

Assessing Synoptic Reports for Pancreatic Resection

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The term *evidence-based medicine* was first coined by Sackett and colleagues¹ as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.” 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 it is impossible for an individual clinician to read all the medical literature. For clinicians to practice evidence-based medicine, they must have the skills to read and interpret the medical literature so that they can determine the validity, reliability, credibility, and utility of individual articles. These skills are known as critical appraisal skills. Generally, 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 (CAGS) and the American College of Surgeons (ACS) jointly sponsor a program titled, “Evidence-Based Reviews in Surgery” (EBRS), supported by an educational grant from Ethicon Inc and Ethicon Endo Surgery Inc. The primary objective of this initiative is to help practicing surgeons improve their critical appraisal skills. During the academic year, 8 clinical articles are chosen for review and discussion. They are selected not only for their clinical relevance to general surgeons, but also because they cover a spectrum of issues important to surgeons; for example, causation or risk factors for disease, natural history or prognosis of disease, how

to quantify disease (measurement issues), diagnostic tests and the diagnosis of disease, and the effectiveness of treatment. Both methodologic and clinical reviews of the article are performed by experts in the relevant areas and posted on the EBRS website. A listserv discussion is held, where participants can discuss the monthly article. Fellows and candidates of the College can access Evidence-Based Reviews in Surgery through the American College of Surgeons website (www.facs.org). All journal articles and reviews are available electronically through the website. Currently we have a library of 50 articles and reviews, which can be accessed at any time. Each October, a new set of articles will be available each month until May. Surgeons who participate in the current (modules) packages can receive CME credits by completing a series of multiple choice questions. Additional information about EBRS is on the ACS website or by email to the administrator, Marg McKenzie at mmckenzie@mtsinai.on.ca.

In addition to making the reviews available through the ACS and CAGS websites, 4 of the reviews are published in condensed versions in *the Canadian Journal of Surgery*, 4 in the *Journal of the American College of Surgeons*, and 4 in *Diseases of Colon and Rectum* each year.

REFERENCE

1. Evidence-Based Medicine Working Group. Evidence-based medicine. *JAMA* 1992;268:2420–2425.

SELECTED ARTICLE

Park J, Pillarisetty VG, Brennan MF, et al. Electronic synoptic operative reporting: assessing the reliability and completeness of synoptic reports for pancreatic resection. *J Am Coll Surg* 2010;211:308–315.

Objective: To prospectively assess interobserver reliability on electronic synoptic operative reports (E-SORs) and to compare E-SORs with standard dictated reports for completeness and time availability in patients’ medical record (“turn around time”).

Design: Prospective cohort study with historical control group.

Patients: Patients who underwent major pancreatic resection over a 10-month period.

Method: Six high-volume pancreatic surgeons (>12 major pancreatic resections per year) at Memorial Sloan-Kettering Cancer Center identified and reached consensus agreement on a list of items to document in operative reports for pancreatic procedures. An attending surgeon and surgical fellow prospectively and independently completed

an E-SOR after each of the 112 major pancreatic resections. Reliability was assessed by calculating the interobserver agreement between attending physician and fellow reports. Completeness was assessed by comparing E-SOR to a case-matched (surgeon and procedure) historical control of dictated reports, using a 39-item checklist developed through an internal and external query of 13 high-volume pancreatic surgeons.

Results: Interobserver agreement between attending and fellow was moderate to very good for individual categorical E-SOR items ($\kappa = 0.65 - 1.00$, $p < 0.001$ for all items). Compared with dictated reports, E-SORs had significantly higher completeness checklist scores (mean 88.8 ± 5.4 vs 59.6 ± 9.2 [maximum possible score, 100], $p < 0.01$) and were available in patients' electronic records in a significantly shorter interval of time (median 0.5 vs 5.8 days from case end, $p < 0.01$). The mean time taken to complete E-SORs was 4.0 ± 1.6 minutes per case.

Conclusion: Electronic synoptic operative reports for pancreatic surgery are reliable, complete in data collected, and rapidly available; all of which support their clinical implementation. The inherent strengths of E-SORs offer real promise of a new standard for operative reporting and health communication.

Commentary: With the electronic medical record, many components of clinical care have become automated. Templated progress notes are standard, which can be individualized based on patient or physician characteristics and practices. These templates improve compliance and billing, may be useful in research studies involving retrospective review of the medical record, and may save time. It is unclear whether they improve communication between caregivers because this form of communication has not been widely studied.

One area in which templated reports have not been widely used is operative reports. Operative reports are important records that serve a variety of functions. Ultimately, an operative report is the record of a procedure that allows someone else to understand what happened. If you are a surgeon, you want to record information that will be important should someone else treat the patient. If you perform cancer surgery, you want to include information relevant to the patient's prognosis and postoperative cancer treatment. If you are a billing specialist you are interested in recording those parts of the procedure that should be billed. If you are a quality analyst, you are interested in the comorbidities of the patient and compliance with quality metrics. If you are conducting a retrospective research review, you are likely interested in linking the operative report to other relevant reports, such as pathology or radiology reports, and in other discrete pieces of information that

may be relevant to a particular disease or condition. If you are a clinical trials coordinator, you are interested in making certain that information necessary to determine whether the patient fits the inclusion and exclusion criteria of your trials is described. What is important to some may not be important to others. Part of the problem is that there are no established standards for an operative report. In essence, a check list creates that standard.

Synoptic reports are a specific type of templated report using checklists or drop-down boxes while minimizing the amount of information that is intended to be conveyed in free-text form. Free text is allowed, but every attempt is made to convey the key pieces of information using drop-down menus to allow standardization, with improved information capture and subsequent retrieval.

The specific objectives of this study were to assess interobserver reliability, to compare the completeness of E-SOR compared with operative reports dictated in the standard fashion, and to assess the time to availability of electronic reports in the medical record compared with standard dictated reports. The inter-rater reliability of E-SORs of pancreatic resections was assessed by having 2 surgeons present at the same operation complete an E-SOR. The next step was to compare the completeness of these reports with that of narrative operative reports dictated by the same surgeons in the past using a standardized checklist.

Six high-volume pancreatic surgeons identified and reached consensus on a list of items to document in operative reports for pancreatic procedures. These items were used to develop E-SOR templates for pancreatic procedures with 4 main sections: approach and exploration, resection, reconstruction, and closure.

Once the report template was finalized, it was incorporated into clinical practice. Then, 4 months after implementation (to allow surgeons to become familiar with the use of the forms), electronic versions of the synoptic report completed by the attending surgeon and paper versions were independently completed. Interobserver reliability was calculated by comparing each element on 112 synoptic reports of pancreatic resection completed by the surgeons and fellows. Turn-around time was defined as the time from case end to signing of the operative report.

The checklist in this study was developed by a literature review, review of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) required elements, and items on the E-SOR. Four surgeons from the study institution and 9 independent external high-volume pancreatic surgeons reviewed the checklist for relevance; those items rated as relevant by 75% or more of the reviewers were retained for the final checklist. There are several aspects to consider when comparing a new test or method of documentation to the gold

standard, or established way of practice. These are accuracy, reliability, and validity. An additional consideration in this study was time. Cost is also often a consideration although it was not reported in this study.

This study did not assess accuracy—the degree to which the report represents actual truth. Using the target analogy, accuracy is defined by the number of times that the arrow hit or close to the bull's eye. There was no independent verification of any of the elements on either the E-SOR or the dictated operative reports. The E-SORs were compared with historic dictated reports for completeness only. Comparison of a synoptic report with a simultaneous dictated report of the same operation with someone intimately involved in the operation but not trained in the synoptic method would have been one way of assessing accuracy.

Reliability, or precision, is defined as the reproducibility or repeatability of a measurement or test. Using the target analogy, reliability is the number of times that the arrows are close to one another—or hit the same place on the target—whether or not that is the bull's eye. Statistical assessment of agreement between observers, or reliability, is measured with the kappa statistic. Reliability of the E-SOR was assessed by comparing 2 forms completed independently by an attending surgeon and a surgical oncology fellow who participated in the same operation. Interobserver agreement was moderate to very good for individual categorical E-SOR items (kappa = 0.65 to 1.00, $p < 0.001$ for all items). Although they completed the forms independently, both were from the same institution and had been using the E-SOR for 4 months so it is not surprising that the reliability was moderate to very good.

One definition of validity is that something is both accurate and reliable. Using the target analogy, validity is defined by arrows that consistently are clustered within the bull's eye. The reliability of the E-SORs supported by the high kappa statistic was assessed, but the accuracy is unknown. Therefore the validity is also unknown.

Finally, in this study, completeness was better for the E-SOR (mean 88.8, [SD 5.4] compared for E-SOR vs mean score of 59.6 [SD 9.2] for the dictated operative reports), with a maximum score of 100, $p < 0.01$.

There was also a significantly shorter time to completion for E-SORs: a median of 0.5 days for the E-SORs and 5.8

days for the dictated reports, $p < 0.01$. The mean time to complete the E-SORs was 4 minutes (SD 1.6 minutes).

So, this study demonstrated, by using E-SOR, that more quantitative information is attainable by a dedicated group of pancreatic surgery specialists. The results may not be generalizable to all operations in all hospital systems. Not all hospital systems have an electronic medical record that supports synoptic reports. Elements of an operative report that are considered relevant or critical for a pancreatic resection are not necessarily relevant or critical for other operations, although there may be some common elements. As E-SOR for common procedures evolves, it will be important to track both what is gained and what is lost in this transition.

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