

# Canadian Association of General Surgeons, the American College of Surgeons, the Canadian Society of Colorectal Surgeons, and The American Society of Colon and Rectal Surgeons: Evidence Based Reviews in Surgery – Colorectal Surgery

Larissa K. Temple, M.D. • David A. Rothenberger, M.D. • Paul Belliveau, M.D.  
for the Members of the Evidence Based Reviews in Surgery Group

The term “evidence-based medicine” was first coined by Sackett and colleagues as “the conscientious, explicit and judicious use of the current best evidence in making decisions about the care of individual patients.”<sup>1</sup> The key to practicing evidence-based medicine is applying the best current knowledge to decisions in individual patients. Medical knowledge is continually and rapidly expanding and reading all of the medical literature is impossible for an individual clinician. For clinicians to practice evidence-based medicine, they must have the skills to read and interpret the medical literature so they can determine the validity, reliability, credibility, and utility of individual articles, ie, critical appraisal skills. In general, critical appraisal requires that the clinician have some knowledge of biostatistics, clinical epidemiology, decision analysis, and economics as well as clinical knowledge.

The Canadian Association of General Surgeons and the American College of Surgeons jointly sponsor a program entitled “Evidence Based Reviews in Surgery (EBRS),” supported by an educational grant from Ethicon Inc, Ethicon Endo Surgery Inc, and Ethicon Endo Surgery. The primary objective of this initiative is to help practicing surgeons improve their critical appraisal skills. Beginning in 2007, EBRS also included a module covering topics in colorectal surgery. Each academic year, 6 clinical articles are chosen for review and discussion. The articles are selected not only for their clinical relevance to colorectal surgery but also to cover a spectrum of methodological issues important to surgeons; for example, causation or risk factors for disease, natural history or prognosis of disease, quantifying disease (measurement issues), diagnostic tests

and the diagnosis of disease, and the effectiveness of treatment. Both methodological and clinical reviews of the article are performed by experts in the relevant areas and posted on the EBRS-CRS website. In addition, a listserv discussion is held where participants can discuss the monthly article. Members of the Canadian Association of General Surgeons (CAGS) and the American College of Surgeons (ACS) can access Evidence Based Reviews in Surgery–Colorectal through the Canadian Association of General Surgeons website ([www.cags-accg](http://www.cags-accg)), the American College of Surgeons website ([www.facs.org](http://www.facs.org)), the Canadian Society of Colon and Rectal Surgeons (CSCRS) website ([www.cscrs.ca](http://www.cscrs.ca)), and the American Society of Colon and Rectal Surgeons (ASCRS) website ([www.fascrs.org](http://www.fascrs.org)). All journal articles and reviews are available electronically through the website. Surgeons who participate in the current (modules) packages can receive CME and/or Maintenance of Certification credits by completing an evaluation and a series of multiple choice questions. For further information about EBRS-CRS readers are directed to the CAGS, ACS, CSCRS, and ASCRS websites or should email the administrator, Marg McKenzie at [mmckenzie@mtsinai.on.ca](mailto:mmckenzie@mtsinai.on.ca)

In addition to making the reviews available through the CAGS and the ACS websites, a condensed version of the reviews will be published in the *Diseases of the Colon & Rectum*. We hope readers will find EBRS useful in improving their critical appraisal skills and in keeping abreast of new developments in general surgery. Comments about EBRS may be directed to [mmckenzie@mtsinai.on.ca](mailto:mmckenzie@mtsinai.on.ca)

## SELECTED ARTICLE

Wong SL, Ji H, Hollenbeck BK, et al. Hospital lymph node examination rates and survival after resection for colon cancer. *JAMA*. 2007;298:2149–2154.

**QUESTION:** Do hospitals that examine lymph nodes (LNs) after a resection for colon cancer have superior survival rates?

**DESIGN:** Retrospective cohort study

**SETTING:** National Surveillance, Epidemiology and End Results (SEER)-Medicare linked database.

**PATIENTS:** Review of 30,625 patients who underwent colectomy for nonmetastatic colon cancer from 1995 to 2005.

**RESULTS:** Patients in whom more than 12 LNs were identified had improved survival (adjusted hazard ratio 0.83, 95%CI 0.78–0.88). This association was greater in patients with stage II disease (adjusted hazard ratio 0.69, 95%CI 0.63–0.76) compared with patients with stage III disease (adjusted hazard ratio 0.89, 95%CI 0.81–0.98). However, node examination rates were not significantly predictive of survival when assessed at the hospital level (adjusted hazard ratio highest vs lowest hospital quartile, 0.95; 95% CI 0.88–1.03).

**CONCLUSIONS:** The mean number of lymph nodes examined at a hospital after colectomy for colon cancer is not associated with staging, use of adjuvant chemotherapy, or patient survival. Efforts by payers and professional organizations to increase node examination rates may have limited value as a public health intervention.

**COMMENTARY:** The goal of improving cancer care is a laudable one. Identification of areas deserving focus for quality improvement is often based on intuitive judgment. However, studies determining the success of these quality initiatives are rare, and measurement of potential quality indicators remains difficult. Nevertheless, in recent years, quality measures have increasingly been tied to reimbursement and public reporting. If we plan to implement and measure quality indicators, it behooves us to assess their validity.

Lymph node (LN) retrieval after colectomy has often been reported as a marker of quality. In fact, several societies (National Quality Forum, American Society of Clinical Oncology (ASCO), American College of Surgeons (ACS), National Comprehensive Cancer Network (NCCN), and Cancer Care Ontario (CCO)), have endorsed a quality measure for LN retrieval and insurance companies are using it for reimbursement. Thus, it is important to assess whether LN retrieval affects survival.

Using retrospective, population-based data, Wong et al attempted to evaluate the validity of the hypothesis that higher LN retrieval results in improved survival at the hospital level in patients with stage I to III colon cancer. The authors utilized SEER-Medicare, a well-recognized data source that includes a population-based representative sample of patients >65 years of age treated for stage I to III colon cancer in the United States. Although subgroups of patients are excluded (ie, patients <65 y, Medicare health maintenance organization and Medicaid patients), it is the

most representative sample in the United States and includes approximately two-thirds of patients with colon cancer. The authors analyzed hospitals in quartiles based on number of LNs retrieved. Interestingly, a majority of hospitals reported fewer than 12 LNs; even within the highest quartile, and only 61% reported 12 LNs or more. Although the data demonstrated that patients with  $\geq 12$  LNs had a 17% survival benefit, after controlling for several factors, this survival benefit was not seen at the hospital level. It is important to note, however, that the proportion of patients with positive nodes was similar in all quartiles. Similarly, the proportion of patients receiving adjuvant therapy was not significantly different.

Perhaps the most difficult aspect of this study is the reconciliation between 2 seemingly disparate findings: at the hospital level, LN retrieval did *not* affect survival, but in individual patients, LN retrieval *was* associated with increased survival. The finding that individuals have better outcome with higher LN retrieval has been substantiated by other researchers who have advocated that number of LNs retrieved should be used as a quality measure. This improved survival may be due to wider resection, more extensive tumor study, or favorable biology in patients with a stronger immune response. One would have expected these individual patient data to translate to better outcomes in hospitals with higher LN retrieval. It may be that the cut points were artificial and/or the benefit small; even in the highest quartile, retrieval rates were often fewer than 12 LNs, and the benefit of improved retrieval might have been too small to identify in this sample. Recent reports<sup>2,3</sup> of patients with stage III colon cancer have demonstrated that the total number of nodes retrieved do not affect survival, suggesting that nodal dissection is not therapeutic. The study is unable to determine why survival benefit is observed at the patient level. However, it is important to note that it is the first study assessing nodal retrieval at the hospital level.

There is considerable methodological rigor in this study. Given that LN retrieval depends on multiple patient, tumor, and treatment variables, the authors used the hospital (rather than the surgeon) as the unit for analysis. They controlled for several patient, tumor, and provider characteristics, including hospital teaching status, hospital volume, and surgical volume. In addition, they performed clinically meaningful sensitivity analyses to test the stability of their findings. For example, they report that LN retrieval did not affect survival of patients when stratified by stage. The authors also showed that patients were probably not understaged; regardless of hospital quartile, the same number of positive nodes was found, suggesting that patients were appropriately staged. These secondary analyses demonstrate the robustness of their findings.

Despite the methodological rigor of the study, there are several limitations. First, the sample did not include patients <65 and/or patients on Medicaid or Medicare

health maintenance organization. The inclusion of stage 0 patients likely dilutes the advantage of LN retrieval. In addition, the cohort included patients only until 2002; given the addition of oxaliplatin in the adjuvant setting and an associated improvement in survival, differences in survival at the hospital level may now be present. A small proportion of patients receiving oral Xeloda alone may not have been identified from the data source, although this therapy would be less than standard anyway. The authors included several patient and clinical features in the multivariate analysis, but controlling for socioeconomic status (ie, with zip code) would have been an important covariate to include. Finally, they used the cut point of 12 LNs because it has been identified as the quality indicator. Several studies have identified different cut points, however, and it might have been helpful to show that no cut point demonstrated improved survival at the hospital level.

The use of SEER-Medicare is unique in that it attempts to test the value of a proposed quality measure. Utilizing well-defined methods and a well-known data source, the authors carefully evaluated the role of LN retrieval as a quality measure and did not find that it improved survival at the hospital level. These findings are probably generalizable to US patients >65 years, although further study is required to determine whether the findings are generalizable outside US hospitals and/or hospitals treating a high proportion of young patients. The data should not be used to support limited lymphadenectomy, because they did show a 17% reduction in mortality for individual patients with  $\geq 12$  LNs removed.

On the other hand, the results of this study suggest that LN retrieval may not be the perfect quality measure at the hospital level. Given that a recent study of the National Cancer Data Base (NCDB) demonstrated that only 38% of US hospitals identify 12 LNs in 75% of their surgical specimens,<sup>4</sup> improving LN retrieval would require significant resources and effort nationwide. In view of this, further

study must be done to determine whether such tremendous effort focusing on LN retrieval is worthwhile.

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Members of the Evidence Based Reviews in Surgery Steering Committee: Nancy N. Baxter, M.D., Toronto, Ontario, Canada; Karen J. Brasel, M.D., Milwaukee, Wisconsin; Carl J. Brown, M.D., Vancouver, British Columbia, Canada; Pro-santo Chaudhury, M.D., Montreal, Quebec, Canada; Thomas H. Cogbill, M.D., LaCrosse, Wisconsin; C. Suzanne Cutter, M.D., Los Angeles, California; Elijah Dixon, M.D., Calgary, Alberta, Canada; G. William N. Fitzgerald, M.D., St. Anthony, Newfoundland, Canada; Harry Henteleff, M.D., Halifax, Nova Scotia, Canada; Andrew W. Kirkpatrick, M.D., Calgary, Alberta, Canada; Steven Latosinsky, M.D., London, Ontario, Canada; Anthony MacLean, M.D., Calgary, Alberta, Canada; Tara M. Mastracci, M.D., Cleveland, Ohio; Robin S. McLeod, M.D., Toronto, Ontario, Canada; Arden M. Morris, M.D., Ann Arbor, Michigan; Leigh A. Neumayer, M.D., Salt Lake City, Utah; Larissa K. Temple, M.D., New York, New York; Marg McKenzie, R.N., Toronto, Ontario, Canada.

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