/08-13-VHA.pdf>.
3. Fischer DA, Zullig LL, Grambow SC, Abbott DH, Sandler RS, Fletcher RH, El-Serag HB, Provenzale D. Determinants of medical system delay in the diagnosis of colorectal cancer within the Veteran Affairs health system. *Dig Dis Sci.* doi:[10.1007/s10620-010-1174-9](https://doi.org/10.1007/s10620-010-1174-9).
4. Ayanian JZ, Chrischilles EA, Fletcher RH, et al. Understanding 485 cancer treatment and outcomes: the Cancer Care Outcomes Research and Surveillance Consortium. *J Clin Oncol.* 2004;22: 2992–2996.
5. Hayware RA. Providing optimal care is complex—And so is measuring it. VA Health Services Research and Development Service Forum: translating research into quality care for veterans. <http://www.hsrd.research.va.gov/publications/forum/Nov07/Nov07-3.cfm>.
6. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Thun MJ. Cancer statistics, 2009. *CA Cancer J Clin.* 2009;59:225–249.