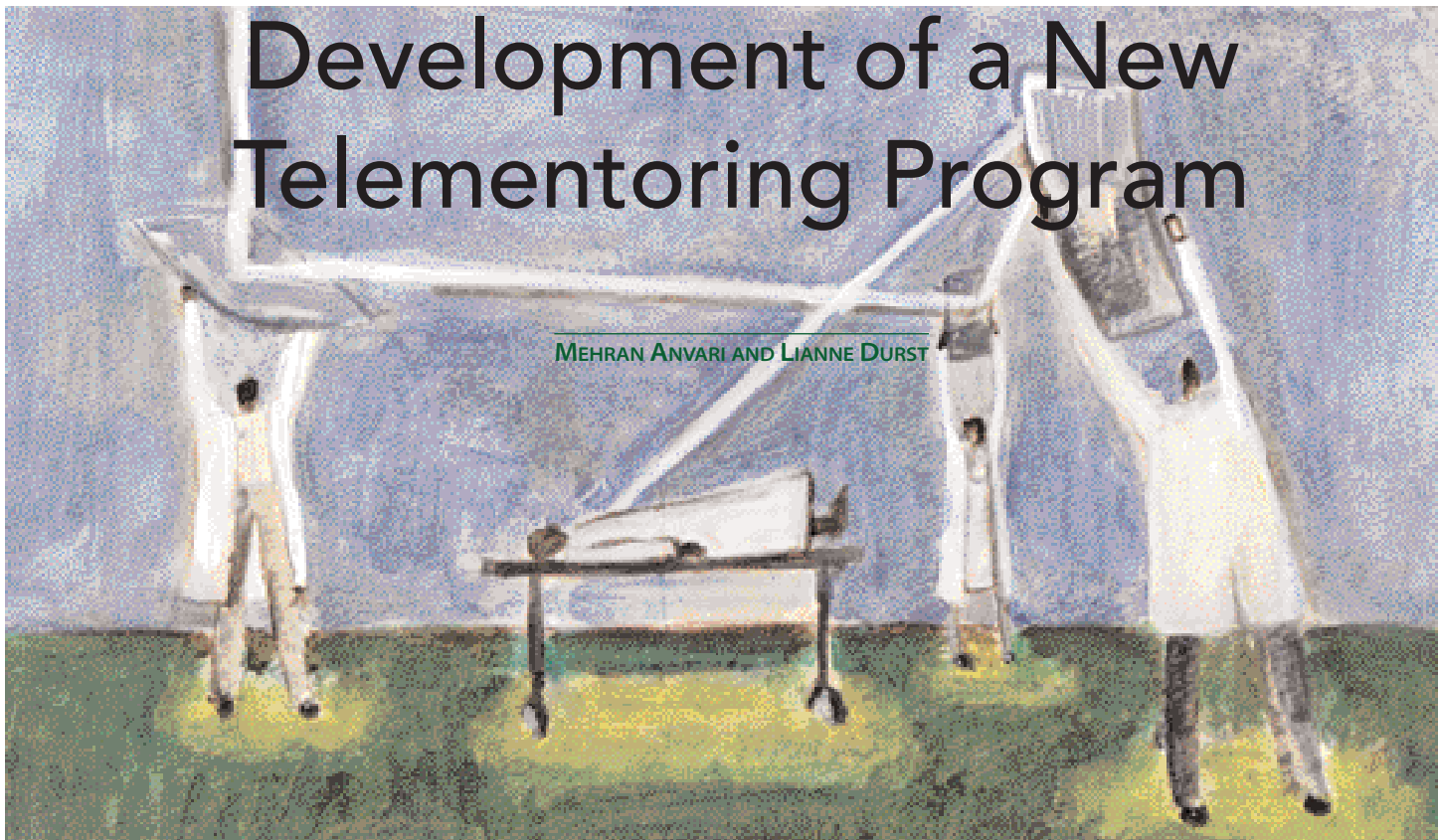


Development of a New Telementoring Program

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The last decade has witnessed a rapid growth in both the number and complexity of laparoscopic surgical procedures. This trend towards increased practice of minimally invasive surgical procedures is expected to continue, with those in the field predicting that by the end of the next decade approximately 70% of all surgical procedures will be treated laparoscopically. At the heart of this growth in popularity are two issues – cost of care and patient satisfaction with the result of the surgery. Despite the large capital costs initially required to obtain the necessary equipment, many have found that practising laparoscopic surgery actually reduces the costs of patient care. These cost savings are centred around the shorter in-hospital recovery times and lower rates of complications resulting from these procedures. Increased patient satisfaction has also been noted with the practice of minimally invasive procedures, primarily derived from shorter recovery, fewer complications, and better cosmetic results. Both of these factors are driving the need for these procedures ever higher, encouraging many surgeons to seek out the training required for practice.

Unfortunately, these skills cannot be easily acquired in the classroom setting, despite the necessity of this format for

acquisition of basic anatomical and surgical knowledge. The Society of American Gastrointestinal Endoscopic Surgeons (SAGES) recommends that in addition to didactic and simulated cadaver practice, all surgeon learners should undergo a period of mentoring or supervisory practice (*Surgical Endoscopy*, 1997, 11: 789-92). While this is not a bona fide requirement, many institutions and individuals have recognized the value of supervised practice and therefore, undertake to acquire this experience before attempting independent practice. To meet this national requirement for mentoring, the Centre for Minimal Access Surgery (CMAS) based at St. Joseph's Hospital in Hamilton, Ontario, is in the process of developing a mentoring and telementoring program for minimally invasive, laparoscopic procedures. This program is due to be implemented in the summer of 2000.

BACKGROUND

Several situations have occurred to facilitate and encourage the development of the CMAS mentoring and telementoring program. Recent technological advances have expanded the scope, clarity and speed of the telecommunication interactions achieved with videoconferencing technology, allowing for live

transmissions of more complicated real-time procedures and mentoring. In addition, the growth of telehealth companies, that specialize in the implementation of telehealth technology as well as the process re-engineering has increased the accessibility of this technology and facilitated interactive real-time telehealth practices over the last ten years.

The process of globalization is emphasizing the increasing need for uniform and widely accepted standards of surgical practice across the country and abroad. Consumers in remote parts of the country want to be assured of the same standards of healthcare as those in any of the other provinces and territories. Additionally, healthcare practitioners across Canada also wish to have the same quality and practice standards applied to all. Finally, the growing need for access to geographically remote areas is encouraging the development of newer forms of information exchange.

PROPOSAL

The Centre for Minimal Access Surgery is in the process of developing a new mentoring and telementoring program that will provide surgeons across Canada with increased access to national experts who can guide them through the difficult process of new skill acquisition and implementation. The program will combine the methods of traditional face-to-face mentoring with the newer technique of telementoring using videoconferencing equipment to remotely monitor and interact with the surgeon. It is felt that an initial four to six cases would be attempted with the mentoring surgeon in attendance and the next set of cases performed with remote, telementored supervision (although the exact number of surgeries undertaken in each component of the program will be individually determined). This combination is thought to be ideal as it compensates for the new surgeons' high demand for specific feedback for the first one to 10 cases, while still reaping the benefits of cost effectiveness and increased access to national experts that come with telementoring.

The CMAS program recognizes the fact that many hospital facilities are not properly equipped for videoconferencing sessions. To address this factor, equipment requirements were investigated and a solution was found in the form of a portable videoconferencing unit that could be shipped to the remote sites for use during the telementoring period. Therefore, all that would be required of the remote site would be to have ISDN lines installed into the operating room of choice. CMAS hopes that by making the process as simple and inexpensive as possible it will encourage more surgeons to participate.

GOALS AND OBJECTIVES OF THE PROGRAM

The purpose of this program is to develop and provide a comprehensive mentoring and telementoring program to

facilitate and guide learning surgeons in the practice of new laparoscopic techniques. Additionally, the program will provide a method for the acquisition of new laparoscopic skills while maintaining the integrity and standards of patient care and safety. Among other things, the objectives of this program include ensuring that the learner's OR suite meets current biomedical standards for safe practice as well as providing the opportunity for a safer learning environment in which new surgeons can gain relevant and crucial experience in new laparoscopic procedures. The program also hopes to increase the learner's operating experience with new laparoscopic procedures and techniques before independent practice is attempted, and in the end to increase and improve the standards of practice and quality of minimal access surgery care across Canada.

INITIAL PLAN OF ACTION

Developing the CMAS mentoring and telementoring program consisted of several logical steps, including the development of curriculum and the securing of faculty and funding for the project. Additionally, there were several key issues, such as equipment, licensing and payment schedules, that needed to be addressed.

Initially, it was felt that locating and assembling the extensive equipment required for this program would be the most challenging component. Therefore, much time was spent in investigating the minimum standards identified for this activity and then ensuring that the equipment available exceeded those technical and broadcast standards.

The second important issue was to explore the current licensing environment and identify the legal requirements for limited practice in other provinces. This was undertaken to ensure that mentoring surgeons maintained their liability insurance and met the standards of care in each medical jurisdiction. It was equally important to investigate the legal responsibilities of both the student and the expert mentor in these situations in order to determine where the liability should lay in the case of complications or problems. It was believed that the identification of the legal standpoint for telementoring would primarily involve applying the current practice standards to our new situation.

Finally, an inquiry into the current methods of remuneration for surgeons undertaking this type of professional activity was required to determine the costs of the program. Billing and remuneration codes for telementoring and mentoring activities would have to be identified. Alternative sources of funding such as "in lieu of" services and outside grant funding would also be explored. While it was understood that there would be many smaller tasks involved with an undertaking of this magnitude, the above activities were identified as the largest and most crucial to the success or failure of the program.

UNFORESEEN FACTORS AND IMPEDIMENTS

As with the development of any program of this size, there were a number of unforeseen factors and impediments. While there is the understanding that there will be some precedent-setting actions when creating a “first-of-its-kind” program, we did not anticipate the number of ambiguities that would affect the execution of our program. With the development of the CMAS telementoring program, these factors and ambiguities occurred in the areas of surgeon credentialling and licensure, liability for practice, technical concerns, confidentiality and payment schedules. The problems encountered in each area will be briefly discussed, along with any potential solutions or mitigating actions.

CREDENTIALLING AND LICENSURE

Current practice dictates that a healthcare professional must be licensed in the province or state of practice if any patient care is to be provided. For telementoring activities there currently exists some ambiguity regarding the designation of “primary physician,” and therefore both the remote and local healthcare professionals must obtain licensure in the region of practice. This is to ensure that proper standards of care for that jurisdiction are met by all healthcare professionals involved in the patient’s care.

This practice standard does not pose a problem or difficulty for many professions such as nursing, occupational therapy and physiotherapy since their licence applies across all regions of Canada. However, for physicians and surgeons, who are only licensed in the province or territory in which they practise, this poses a significant problem. Given that Canada alone has 13 different medical practice jurisdictions, the process of acquiring multiple full-practice licences would become both costly and time consuming, deterring many professionals from participating. This is especially true given that the telementoring activities of the remote professional constitute limited practice and may not require the specificity and scope of a full licence.

In order to minimize the time and effort required to practise telementoring, it is hoped that new telemedicine guidelines and licensure will be created. A potential licence should allow the physician or surgeon to provide telemedicine to patients located in different jurisdictions. It is hoped that Canadian licensing bodies will pursue the creation of this practice designation. Until then, telementoring faculty and learners must acquire an educational licence to practise in the desired province (outside their own), allowing them limited privileges for the purpose of teaching or learning.

LIABILITY FOR PRACTICE

Liability is defined as being under obligation and answerable to a particular result. The question of responsibility and liabil-

ity in patient care was much more difficult than expected with telementoring activities. In order to better understand the issues, Dr. Patrick Ceresia from the Canadian Medical Protective Agency (CMPA) was consulted. According to Dr. Ceresia, the responsibility for practice has traditionally been on the shoulders of the individual or group of individuals who provide direct care to the patient. However, in instances where videoconferencing technologies are employed, especially if there is more than one professional involved in care, there is a question regarding whether the off-site individual is providing the “direct care.” The local physician is deemed to be a “novice” or “learner” in a particular technique and therefore under the guidance of an “expert.” Is the learner then considered the “most responsible” physician in this case? For cases that are formally pursued in court, a patient must convince the court that the health practitioners involved in the provision of care were negligent. Therefore, it is important to define the level of “involvement” and responsibility for each individual in the provision of care in all cases.

According to the CMPA, when establishing physician responsibility or “duty of care,” the courts must determine the establishment of a patient-physician relationship (Beilby et al. 2000). Traditionally, this was based on physical contact with the patient for examination and treatment. Telementoring activities make the identification of this relationship more difficult as this physical contact does not exist, and in most cases there is no interaction between the patient and mentoring physician. Currently, most programs that have attempted telementoring activities have considered the on-site learner to be the most responsible party, the rationale being that the mentor cannot physically intervene should it be necessary. The CMPA advises that to ensure that all parties clearly understand the appointment of the “most responsible” physician, all participants should sign an “informed consent” document stating the understanding of such designation. This document should outline all activities to be performed and the roles of both the mentor and learner. Additionally, the transmission of data through videoconferencing medium should be outlined, along with the potential consequences of data interception and the protection of patient anonymity. The informed consent process is designed to ensure that all participants (including the patient) completely understand the ramifications of the telementoring process. However, this “informed consent” form does not absolve the mentor of any liability or responsibility as he or she has the ability to directly impact patient care.

Generally, in legal cases involving these more ambiguous situations, the decision is made by consulting previous related cases. Once again, this becomes difficult in the area of telehealth because of the lack of national a priori examples regarding telementoring activities. Currently, Canada will be

handling the few legal problems encountered on a case-by-case basis, with everyone especially cognizant of the fact that they are setting precedents that will impact the future of the industry. Overall, it is important to recognize that the question of legal liability has not been completely resolved at this point. Therefore, healthcare professionals engaging in the practice of telementoring (either as a mentor or learner) should play it safe and ensure that they are each individually protected during these activities.

To assist with clarification, in case a liability or practice issue should arise, the mentoring sessions will be monitored using two methods. First, after each procedure, a practice audit will be completed by both the mentor and the learner. The both participants will fill out a post-surgical audit form that will outline the case, complications, any weak areas identified/discussed, and an overall evaluation of the student performance. Second, all sessions will be videotaped – providing a copy of the learner’s performance during the case, in case a review is required. This tape can also be used for the self-audit process that is to occur after each mentored procedure. Permission to tape the procedure will be covered in the “informed consent” form. While it is understood that these forms of monitoring have their limitations (such as subjectivity & potential for taping glitches), at the present time we feel that this is the most comprehensive evaluation that is available to us.

TECHNICAL CONCERNS

Telementoring activities require the use of the latest technologies to transmit data across distances. As a result of this high dependence on technology, several concerns have been raised, including data quality and the completeness of data transfer, as well as the potential technical failures that are always possible in such systems. These concerns are not unfounded, since errors could occur with the physical equipment located at either the local or remote sites. While many will testify to the high quality of most of the professional videoconferencing systems available today, there is still a margin for error even in the best made systems. Example problems that could be encountered are the temporary loss of video or audio signals, occasional difficulty connecting to the remote site on the first try due to ISDN line failure, minor videoconferencing and operating room equipment incompatibilities, as well as infrequent operator errors.

Essentially, it is impossible to ensure an error-free system, even in the highest quality systems and programs. The important information that one must have when establishing a telementoring program is the provision of a back-up plan, in the case of an unresolvable problem, and the identification of responsible parties for each error situation. The emergency or back-up plan should include a number of contingencies and

will be specific to the operation and scope of each facility. These contingency plans should also ensure that additional staff members are available at the learner’s location to assist with the procedure if necessary. Finally, the learning surgeon should be qualified to do the procedure by another method in order to ensure patient safety and maintain the standards of care in the rare case should severe problems occur.

The responsibilities for the operation and upkeep of the equipment used for telehealth are more general and can be globally applied. Basically, current standards state that the owner of the equipment has a duty to provide proper working equipment and competent operators. Physicians or other healthcare providers commissioning the use of such equipment become responsible in part or in whole for the safe and competent operation of the equipment through vicarious liability. Therefore, it is important as either an owner or user of videoconferencing equipment to be knowledgeable of any problems with the system or operators and ensure that safety inspections, equipment functionality, and employee education sessions are performed regularly.

CONFIDENTIALITY

Telehealth specifies that the parties involved are located in different areas – whether across the hall or in another country – and require the use of telecommunications media for data transfer. This dependence on data processing and transfer technology, such as videoconferencing equipment as well as the cable lines or satellites used for transmission, leaves a program vulnerable to security breaches. Therefore, a further potential problem in the proposed CMAS telementoring activities involves the security of the data transmission.

The concerns of privacy, data loss and data interception are very real and hold more weight given that the data transmitted could carry identifying information, such as pictures and patient names. To minimize these risks, security measures have included the coding of data and the minimization of the number of linkages used in transfer. The measures that can be instituted to protect confidentiality have ranged from limiting the remote sites to those deemed reasonably “secure” to the other extreme of assuming no security and simply limiting the type of data transferred (keeping data as anonymous as possible).

In addition to these more obvious security problems, one must also be aware of smaller hazards such as maintaining the privacy of the conference area from any passers-by, as well as ensuring that all telehealth staff are informed of the confidentiality of the exchanges. Overall, since full security is never possible, all individuals involved in videoconferencing use (lecturers, surgeons, students, patients, etc.) should be made aware of the potential for breach or interception of this data.

PAYMENT SCHEDULES

Once the telementoring program has been established, there is then the question of usage. While many healthcare professionals are paid on a salary basis, those paid on a fee-for-service basis, such as many physicians, may not be paid for telehealth services due to the fact that in many provinces billing codes for these activities have not been established. Some hospitals have managed to circumvent this problem through the use of salary contracts that include telehealth activities. Other programs have received government funding to cover their telehealth expenses and pay those professionals involved. While these options appear to be an excellent solution to the problem, changing the pay processes or obtaining government grants are not methods available to all institutions or programs. Furthermore, there is the possibility that these solutions may not be feasible in the longer term.

The other problem with the currently available compensation solutions is that they generally do not include educational activities, such as mentoring, in their scope of funding. For instance, we have found that educational programs would most likely have to be internally or privately funded in order to offer any compensation to experts recruited for teaching. This is especially true given that many educational activities, such as telementoring, require a significant amount of time on the part of the experts recruited as faculty. Clearly, if telementoring is to become a widely adopted educational modality, this will have to change. A few provinces, including Alberta, Saskatchewan, Nova Scotia and Manitoba, have begun to establish telehealth billing codes for specific medical specialty activities, allowing independent practitioners to be reimbursed for certain telehealth activities. It is hoped that other provinces wishing to increase telehealth activities will soon follow suit, as it would significantly increase the willingness to participate. Until that time individuals engaging in telementoring activities should seek funding from what sources they can, including government funds, private sponsors, or hospital programs. However, in the absence of such funding, the option is to institute user fees, charging either the student learner or the cost centre, in order to cover the costs of the individual telementoring sessions.

ACTUAL ACTION TAKEN

The unforeseen issues described above in no way prevented the development of the telementoring program, but they did give us pause to consider the ramifications of each factor. Each of the areas of ambiguity was thoroughly researched through both literature searches and consultations with individuals in the College of Physicians and Surgeons of Ontario, the Canadian Medical Protective Agency, the Royal College of Physicians and Surgeons and with the CMAS-appointed legal representatives. Outcome analysis and risk

assessments for each area were thoroughly discussed. The necessary path of action was identified for each area and then integrated, when appropriate, into our telementoring program.

LESSONS LEARNED

The emergence and growing availability and usage of new telehealth technologies has opened new avenues for healthcare education and mentoring practices. However, simply having the opportunity to create or develop a telementoring program does not necessarily guarantee success. A number of hurdles, such as those outlined above, must be overcome and resolved before the program will become a success. While these additional activities did not prevent the development of our telementoring program, they did slow the visible progress and launch date significantly. The data acquisition and expert consultation process is time consuming, especially with new programs for which information may be scarce, scattered and unprocessed. Therefore, ensure that significant time has been allotted for this activity.

CONCLUSION

The creation and establishment of the Centre for Minimal Access Surgery's telementoring program is not without complications. The necessary development of the protective infrastructure required to support the program is a slow and tenuous process that is dependent on the cooperation of a wide variety of organizations. While the process may become time consuming and arduous, be assured that the results of decreased risk to the participants, the patients and the organization are well worth the effort.

In the end, it is our vision that the successful development and implementation of this new cutting-edge telementoring program will advance the quality, scope and accessibility of minimal access training and raise the standards of surgeon credentialing and practice across the country. ■

REFERENCES

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