MEDINFO 2007
HISA Ltd Australia
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Alberta WebSMR – The Implementation of a Synoptic Report for Cancer Surgery

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Abstract

Cancer Surgery Alberta worked with Alberta surgeons to examine the need for standardized cancer surgery guidelines within the province. Consensus was reached on the development of an electronic synoptic report to replace the traditional narrative report for cancer surgery. Minimum data sets were established by surgeons for each tumor group converted into a web-based surgical medical record (Alberta WebSMR). By working with Alberta health regions, surgeons, and Alberta Health & Wellness, synoptic reporting for cancer surgery was introduced throughout Alberta. This application has been successful in recording cancer surgeries and providing a method for access to real-time clinical outcomes data. Implementation will continue throughout the province and the number of active templates will increase. The Alberta WebSMR provides an opportunity for surgeon education, data to support decision making, and ultimately improved surgery for cancer patients.

Keywords:

cancer , surgery, synoptic, computer, operative report, outcomes

Introduction

Medical oncology services, including chemotherapy and radiation have long been centralized across Canadian provinces. Surgical oncology, on the other hand, has not met that same level of standardization. Due to the resultant lack of well-defined and readily available treatment guidelines and outcomes data in cancer surgery, the Alberta Cancer Board consulted with the Alberta Health Regions, the Alberta Medical Association, Alberta Health and Wellness, and the College of Physicians and Surgeons of Alberta to develop Cancer Surgery Alberta (CSA). Along with the Canadian Strategy for Cancer Control, CSA identified a need to establish baseline surgical information in order to better understand the current status of patient outcomes of cancer surgery and enable benchmarking of surgical outcomes. CSA obtained consensus from Alberta surgeons on the development preformatted templates and synoptic reporting that makes outcomes analysis possible. Minimum data sets were developed by the surgeons and a pilot study was conducted. Upon ascertaining that a web-based synoptic report was advantageous in providing a complete picture of cancer surgery, and thus benefiting cancer patients, a web-based medical surgical tool was developed and deployed in Alberta.

Methods

Cancer Surgery Alberta held consensus workshops to address the lack of cancer surgery guidelines. As a result of these meetings, data elements were established to create a computer-based synoptic report for rectal cancer. A pilot study was conducted to compare the feasibility of such a system to the traditional narrative report. The study looked at elements for abdominoperineal resection and anterior resection. Examining waiting times, resource utilization, staging, decision-making, guidelines, functional information, and the technical details of surgery, the findings from this initial study showed that the synoptic report captured 99% of critical information in rectal cancer versus 46% of critical information obtained from the standard narrative operative report (Edhemovic, Temple, de Gara, & Stuart, 2004 [1]). There is a paucity of information in the literature about synoptic surgical records because this is a relatively new concept. Intuitively clinicians and outcomes analysts believe that such records will offer considerable advantages. However, there is little empirical evidence reported in the literature to support this widely held opinion. The few studies reported in the literature are unanimous in identifying the advantages and superiority of synoptic reporting over traditional narrative reporting. (Dougherty, 1999 [2]; Edhemovic, Temple, de Gara, & Stuart, 2004 [1]; Hemmings, Jeffery, & Frizelle, 2003 [3]; Sleszynski, Glonek, & Kuchera, 1999 [4]) Other than the report of the pilot study of the current initiative (Edhemovic, Temple, de Gara, & Stuart, 2004 [1]), only one study was found that reported the use of synoptic reporting for surgery (DeOrio, 2002 [5]) and that study reported synoptic reporting in orthopedics. No studies were found that reported on oncology surgery. However, after consulting widely, CSA concluded that the current practice of

dictating operative reports was inadequate and needed to be replaced with mandatory reporting of certain data elements that could be most easily achieved by a standardized electronically-generated operative synopsis. CSA contracted an independent software consulting group to develop a web-based surgical medical record (WebSMR).

In order to develop a successful province-wide system, CSA had to develop a multi-disciplinary team consisting of clinical, technical, and administrative members from all health regions

and concerned organizations. This included surgeons, the Alberta Cancer Board, health records, Alberta Medical Association,

Alberta College of Physicians & Surgeons, cancer registry, information systems, and the operating room. Once a foundation was developed, a CSA steering committee was established to provide leadership in working towards all of the CSA Goals identified. In addition, tumour site working groups (TSWG) were established for the development of each template. These groups were composed primarily of surgeons that work in the tumour site area for which a template was being developed. The TSWG defined data elements and formatted their tumor specific templates, approved standards for data definitions, defined outcome queries for the database, and recommended implementation to specific surgeons and health facilities. The surgeons who generated these data elements were the cornerstone of a successful computer synoptic system. There were also several other requirements essential to the success of such a program. Physicians and executive members were involved from the beginning to ensure leadership and user uptake. Individualized training of all users at their own site, coupled with open communication and regular feedback to the end users, has also facilitated successful implementation. In creating a province wide system, it was important to establish Information Management Agreements, Privacy Impact Assessments, and security clearances with each individual health region. Each health region also created an implementation team consisting of health records, OR managers, and information systems. After a template was deployed, surgeons provided feedback and suggested changes to the data. These recommendations were catalogued and would be discussed with the TSWG at regular meetings. Approved changes would then be used to create a new version of a template, and all surgeons would be advised of the update.

The Alberta WebSMR is a technology solution that provides healthcare institutions with a simple electronic means of capturing standardized data points and generating synoptic post-operative surgical records. Its simple interactive questionnaire design makes it easy for surgeons to file consistent reports from any computer with internet access and is limited only to what the surgeon knows at the time of surgery. The heart of the Alberta WebSMR is the Survey Administration Module (SAM), managed by CSA. It is within SAM that the templates are created using the minimum data sets established by each tumor working group. SAM is a dynamic tool, allowing each template to be customized while permitting regular updates to the data sets based on surgeon requirements. It is also from SAM that CSA staff run quality assurance checks on the operative reports and distribute the reports to all interested parties in a timely manner.

To ensure successful user uptake, the Alberta WebSMR is as comprehensive as possible. The system is available from the hospital, office or any other location with an internet connection. A surgeon selects a pre-entered patient, completes a series of survey-style questions, and electronically signs the document, thus eliminating the need for transcription, cutting down review time, and providing the opportunity for surgeons to obtain real-time outcomes.

In order to maximize interoperability, the Alberta WebSMR has targeted integration to other health care systems using a standards based approach. Health Level Seven (HL7) is used as the means to define the electronic messages that Alberta WebSMR uses to send and receive data to other healthcare information systems. As the standard for interfacing clinical data in many institutions, HL7 offers simple communication with many other systems. The application currently uses HL7 2.x and therefore can be interfaced with health information systems that are in use today, with a future target of HL7 3.0. Within the HL7 messages that WebSMR sends, the Clinical Document Architecture (CDA) standard is followed when sending the WebSMR surgical report to other healthcare systems. CDA will be utilized to provide the post operative surgical report in its entirety as a document, thereby replacing the classic dictation style in updating provincial/regional EHRs. At the data element level, the use of structured clinical vocabulary is imperative to enable comparison across sectors and jurisdictions within a pan-Canadian EHR. Aligning with a more widely adopted clinical terminology standard enables more effective data aggregation and transfer across sectors and jurisdictions than the current consensus based clinical vocabulary standard of WebSMR. WebSMR data elements can accommodate to SNOMED Clinical Terms (SNOMED CT) as well as to CCI and ICD 10.

Once surgical information is collected by the WebSMR database, a data table can be exported to the preferred statistical application. As soon as a WebSMR report has been approved, the data can be analyzed through this technique. Reports can be generated based on individual, health care facility, health region, or date range.

Results

The WebSMR currently has six active tumor groups in use (colorectal, breast, liver, sarcoma, melanoma, ovarian), with over 500 reports entered by 20 surgeons in four health regions since 2005. An electronic health record interface is currently in production which will expand the number of health regions using the Alberta WebSMR from four to ten. Thus far, feedback from surgeons has been mainly positive. Regular meetings and communication with surgeons and other steering committee members has facilitated the refinement of the application, with development of new template versions, format changes, and improved work processes. Login issues and timely development of interfaces with other health systems have been the largest challenges.

There have been several aspects of the Alberta WebSMR that have received approval. Namely ease of use, reduction in chart review, and faster turnaround time for reports. Perhaps the strongest response has been towards the availability of outcomes. Waiting times can be determined based on decision date and surgery date, and reasons for delays are also monitored. Several areas directly related to the surgery are also recordable, such as preoperative testing (table 1), clinical staging, patterns of practice (table 2) and use of neoadjuvant therapies. Sample outcomes from the WebSMR can be found in Tables 1 & 2.

Table 1: Breast Cancer Method of Detection

	# patients	Patient (%)	Imaging (%)	Doctor (%)
DCIS	28	0	100	0
IBC	127	43	47	10

DCIS: ductal carcinoma in-situ; IBC: invasive breast cancer

Table 2 - Rectal cancer outcomes

	Abdomino-perineal Resection (APR)	Low Anterior Resection (LAR)
# Patients	18	48
Tumor 1-5cm	94%	6%
TME – Total	100%	63%
TME – Subtotal	0	37%
Loop ileostomy	0	44%
Margins <2cm	5%	0
APR Rate	17%	n/a

TME: total mesorectal excision

Discussion

Surgeon uptake of the Alberta WebSMR has been successful with a limited number of users in four health regions. By March 2008, the application will be deployed throughout the entire province, with an increase to ten health regions and potentially 250 users. Therefore, it is important to utilize user feedback to enhance the system at an early stage. Although login and interface issues have proved to be challenges to this point, these issues will be rectified in the near future. In contrast, the ability to review and sign-off a chart and the elimination of transcription have been met with positive review. Such features allow a surgeon to provide more time in practice and less time with administrative issues. Following successful implementation of the Alberta WebSMR throughout Alberta, CSA will examine the potential for adoption of the WebSMR by other surgical specialties in Alberta, other clinical specialties that would benefit from synoptic reporting, and other provinces across Canada.

The quality of surgery is now linked with significant short and long term outcomes, which mandates that we accurately record and measure our procedures. As such, the Alberta WebSMR offers an excellent tool to obtain real time outcomes with the ability to reflect changes in patterns of practice. It can demonstrate the capacity to analyze aggregated clinical outcomes data related to oncologic surgery with the capacity to influence the adoption of changes in practice by providing practice based evidence. Following the completion of an operative report, updated outcomes can be obtained for all aspects of surgery. For example, the method of breast detection can be determined and the results can be used to analyze the need for increased public education, improved imaging practice, etc (table 1). This analysis can prove beneficial to many facets of cancer surgery. The template that guides the surgeons as they record the data points was developed by their peers and is a subtle but potent educational means of disseminating and refreshing surgeons' awareness of cancer surgery guidelines. The Alberta WebSMR is an important educational tool for surgeons by providing them with a dataset with which to self evaluate by analyzing techniques or outcomes to identify areas where continuing education and training may be valuable. For example, a surgeon may compare personal APR rates to those of all surgeons as a whole (table 2) and draw conclusions about his/her practice measured against the norm. The delivery of timely, accurate, and aggregated surgical outcomes information also has the potential to be a powerful decision making tool for surgeons, health managers, and policy makers. For example, waiting times and reasons for surgical delays can be generated from the Alberta WebSMR. Communication of patient information is one of the barriers to reducing waiting times. Prompt reports providing information on these issues to the appropriate positions

will enhance patient care by follow-up teams and family physicians along with workload planning for the tertiary cancer care centres.

Conclusion

The WebSMR process has been highly successful in defining the elements of a cancer surgery, providing an educational tool for the participating surgeon and providing an efficient mechanism for outcomes assessment. Defining important elements will lead to standardized guidelines for cancer surgery in Alberta, and possibly Canada. In turn, the education of participating surgeons will be strengthened. Increased surgeon knowledge will ultimately benefit the patient, who will receive improved care. Likewise, decision-making outcomes will lead to better resource management within health facilities and improve availability of quality care for patients. Future integration with other areas of cancer care, such as pathology, radiation oncology, and medical oncology will provide an excellent opportunity to understand the biology of cancer.

Acknowledgments

Cancer Surgery Alberta would like to acknowledge the continuing support of the Alberta Cancer Board, Dr. Anthony Fields, Softworks Group Inc., the Alberta Health Regions, Alberta Health and Wellness, the CSA Provincial Steering Committee, and all of the Alberta surgeons.

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