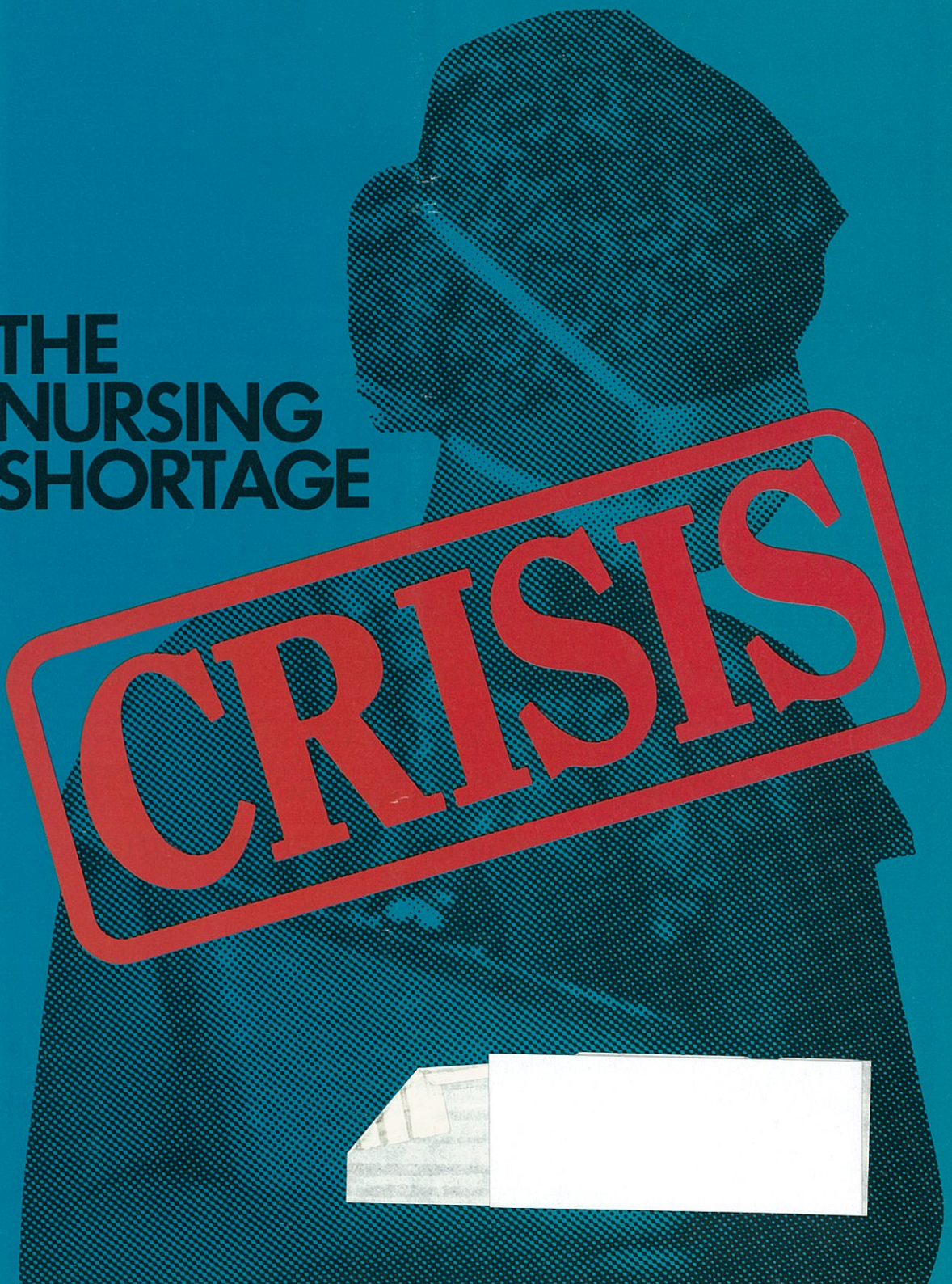
CANADIAN
Operating Room Nursing Journal
Volume 6, Number 5, November, 1988

THE NURSING SHORTAGE



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Operating Room Nursing Journal

Volume 6, Number 5, November, 1988

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GENERAL INFORMATION

The Canadian Operating Room Nursing Journal is published six times a year (February, April, June, September, November and December)for operating room nurses and related surgical nursing personnel across Canada.

The objective of this publication is the continuing education and professional advancement of the operating room nurse as well as personnel in related nursing services.

Under the guidance and direction of an editorial advisory board, the intent of this publication is to assist national, governmental and allied health care agencies in the process of news and information flow.

The Journal will also assist national, governmental and allied health care agencies in the process of news and information flow to this specialized segment of the health care field.

The Canadian Operating Room Nursing Journal is dedicated to the publishing of original and practical information based on scientific principle and clinical fact. This journal is periodically reviewed by the Editorial Advisory Board, with manuscripts and submissions, whenever possible, adjudicated and assessed in advance by peers specifically chosen by this Board.

The opinions expressed in articles submitted to this publication are those of the author or authors and are not necessarily to be construed as a reflection of the point of view of the publishers of the *Canadian Operating Room Nursing Journal.*

The Canadian Operating Room Nursing Journal is indexed in Index Medicus, the Cumulative Index to Nursing and Allied Health Literature, and the International Nursing Index, U.S. National Library of Medicine.

GUIDELINES FOR CONTRIBUTORS

The Canadian Operating Room Nursing Journal encourages and invites manuscripts and/or submissions of relevance and current interest to operating room nurses and related health care personnel in the area of surgical nursing care.

As a bi-monthly professional publication, the Canadian Operating Room Nursing Journal reaches the following nursing categories subsumed under the heading, operating room nurse. These categories include:

- ***O.R. nurses***
- ***O.R. supervisors***
- ***O.R. nurse/managers***
- ***O.R. staff nurses***
- ***O.R. technicians***
- ***O.R. circulating nurses***
- ***O.R. scrub nurses***
- ***Nurse educators***
- ***Nursing students***
- ***Post anaesthetic***
- ***Central supply***
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- ***Day surgery***
- ***Emergency surgery***

All articles/submissions should be geared to this audience range.

Submitting procedure

Having submitted a manuscript for publication, the author(s) should retain at least one copy. A covering letter should accompany the manuscript and should include the home and work addresses and phone numbers of the author(s). Every submission should be double-spaced with wide-margins on (standard) 8½ by 11 inch paper. However, other formats will not be rejected if the submission is legible and neat.

Length

Although there is no restriction on the length of a submission, a paper between 5 and 15 pages (excluding illustrations) is advisable.

Illustrations

Photographs, charts, diagrams, graphs, cartoons and other illustrations greatly enhance a professional manuscript. Photographs should be un-mounted, sharp and preferably, black-and-white. All illustrations should be labelled clearly on the back.

Notes/References/Bibliography

The Canadian Operating Room Nursing Journal follows the format recommended and used by the Canadian Medical Association (CMA).

Your autobiography

This information should include: full name; academic accomplishments (no more than three after the name); last university, college or school attended; present position in the profession; and membership or associations of a professional nature.

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The challenge to build... to meet the needs

By Nellie I. Beatty

To be involved in the construction of a new building of any description is always exciting. A nurse who has the opportunity to assist with the planning of a new hospital may discover that her assignment is one of the most challenging of her career.

When the renovation of an old surgical suite or the construction of a new suite is contemplated, the operating room supervisor is usually appointed to the planning committee, or the "users group." The nurse supervisor will be one of a group of professionals: architects, engineers, planners, surgeons and anaesthetists. Each of the committee members will approach the planning of a new suite from the background of his or her own discipline and particular needs.

Although the architect may have designed, and the engineer may have built a surgical suite before, only the physicians and the nurses work in such an area. The needs of the physicians may differ dramatically, depending on the medical-surgical specialty being considered. Therefore the co-ordination of the various points of view falls largely to a knowledgeable nurse who is familiar with the needs of patients, medical, nursing and support staff. In addition to recognizing the needs, the nurse must familiarize herself with the various systems required in the department and study the variety of products available. Armed with this knowledge and with her experience as an operating room administrator, the nurse supervisor will make a unique and essential contribution to the group.

Getting started

In order to prepare herself for the challenge of planning a new suite, the O.R. supervisor and the other members of the users group must try to envision the present and future needs of the hospital, the staff and the people that will be served. What sort of surgical suite is the hospital board planning to build? What sort of suite is required to meet the needs of the community it will serve?

Research questions

The character of the surgical suite will begin to take shape when the following questions have been researched and answered:

1. What geographical area does the hospital serve?

2. Is there a predominant age group in the community population? If so, what is it? What are the most usual surgical services required by this age group?

3. What surgical services will be available?

4. Can you expect an increase or a decrease in the present patient load? By how much?

5. How many surgeons will use this surgical suite?

6. How many surgeons are on each surgical service area provided?

7. How many anaesthetists will be required? What

About the author

Nellie I. Beatty, B.Sc.N., R.N., retired last year as Director of Nursing, Operating Rooms, Walter MacKenzie Centre, University of Alberta Hospitals, Edmonton. Throughout the ten years of the consruction of the MacKenzie Centre, she was a member of the Users Group appointed to plan the new surgical suite. Ms. Beatty's article is essentially the first chapter of a manual that is being written for operating room supervisors who have been appointed to a building committe.

facilities (library, offices, laboratory) does the anaesthetic department require?

8. Is the hospital a teaching hospital, a general hospital or a specialized facility?

9. Does the hospital offer programs which require students to have operating room experience? How many programs per year? Do the programs overlap? How many students are expected in each program?

To obtain a realistic picture, it is essential that the users group have the assistance of the hospital board and administration as well as physicians and nurses representing the various surgical specialties.

It is important to formulate clearly the role of the hospital for the next ten to twenty years. Too often facilities have been built without clear guidelines regarding the services to be offered. This can be very frustrating to the users and expensive to the public.

Policy statements

In addition to determining the needs of the community and the role of the hospital in serving these needs, consideration must be given to the methods by which the work within the surgical suite will be carried out. This is essential prior to the actual drawing up of any plans.

Hospital administration, with the help of the users group must formulate certain policy decisions which directly influence the size of the suite as well as its exact location within the building. These policy statements are directly related to the surgical specialties being offered and to the variety of systems required in a surgical suite. Although the details of procedures will be written at a much later date, the users group will be unable to plan realistically until the broad policies pertaining to geographical location, material management, communication, infection control, traffic control and allocated space are in place.

Location and adjacencies

The best geographical location of the surgical suite within the hospital may vary with each hospital. In a large hospital, a general meeting may be planned at which all department heads state publicly their preference of location in the new building. It is questionable whether this is helpful, as several departments may have the same preference and the hospital administration must make the final decision. However, those nursing units housing intensive care patients or patients frequently requiring STAT surgery should have access to the surgical suite. Examples of such units are cardiac recovery and trauma units, high risk obstetrical units, neurological and neonatal intensive care units.

Material management/supply system

The lifeline of all operating rooms is the supply system. Therefore, one of ther first policy decisions must pertain to the method of delivery of the hundreds of items that are required daily in an operating room. Very few surgical suites are self sufficient today: that is, very few departments wrap and sterilize their own supplies within the surgical suite. The trend is to have a central supply department prepare the supplies and deliver them, ready for use via the case cart and/or an exchange cart program.

Case cart programs can be all inclusive (delivering all instruments and supplies) or they can be "supply specific" (a partial case cart system). The system chosen must be very well thought out, and instruments and supplies followed through the projected traffic route. Realistic decisions regarding the space required for decontamination rooms, instrument rooms, cart receiving and storage areas can be made when the administration and the users group have agreed upon the system for receiving supplies. The location of the central sterile supply department, relative to the surgical suite, will directly influence the choice of the supply system. If instruments and supplies are to be processed outside the surgical suite, the sterile central supply department should be located directly above, or below, or adjacent to the surgical suite. This adjacency is extremely important in reducing the turn-a-round time for surgical instruments.

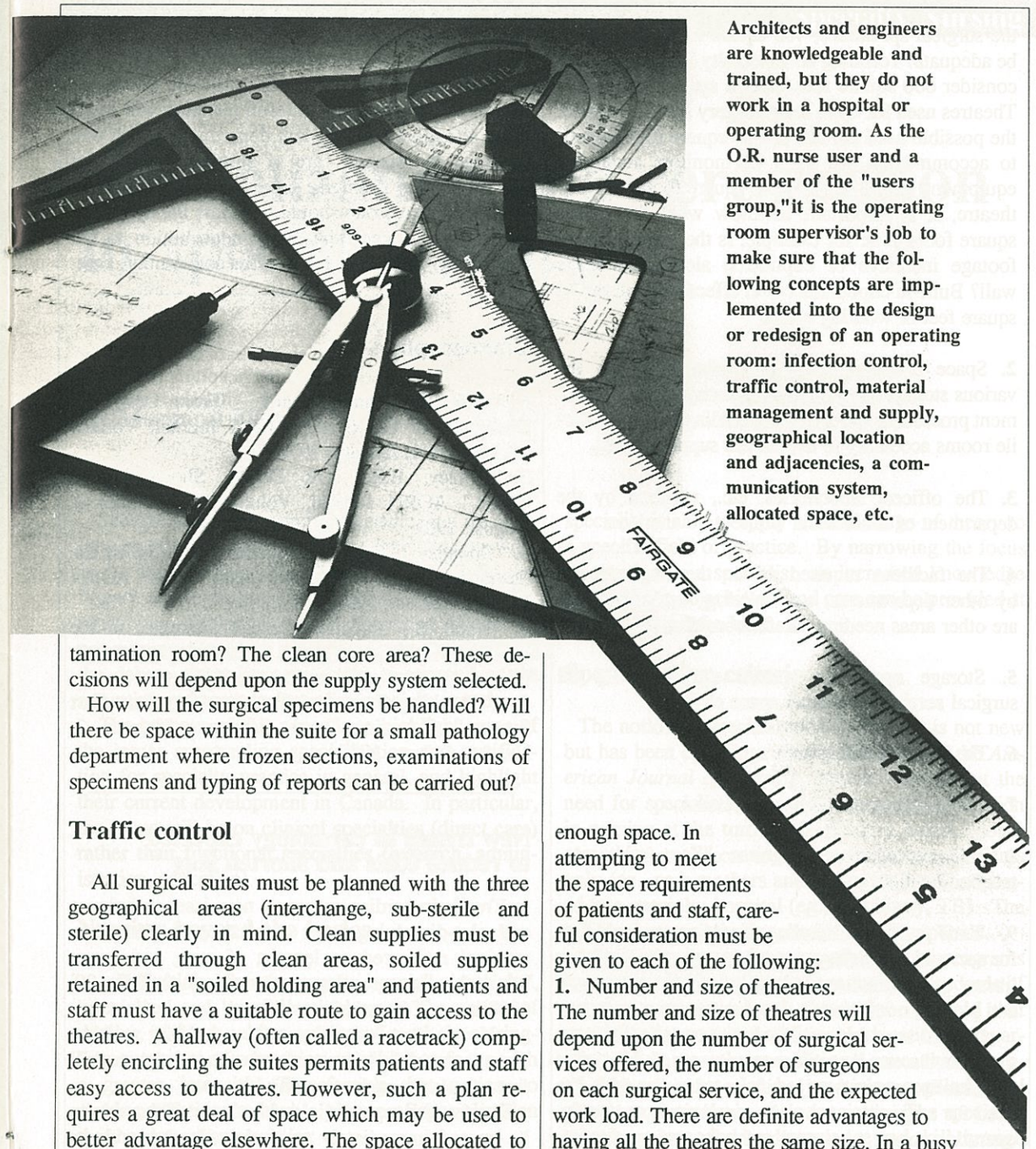
The communication system

The suite will require a good communication system within the department, between hospital departments and out side the hospital. Does the hospital intend to build a computerized department? If so, space must be allocated for the computer equipment and the operators. How will visitiors view surgery? Will they be permitted to enter the theatre, or will they sit in a viewing room and watch via a closed circuit television channel?

Infection control system

The control of infection is the "name of the game" in any operating room, and all procedures must be carried out with infection control in mind. What is the procedure for handling contaminated instruments or supplies? What is the required size of the decontamination room? The clean core area? These decisions will depend upon the supply system selected.

How will the surgical specimens be handled? Will there be space within the suite for a small pathology department where frozen sections, examinations of specimens and typing of reports can be carried out?



Architects and engineers are knowledgeable and trained, but they do not work in a hospital or operating room. As the O.R. nurse user and a member of the "users group,"it is the operating room supervisor's job to make sure that the following concepts are implemented into the design or redesign of an operating room: infection control, traffic control, material management and supply, geographical location and adjacencies, a communication system, allocated space, etc.

Traffic control

All surgical suites must be planned with the three geographical areas (interchange, sub-sterile and sterile) clearly in mind. Clean supplies must be transferred through clean areas, soiled supplies retained in a "soiled holding area" and patients and staff must have a suitable route to gain access to the theatres. A hallway (often called a racetrack) completely encircling the suites permits patients and staff easy access to theatres. However, such a plan requires a great deal of space which may be used to better advantage elsewhere. The space allocated to hallways, storage, etc., will depend to some extent, upon the available dollars for the new suite. However, it is poor economy to settle for narrow hallways and small storage areas when patients are being transported with a multitude of equipment items attached to their beds, and when the required surgical equipment seems to increase each year.

The surgical suite is one of the most complicated and expensive departments to construct. History has repeatedly shown us that operating rooms never have enough space. In attempting to meet the space requirements of patients and staff, careful consideration must be given to each of the following:

1. Number and size of theatres. The number and size of theatres will depend upon the number of surgical services offered, the number of surgeons on each surgical service, and the expected work load. There are definite advantages to having all the theatres the same size. In a busy suite where there is constant pressure to save surgical time, it is much easier for all concerned if any surgical procedure can be done in any theatre. It will, of course, be most efficient to allocate certain theatres to each surgical service, where special equipment for that service can be stored. Nevertheless, even in the most efficiently managed suites, it often becomes necessary, for example, to place a STAT head injury patient in a theatre other than the neurological theatre. In a general hospital without

the surgical specialties, 400 square foot theatres will be adequate. Teaching and specialty hospitals should consider 600 square foot (usable space) per theatre. Theatres used for open heart surgery should consider the possible need for 700 to 800 square foot theatres to accommodate the array of monitors and other equipment. In determining the square footage of any theatre, it is important to know what the usable square footage is: for example, is the quoted square footage inclusive of cupboards along one entire wall? Built-in cupboards could effectively cut off 30 square feet of working space.

2. Space consideration should also be given the various storage areas, decontamination rooms, instrument processing rooms, soiled holding areas and sterile rooms accessory to the chosen supply system.

3. The offices, laboratories, etc., required by the department of anaesthesia will require attention.

4. The facilities required within the surgical suite by other departments, e.g. radiology and pathology, are other areas needing careful consideration.

5. Storage space for special equipment by all surgical services is another space concern.

6. The patient holding areas.

7. The post anaesthetic recovery room.

8. Hallways wide enough to accommodate equipment and patient beds.

9. Staff facilities including dictating areas, offices for secretaries, nursing supervisors, classroom and/or library space, male and female locker rooms, staff and physician lounges.

Careful attention must be given to all the above mentioned areas. Actual measurements of equipment are usually required to justify to administration the need for a spacious suite. As mentioned previously, operating rooms are notoriously short of space. Any surgical suite larger than two theatres should build in an extra room of 400 to 500 square feet, for which nothing is planned at the time of building. Once the suite is occupied this space will undoubtedly be well used, and will provide an economical way of meeting future needs. To the uninitiated, the research and the formulation of policy statements before the actual drawings begin may seem a waste of time. However, the building or renovation of a surgical suite requires more knowledge and expertise than is usually recognized by hospital administrators. There can be no realistic allocation of space and location for a surgical suite until the foregoing questions are answered. Carefull planning will result in an attractive and efficient department which will facilitate the special care of surgical patients for years to come. The nurse supervisor who is appointed to the users group should welcome the opportunity to make a very significant contribution to her profession, the hospital and to the community. ■

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New trends in cardiology expected to reduce costs and shorten stay

Trends in cardiac surgery - new laser techniques and clot-dissolving drugs - are expected to improve survival rates, reduce lengths of stay, and lower hospital costs, according to an article in the May 20, 1988 issue of *Hospitals*.

New catheter tips have the capability to blast through arterial plaque with a hot metal tip, or drill through plaque with a rotating bit.

People with myocardial infarctions will be able to be treated immediately with clot dissolving drugs such as tissue plasminogen activator (tPA). TPA is predicted to reduce the percentage of early fatalities by up to 40% and significantly reduce the severity of heart failure. The use of tPA signals another trend - that of treating heart problems with drug therapy, aspirin, and beta blockers instead of surgery.

Future trends include increased heart-lung transplants; magnetic resonance to keep plaque pushed against the vessel wall; and development of pacemakers that will allow controlled exercise.

Specialization and certification in specialty practice

By Margaret Fitch, R.N., Ph.D.

Specialization in nursing and certification for specialty practice are rather important developments within the fabric of Canadian nursing. They will have an impact on the majority of nurses who are currently practicing. No longer are we discussing whether or not nursing should be specialized; we are caught in the debate about how we ought to respond to the mounting pressures to formalize specialty practice.

The purpose of this paper is to highlight some of the issues surrounding specialization and certification for specialty practice in general, and highlight their current development in Canada. In particular, the focus will be on clinical specialties (direct care) rather than functional specialties (research, administration, education).

Nursing beyond the basics

Definitions for the words 'special', 'specialty', 'specialize' and 'specialization' create the notion of dealing in depth with a portion of a whole or singling out a part of something on which to focus with a greater intensity. Transferring that notion to nursing practice we have a picture of specialization that has two characteristics:

1. the practice is narrowed in focus to a particular portion;
2. the practice is delivered with a greater depth of knowledge.

The focus of specialty practice on a portion of nursing practice facilitates a greater understanding of that particular area. While the generalist knows what is useful to apply in all patient situations, the specialist is able to apply a broad range of theory to a specific field of practice. By narrowing the focus of practice as a specialist, an increased knowledge and skill can be achieved and care can be provided at a level beyond the basic.

Specialization criteria

The notion of specialization in nursing is not new but has been changing. In the first issue of the *American Journal of Nursing*, Dewitt wrote about the need for specialists to improve care. Specialization in nursing at the turn of the century meant "doing something well", caring for one group of clients only (eg., new mothers and babies) or being educated in a specialty hospital (eg., psychiatry, TB). The criteria for specialization was technical expertise.

Over the years, as more educational programs became available and issues concerning standards of practice were articulated, the notion emerged that specialization required additional educational preparation. More recently, an additional caveat has emerged that one must also be practicing regularly and almost exclusively in one's specialty. The specialist must have extended her knowledge and skill through experience and education beyond the basic generalist preparation. One does not become a specialist simply by working in an area for a number of years.

A different level of nursing care

We are generalists when we graduate from our basic programs in that we know a little about caring for individuals in a wide variety of health/illness situations. The scope of our knowledge is broad but

the depth is shallow. When we specialize, we build upon that generalist foundation and increase the depth of knowledge/skill in a particular range of content. This means the generalist and the specialist will have some knowledge and skill in common but the specialist will be able to provide a different level of care in a specific area.

Fundamental questions

Two fundamental questions ought to guide our deliberations regarding specialty practice. These two questions are:

(1) **Who is a specialist in nursing?**
(2) **How will the public be protected from the unsafe specialty practitioner?**

Determining who has the right to claim the title of specialist in nursing and ensuring the public does not suffer at the hands of an individual who is not adequately prepared are fundamental concerns. Whether or not we are able to answer these questions lies in our ability as a profession to deal with specific issues. These issues will be outlined below.

Issue #1. How will nursing be divided and the specialty areas defined and labeled?

Imagine having all the content (knowledge and skills) of nursing practice in front of you like a pie or a cake. Your task is to divide the contents into portions and find a name to describe each. Where would you begin? How would you make a decision? What principles would you use?

Presently there are a number of principles used to divide the field of nursing and label the "specialties". Examples of the principles include organ and body systems (e.g., respiratory, cardiovascular), age of the client (e.g., pediatrics, adolescent), and degree/length of illness (e.g., acute, chronic). The myriad of labels for "specialties" creates a sense of confusion and raises concerns about overlap. What is the difference between the following labels: maternal-newborn, maternal/infant, family-child, parent-child, women/infant health care? What content is so unique to any one of these that it needs a different label?

As a profession we need to determine whether we will let situations determine the divisions of nursing practice or whether we want to take a particular role in molding what divisions ultimately emerge.

In the first instance, we allow creative growth and responsiveness to the public's nursing care needs while risking confusion and fragmentation with numerous small specialty groups - each with its own set of standards and levels of competencies. In the second instance, creating a list of "acceptable" specialties provides proactive leadership and guidance but risks stifling creative professional growth and creating rigidity. Somehow, we need to find a balanced approach that provides flexible leadership.

Issue #2: Can the unique knowledge, skills and competencies necessary for the practice of a specialty be identified?

Usually, a specialty practice begins with one or two practitioners. They do not have role models or teachers and their competencies are judged on their own achievements rather than established standards. These few will teach a few others - probably in an apprenticeship fashion - and those will teach others. This approach is necessary because courses of study or patterns in practice have not emerged. As additional learners arrive, the teaching approach can move to a group or seminar approach. In time, both to decrease costs and to maintain contact with the broad perspective, teaching may move into a formal academic setting. Eventually, articles may be written describing the practice and research may be initiated to test its knowledge base.

This process, however, does not occur quickly and "specialty" practices may not exist long enough to develop. A practice may arise in response to a particular health care need, but if the need does not remain, the practice may disappear before its knowledge base is fully articulated. The growth and development of the specialty is vital if the knowledge, skill and competencies necessary for its practice are to be developed. It takes time, numbers of nurses practicing and a geographic distribution of practice centres, plus a growing literature and research base before a clear notion about the knowledge/skill base (core elements) required for practice in the specialty is evident. Without a clear notion regarding the boundaries of practice, it is impossible to know what should be tested or measured to determine competency to practice. It is incumbent upon the specialty practitioners to identify and communicate the knowledge/skill base required for their specialty practice and to determine the standards of practice which reflect that base.

Issue #3: How will the nursing specialty be be recognized and accepted?

The issue of recognition revolves around determining the appropriate preparation for specialty practice. There are a variety of viewpoints on this issue and some of the confusion stems from mixing notions of safety to practice in a clinical area and academic preparation. The knowledge, skill and competencies to provide SAFE care for patients in a specialty environment are the same whether a nurse is diploma, baccalaureate or masters prepared.

Gaining the knowledge and skill to be SAFE in a clinical setting may occur in a variety of ways including on the job training, seminars, self-study or formal coursework. Expectations for depth of knowledge and skill in working with complex data sets should increase with additional academic preparation. Specialization at a graduate level provides an avenue to discover new insights and make contributions to a particular area of nursing knowledge. How these skills are used in a clinical setting will depend, among other factors, upon the expectations of the employing agency. Graduate education per se does not prepare an individual for a particular role.

Identifying the expectations

Clearly we must identify the expectations we hold for the level and nature of specialization before we can determine the appropriate preparation for a specialty practitioner. Knowing the knowledge, skills and competencies for the specialty, together with the level of performance expected would help immeasurably in determining adequate preparation. There are many avenues for learning as an adult including seminars, conferences, reading and experience. Specialty groups need to decide which route or combination of routes is most appropriate for their specialty.

Issues arise because of the confusion regarding education. Currently, nurses are attending a variety of courses, workshops and conferences to add to their knowledge base. However, there is no guarantee their efforts will be acknowledged in any manner by their employer or by another agency should they change employers. In addition, there are no mechanisms to ensure a specialty course offered in Ontario produces the same level of skill in a practitioner as a similarly titled course in British Columbia. It is also of interest to note the increasing number of job postings that request for some type of "specialty" preparation.

ISSUE #4: How can competencies in a specialty be reliably and validly measured?

Measuring competency in specialty practice means we must measure or test performance beyond the basic level. We want to measure the application of knowledge and synthesis of a multitude of factors. Experts in the field of measurement suggest it may be difficult to measure these dimensions with current evaluation techniques. We must clearly identify the salient characteristics of specialty practice and determine what measurement approach is best suited for each characteristic. In addition to the multiple choice examinations, we may need to consider panel reviews, peer evaluations, essay examinations or performance evaluations. This is a crucial area, for without a reliable and valid measure of competency, one may not be able to determine if the individual is adequately prepared and the public protected.

Urging formal recognition

Despite the unresolved nature of these issues surrounding "specialization", Canadian nurses are urging for formal recognition of specialty practice. Nurses are engaged in continuing education and are seeking recognition for their endeavours. The desire for recognition and consistency across the country in education and practice have contributed to the emergence of certification as a means of formally recognizing specialty practitioners.

Certification has emerged as another credential in the context of the credentialing processes in Canadian nursing. Credentialing refers to all the processes whereby individuals and institutions are designated by a qualified agent as having met established standards at a specific point in time (CNA, 1982). Because credentials can distinguish the qualified from the unqualified, they are seen as protective. There is a tendency on the part of society to believe the individual who holds a credential is "better" than one who does not hold a credential. They expect the holder to deliver a certain level or standard of service.

Credentials are established for a variety of reasons. These can include: to recognize excellence, to protect the public, to confer an honour, to recognize academic achievement and to determine salary or selection for employment.

Confusing issues

Confusion exists when a credential is established for one reason, and over time begins to be used for another. For example, a credential designed to acknowledge **EXPERT PRACTICE** in an area could, over time, be used as **ENTRY TO PRACTICE** in the same area. It could be argued that 'entry to practice' and 'expert practice' require different levels of knowledge and skill. To use a credential designed to measure high level expertise for entry to practice may be inappropriate. Care

Many specialty nursing associations formed because of identified needs for education and communication among practitioners with similar concerns. All are currently struggling with the issues surrounding standards of practice, educational preparation, and certification.

needs to be taken so that the purpose of a credential is clear and the credential is used in accordance with that purpose. As long as the purpose of the credential is clearly defined, the other issues of scope, level, control, participation and quality of service are easily resolved.

In Canada, certification is defined as recognition that a registered nurse has demonstrated competence in a nursing specialty by having met pre-determined standards of that specialty (CNA, 1985). In essence, certification refers to the process for measuring whether or not an individual nurse possesses the knowledge and skill required to practice a specialty. It assumes the specialty has developed a suitable means of testing that the individual has mastered the necessary knowledge and skill. It is a voluntary, periodic process controlled by the profession. As a national process it serves the purposes of:

(1) Providing an opportunity for practitioners to validate their expertise in a specialty;
(2) Promoting high standards of nursing practice so as to provide quality nursing care for the people of Canada and;
(3) Identifying nurses who have met the specialty standards.

The Canadian Nurses Association has taken a leadership role in making certification for specialty practice a reality in Canada. Guidelines for the certification process have been developed (CNA, 1985) and a Department of Certification has been established in Ottawa.

Specialty examination

Within these guidelines, the onus is on the specialty groups to develop a proposal outlining the basis and rationale for their specialty practice. It is critical for specialty practitioners to articulate the nature of their practice, its boundaries and recipients and the preparation required to practice safely. The proposal is subsequently reviewed by the CNA Certification Committee and decisions are made regarding the process for developing an examination. The CNA Testing Service provides the expertise on measurement and evaluation.

To date, the Canadian Association of Neuroscience Nurses has been approved to develop an examination and funds have been allocated by the CNA Board of Directors to support this endeavour. The only other Canadian group that has a certification examination is the Occupational Health Nurses. Their work was completed before the release of the CNA guidelines.

Within Canada, there are a number of specialty nursing associations. Many formed because of identified needs for education and communication among practitioners with similar concerns. All are currently struggling with the issues surrounding standards of practice, educational preparation and certification. For all of them a major endeavour lies in moving any discussion about standards or issues into a national arena where consensus can be reached about the specialty practice and an examination developed that will measure the appropriate knowledge.

CNA special interest groups

In 1986, the formation of the CNA Advisory Council on Specialty Practice was a major support for the struggling nursing specialty groups. The Council, consisting of the CNA Officers and Board of Directors and representatives from groups with CNA Special Interest Group status, meets once a year to discuss issues of mutual concern. The criteria and procedures for becoming a CNA Special Interest Group are available from the Canadian Nurses Association. The purpose in establishing this Council was to strengthen the linkages between the Canadian Nurses Association and the emerging specialty associations. This was seen as desirable in order to strengthen the profession and enhance the development of specialty practice in Canada. Reports from the three meetings held provide evidence that these objectives are being served. There is ample opportunity to participate, as well, in the evolving certification process.

Positive and negative outcomes

There are both positive and negative outcomes anticipated from certification. Positive outcomes include the identification and recognition of qualified practitioners, protection of the public from unsafe practitioners, personal satisfaction and sense of achievement for nurses, provision of evidence that continued learning has occurred and the ability to transfer credentials from one setting to another.

Negative outcomes include the cost of the education and examination process, fragmentation of patient care, role overlap and confusion (generalist and specialist) and the cost of hiring and retaining qualified practitioners. Nurses need to weigh these outcomes in deciding to proceed with a certification process for their specialty.

Conclusion

There are challenges ahead for nurses in the arena of specialization and certification for specialty practice. As a profession we have progressed in our thinking about specialization and certification over the recent years. We now have a process available allowing us to test some of the notions we hold.

There is a wonderful opportunity for specialty practitioners to influence the development of specialty nursing practice in Canada and the resolution of the issues before us. By working through your specialty association you can establish standards of practice and contribute to decisions regarding how new practitioners in your specialty should be tested. You can influence who will be called a specialist and work to protect the public from unsafe specialty practitioners. Ultimately, the profession will be served, for nurses will be talking about their practice and how they can best meet their patients needs. ■

About the author

Margaret I. Fitch, R.N., Ph.D., is Director of Nursing Research and Professional Development, Toronto General Hospital. The preceding article was adapted from an address delivered this past Spring to the Operating Room Nurses Association of Greater Toronto.

Preadmission visits beneficial for children scheduled for surgery

Preadmission visits can help reduce the length of hospital stays and provide educational and emotional benefits for patients and their families, according to an article in the February, 1988 issue of the *Journal of Post Anesthesia Nursing*.

The Children's Hospital of Philadelphia requires preadmission visits within 30 days of scheduled procedures. During thse visits, a nurse explains how the family and patient can prepare for the operative procedure. Nurses also provides information about what can be expected on the day of surgery. These preadmission visits last between one and three hours and can include health assessment and care planning, anaesthetic evaluation, surgical evaluation, laboratory work, preoperative medication orders, and any other required studies or consultations.

On the evening before surgery, a nurse will call the family and repeat any information about NPO instructions.

According to the article, this system has resulted in less than 1% cancellation rate on the day of surgery due to noncompliance with feeding instructions.

These preadmission visits have been benficial for the institution, the patient and the family of the child having surgery, a spokesman for the Philadelphia hospital said. If laboratory results are abnormal, tests can be repeated or surgery can be psotponed instead of cancelled on the day it was scheduled. This helps in scheduling operating room time and increases the number of patients who can have surgery on a given day. As well, families and patients can wait at home on the day of surgery, a lot more comfortable in that they know just what to expect once they arrive at the hospital.

Postoperatively, the parents feel more comfortable providing care as they have had time to prepare and know exactly what they should do for their child.

Call for Abstracts.. 1990 ORNAC Conference

The Program Committee for the National Operating Room Nurses Conference, scheduled for Toronto in 1990, is calling for abstracts pertaining to research in the operating room nursing field.

The authors of those abstracts selected will be invited to participate as speakers at the National Operating Room Nurses Conference (11th National) which is scheduled for the Harbour Castle Weston Hotel in Downtown Toronto, April 1 - 6, 1990.

Deadline for presentation of abstracts is April 3, 1989. Abstracts should be sent to the following address on or before this date:

Carol Lenox, Program Convenor,
11th National Operating Room Nurses Conference,
Mississauga Hospital
100 Queensway West,
Mississauga, Ontario,
L5B 1B8 (416) 848-7100

The nursing shortage crisis

Report on two provincial studies

By Editorial Staff

There is a nursing shortage in hospitals across Canada, but there is no shortage of nurses. This is the dilemma facing the nursing profession and the Canadian health care system in general.

Last year in Metro Toronto, for example, an area that enjoys one of the largest pools of nursing manpower in North America, several hospitals were obliged to transfer twenty-four women with high-risk pregnancies to specialized hospital units in other parts of Ontario. Just before Christmas, two Ottawa hospitals temporarily closed their emergency departments to all but life-threatening cases. At New Year's, a critically ill new-born had to be flown from Toronto to Buffalo, New York for treatment. Such scenes are becoming commonplace, not only in Ontario, but in other provinces as well. A variety of reasons are given for this crisis:

- not enough beds;
- lack of equipment;
- too few nurses;
- nurses leaving the profession; and
- a shortage of specialized nurses.

Complex and misunderstood

There is a "nursing shortage" in hospitals, but this is not the real story, nor is it a situation that can be applied to the numbers game. Unfortunately the problem is far more complex and not generally well understood.

Two reports, one from British Columbia and one from Ontario will be discussed. The "Report on Nursing Manpower" commissioned by the Ontario Nurses' Association (ONA) in 1987 indicated that there are enough registered nurses in the province of Ontario to fill the available positions in hospitals; but too few nurses are choosing to work in the vacant positions.

The Association commissioned Goldfarb Consultants to poll their existing and former member nurses on their reasons for the disenchantment within the nursing profession.

The report states: " The real story is that for many nurses, their much-beloved profession has become intolerable. Its opportunities for caring have all but vanished, and many nurses are refusing to work under increasingly unbearable conditions that do not allow them to give patients the full and proper care they need and deserve.

Nursing as nurses once knew it no longer exists. Nurses are required to endure working conditions that greatly reduce the amount of direct quality care that they can give to their patients. According to the report, these conditions include:

- too few support staff
- excessive patient loads
- increasing demands to perform non-nursing duties
- poor work scheduling

These frustrating conditions (possibly endemic throughout Canada), coupled with other working/life frustrations - lack of recognition, poor employer support for extra education, little say in health-care management, etc. - have created a crisis both for Ontario's nurses and its health-care system as a whole."

Nurses have now reached their collective breaking point and increasing numbers of them are now pursuing various alternatives within nursing, and some are leaving, (have left) the profession for greener pastures in other provinces, other countries, and what is most disheartening, other fields.

Many nurses have stayed on hospital staff but are working instead on a part-time or casual basis. Others have opted for working in hospitals through an outside agency. Nurses who make work-place adjustments within nursing are often able to have more control over their working lives, but the underlying problems remain unresolved. The result for hospitals is fewer nurses for full-time positions. The pain for all is reduced quality patient care.

Attractive alternative

The Goldfarb survey covered a wide spectrum of general issues and concerns. The questions dealt with the state of the health care system, the motivations for entering nursing, the difficulties being faced by nurses today, the nature of the nursing shortage and, most importantly, how to make nursing a more attractive alternative.

The position paper of the ONA presents the key findings of the survey and some recommendations of what must be done, not just to end the shortage, but to end the conditions under which more and more nurses are unwilling to work.

The composite picture of the nurse which emerges from the survey is a highly professional, compassionate and caring individual who wants to help heal the sick, but who is often frustrated at not being allowed to do their best work because of increasingly unbearable working conditions. Twenty percent of the nurses surveyed indicated that they had wanted to be a nurse since childhood and that nursing was the only work they had ever wanted.

Primary concerns

In commenting on the survey findings the ONA says: "That people with such aspirations and dedication to service should find themselves in a working environment that now does little to satisfy such selfless motives is a profound paradox and a source of anger for many nurses. "

Respondents to the survey felt that the quality of health care in Ontario was good (59 per cent); only

Battling the shortage in British Columbia

The shortage of nurses in British Columbia has been at least as severe as that experienced in Ontario. According to the *Nurse Manpower Study* released recently (mid-August) by the B.C. Minister of Health, job dissatisfaction (among others) is one of the major reasons for the nursing shortage in that Province.

The Registered Nurses Association of B.C. recently completed a separate study in an attempt to show the relationship between nursing employment and education *(Descriptive Study of Demographic Characteristics and Job Satisfaction of B.C. Registered Nurses With Three Educational Backgrounds).*

Greater Satisfaction

One of the tenents of the report was that nurses in supervisory positions tend to be more satisfied with their jobs than nurses in other positions. It specifically specified that nurses with baccalaureate degrees are more likely to be working in supervisory positions.

The report also mentioned that there is both a direct and indirect relationship between satisfaction with nursing and the type of nursing education that has been acquired.

Even though differences in job satisfaction may be associated with the kinds of work nurses can obtain access to with different educational backgrounds, the report mentioned that job satisfaction may also be associated with the ways in which nurses work and with a number of environmental and organizational factors.

Nurse supply factors

In a separate study (*Nurse Manpower Study)* carried out by the B.C. Ministry of Health, the following factors were cited as likely to affect the supply of nurses in B.C.:

- lack of educational opportunities, support and funding
- lack of economic incentives
- lack of organizational support for nurses within institutions
- lack of organizational power
- nurse/physician relationship
- the status of nursing as a job, as a profession and as a career.

The staffing of nurses, scheduling practices and how nurses were utilized were also factors affecting the supply of nurses in B.C.

17 percent thought it excellent; and, 23 per cent considered it poor or fair. The primary concerns of the nurses polled were:

- poor working conditions and relationships
- not enough nurses hired for the workload
- shiftwork too long and tiring
- too many non-nursing tasks, e.g. housekeeping and clerical work
- too much bureaucratic/administrative interference
- insufficient time to give quality care
- no back-up or nursing support system
- inadequate compensation compared to other professions
- long-term service not rewarded since the salary grid stops after seven years service (50 per cent of working nurses are now at this level).

The range of frustrations within the profession is astonishing, particularly the finding that nurses spend an average of 30 per cent of their time on non-nursing functions. By speaking out about these conditions, nurses are making a collective plea for help, both to save their profession and to prevent further serious deterioration of long-held, high quality standards of patient care.

Recommendations for change

Solutions to the problem of declining quality patient care, the fundamental issue, will require government and hospital administration to change their attitudes and policies regarding registered nurses, the frontline caregivers. Such changes will require major structural adjustments if the true potential of nurses is to be realized and the quality of patient care improved. Four major issues require attention:

(1) Compensation

Salary levels and structures must be improved to recognize experience, advanced nursing education, and shift work. Shift differentials must be sufficient to ensure adequate staffing on all shifts. Rotating shifts should no longer be considered a requirement of employment but instead, replaced with an option of permanent shifts.

(2) Support staff

Clerical/housekeeping staff must be increased to allow nurses more time to care for patients. Better pay and adequate support staff might yield better patient care without substantial increases in costs.

(3) Incentives

Compared to other professions, such as teaching, nursing lags behind in providing perks for developing skills, advanced education or remaining in the profession. Tuition support and paid sabbaticals would do much to encourage nurses to remain in a given position longer and thus reduce staff turnover.

(4) Working relationships

Much of the dissatisfaction nurses have with their working lives comes from having insufficient input into the organization and delivery of health care. This very issue was cited during the recent nurses strikes in Saskatchewan and Alberta. Increased participation in the decision making process on an equal basis with other members of the health care team would go a long way in alleviating the sense of powerlessness and the lack of recognition nurses now are enduring.

Many of the concerns and recommendations are not new, but the current staffing shortage and the looming crisis if the exodus from the profession continues demands immediate attention.

The ONA position is: that fundamental changes in the system must be made to allow nurses to function as they were educated to function.

"Return the nursing profession to the nurses, and they will return to the profession."

Innovative surgical techniques
The legal aspects

By L. E. & F. A. Rozovsky

Surgical innovation makes for "good copy" in newspapers, on television and on radio. Breaking new frontiers which promise the saving of lives captures the interest of almost everyone. With innovation, however, come concerns about legal liability.

Legal concerns revolve around negligence, consent, and confidentiality. O.R. nurses have good reason to share these concerns, particularly if they are involved in breaking new surgical ground. There are, however, measures which can be taken to minimize these concerns for OR nurses.

Putting the legal worries in context

To appreciate the legal concerns stemming from surgical innovation, it is useful to review the three main areas of responsibility:

1. Negligence - The basic legal rule is that doctors and nurses must provide care consistent with average, reasonable and prudent care in the same or similar circumstances. The "stakes" are higher when the "circumstances" involve innovative or experimental surgical procedures. What would be the duty of care for "routine" cardiac bypass surgery, is not the same standard applied to novel open-heart operative procedures.

The duty of care is raised because doctors and nurses engaged in innovative surgery are holding themselves out as being capable of greater sophistication and expertise. In essence, doctors and nurses in this category are saying they have the extra training, experience and skill to conduct bold new techniques that others are unable to perform.

The net effect of this higher threshold of responsibility is that negligence can be established against the innovators which would not be true in the case of professionals who held themselves out at the regular level of professional competence.

2. Consent - Aside from negligence, those engaged in innovative surgical techniques should be mindful of the requirements for consent in these circumstances. Canadian case law suggests that in the case of innovative or experimental procedures there is duty to provide far more information than is required for ordinary surgery or medical treatment.[1] It is not enough to provide details about material risks that a reasonable person in the patient's position would want to know in the same or similar circumstances. Rather, patients are entitled to information about all known risks associated with the innovative or experimental operation.

The difficulty with consent to innovative and experimental surgical operations is that little may be known about the risks associated with such procedures. Only with experience will the true measure of risks be clear enough to develop a picture for patients. Therefore, it is important for surgical pioneers to make it clear to patients the limitations of their knowledge of risk factors.

Aside from case law on the topic, surgeons should also take into account the consent "guidelines" published by the Medical Research Council (MRC) of Canada.[2] These guidelines might have direct bearing, particularly if the surgical protocol is part of an MRC funded study.

3. Confidentiality - Patient confidentiality can prove troublesome with surgical innovation. Hospitals are often anxious to "spread the word" that their surgical teams have broken new ground in the effort to overcome difficult hurdles in patient care. The media thrive on such news, soaking up every

detail possible through scheduled press conferences, interviews with hospital administrators, and members of the surgical team. The media will also attempt to contact the family of patients so that the press can expose the "human interest" side.

For hospitals, surgeons and nurses, a careful balance must be struck between publicizing surgical innovation and respecting the anonymity of patients and their families. Any careless leaks to the media can prove embarrassing. It could also lead to litigation if these "leaks" violate provincial laws governing disclosure of patient information.

A checklist for avoiding legal problems in innovative surgery

Short of preventing surgical innovation as a means of avoiding liability, there are some practical steps that can be taken to lessen the likelihood of legal problems. These include the following:

1. Hospital screening of proposed surgical innovation One major step is to screen all surgical innovation prior to any human intervention. This screening process should include the development of a multidisciplinary committee, consisting of surgeons, nurses, administrative representatives, lay persons, and clergy. The committee would not include in its membership those who are directly involved in the proposed surgical intervention. They would review the innovative technique in terms of need, risk and benefit to the patient, availability of appropriate intra-operative and post-operative support as well as the impact of the innovation on the availability of surgical resources to other patients.

Only those procedures which are cleared by the hospital based committee would be attempted on patients. Those deemed deficient would be referred back to the surgeon for further development.

2. Application of MRC Requirements If the procedure involves MRC funding, a research ethics board in the hospital would have to review and approve the surgical research protocol. The protocol review would follow the MRC human research guidelines, including those dealing with consent. Protocols not meeting guidelines would not be approved.

3. Consent Policy on Innovative Surgery A detailed policy on consent to innovative surgery should be developed. This policy would outline the requirements for obtaining consent and documentation. It would take into account "problem" cases such as consent for those incapable of authorizing the innovative operation. The policy would also address the proper means for educating those responsible for securing an effective consent to surgery.

4. A Media Policy for Innovative Surgery Although all hospitals should have a well-written policy on contact with the media, special attention should be paid to the content governing public disclosure of innovative surgery. This should include information on who is to be the hospital spokesman, and proper responses to media inquiries. This requires staff education, including in-service programmes for OR nursing staff who may be confronted with seemingly innocuous questions from reporters.

5. A QA/RM Programme for Innovative Surgery When new ground is being broken in surgery, it is important to carefully monitor patient care and risk exposure. This includes environmental factors for patient and staff, infection control, anaesthesia, as well as intra-operative and post-operative patient management. For OR nurses, this will require development of practical quality assurance standards, effective means for problem identification and resolution, as well as efficient channels of communication. It will also require effective interdisciplinary cooperation to assure the quality of patient care and at the same time, minimize risk exposure.

Conclusion

With the growing awareness of patient rights, concern about liability, and pressure for innovative surgical techniques, a balance must be struck which deals with all of these concerns. Such a balance can be reached through a cooperative approach to planning in which O.R. nurses take a leading role. ■

References

1. See, Halushka v. The University of Saskatchewan (1965), 53 D.L.R. (2d) 436 (Sask. Q.B.).
2. "Guidelines on Research Involving Human Subjects 1987." Ottawa: MRC, 1987.

About the authors

Lorne Rozovsky, is a Halifax lawyer with the firm of Patterson Kitz, and adjunct associate professor of law and medicine at Dalhousie University and a principle in Lefar Health Associates, Inc.

Fay Rozovsky is president of Lefar Associates, Inc. and a visiting lecturer in health law at the Harvard School of Public Health. She is a member of the Massachusetts and Florida Bars.

Calendar of Events

November 4 - 5, Haliburton, Ontario: 11th Annual Fall Seminar, Operating Room Nurses of South Central Ontario, Pinestone Inn, Haliburton, Ontario. (Contact Carol Findly, OR, Ross Memorial Hospital, Lindsay, Ontario K9V 4M8 ((705) 324-6111).

February 19 - 24, 1989, Anaheim, California: 36th Annual AORN Congress, Anaheim Convention Centre. (Contact Sylvia Rottman, Director of Meeting Services, AORN, 10170 East Mississippi Ave., Denver, Colorado 80231 USA).

April 23 - 26, 1989, Toronto, Ontario: First Provincial Conference, Operating Room Nurses Association of Ontario, Constellation Hotel, Dixon Road). (Details, Hilda Gatchell, Convenor, Publicity, 208 Oshawa Blvd. North, Oshawa, Ont. L1G 5S9).

June 11 - 13, 1989, Winnipeg, Manitoba: Third Biennial Conference of the Manitoba Operating Room Nurses Association, Delta Winnipeg Inn. (For details contact Bev Popowich, Co-ordinator, O.R. P.A.R. and Day Surgery, Misericordia General Hospital, 99 Cornish Ave., Winnipeg, Manitoba R3M 1E2 (204) 774-6581).

August 28 - September 1, 1989, Vienna, Austria: VI World Conference of Operating Room Nurses, Austria Centre, Vienna. (For more details, write to AORN Meeting Services Department, 10170 East Mississippi Ave., Denver, Colorado 80231).

April 2 - 6, 1990, Toronto, Ontario: 11th National Operating Room Nurses Conference, Harbour Castle (Westin) Hotel. (Delegates contact: Audrey MacDonald, OR, Mount Sinai Hospital, 600 University Ave., Toronto, Ont. M5G 1X5. Exhibitors contact Valerie Shirreff, OR, Mississauga Hospital, 100 Queensway West, Mississauga, Ontario L5B 1B8).

Caution advised when administering medication in pill form to the elderly

Improper techniques in swallowing and/or administering pills can cause esophageal symptoms in the elderly, cautions Dr. George Caranasos, Chief of the Division of General Medicine at the University of Florida College of Medicine. Health care professionals working with the elderly should take special precautions when instructing the elderly in the use of medications in pill form.

Dr. Caranasos noted that predisposing factors to pill-induced esophagitis (inflammation of the esophagus) include taking medicines with too small amounts of water or while reclining, or lying down shortly after taking a pill.

He said that when pills are taken under these conditions, the pill can lodge in the aortic arch or left atrium (especially if enlarged from heart disease), in the distal esophagus or at the sight of a stricture. Resulting symptoms include retrosternal pain (pain behind the sternum), pain on swallowing, and difficulty swallowing. Dr. Caranasos noted that often these symptoms are misdiagnosed as esophageal cancer or candidiasis (infection of the skin or mucous membrane with any species of Candida - a yeast-like fungi that can develop in the intestinal tract, skin or mouth).

These symptoms usually disappear within three to six weeks after temporary discontinuation of the pill (if possible) and the use of antacids and a liquid diet.

Patients should be administered their pills while upright, with liberal amounts of fluid and well before retiring, said Dr. Caranasos in an article reported in *Geriatrics* (Vol. 43, No. 9). He also added the same precautions when administering certain cathartics, as they can cause swelling and blockage if administered with inadequate water.

Preparations well underway for Ontario's provincial OR conference

The Operating Room Nurses Association of Ontario (ORNAO) will hold its first Provincial Conference from April 23 to 26, 1989 at the Constellation Hotel on Airport Road in Toronto.

Because of the strongly felt need for a provincial conference in Ontario, the Ontario O.R. Nurses Association (ORNAO) joined forces with the executive and organizers of the (GTORNA) Greater Toronto O.R. Nurses Association's Conference.

The Ontario Provincial Conference will be under the direction of a committee selected by the executive of both the GTORNA and the ORNAO.

Conference Chairperson...
Jean Cunningham (St. Joseph's Health Centre)
Toronto

Publicity Convenor...
Hilda Gatchell (Oshawa General Hospital)
Oshawa

Exhibitors Committee...
Donna Kaufmann (Women's College Hospital)
Toronto

Global pollution...

The consequences are ravaging the world's health

By editorial staff

The projected increase in the number of malignant melanoma cases resulting from the depletion of the stratospheric ozone layer* will be the least of the health problems facing the world, according to environmentalists.

Radical changes

At an international environment conference held in Toronto recently, experts discussed some of the consequences for health world-wide as a result of the unatural and complex pollution-related changes that are ravaging the earth's atmosphere. Some of the health problems directly associated with radical atmospheric changes that conference speakers mentioned as emerging are:

- General systemic suppression of the human immune system;
- Increases in the incidence and distribution of infectious diseases;
- Severe respiratory difficulties;
- Heat-induced fatalities;
- Cataract development/subsequent blindness.

The pollution systems with the most potential for greatly increasing human health problems are:

- increases in tropospheric* ozone;
- increases in acid aerosols;
- stratospheric* ozone depletion;
- global warming and climate changes.

Dr. Lester Grant of the U.S. Environmental Protection Agency (EPA) was one of the speakers at the International Conference held at the Toronto Convention Centre June 27 to 29. He recently finished a draft paper on the health effects associated with regional and global air pollution problems. This paper, which is being reviewed by the EPA, was summarized at the conference. The conference was called *"The Changing Atmosphere, Implications for Global Security."*

Dr. Grant said that the accumulation of tropospheric (surface level) ozone over urban areas is linked to respiratory problems ranging from severe transient effects to more chronic damaging exposures affecting lung function and the defence mechanisms of the pulmonary system.

Major symptoms

Even transient effects of surface-level ozone should not be dismissed as inconsequential, he said. "At high enough levels, they can seriously dis-

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* Ozone - a form of oxygen (O_3) formed by the action of ultraviolet radiation on oxygen

* Troposphere - region of the atmosphere above the earth's surface (surface level)

* Stratosphere - region of the atmosphere beginning about 7 miles up with a ceiling of about 20 miles.

rupt normal work and social activities, or even require emergency medical attention."

The major symptoms associated with the transient effects of tropospheric or surface-level ozone are coughing, wheezing, intense chest pain during inhalation and shortness of breath. Because of ozone activity in the pulmonary system, particularly on the respiratory tract nerve reflexes, constriction of the airway takes place resulting in reduced oxygen flow to the lungs.

Depending on the exposure time to the ozone and the concentration, the effects can last up to many hours. The level of physical activity during the exposure is a major fact affecting dose-response relationships. Even lower ambient ozone levels, for example, can cause respiratory problems.

In discussing the chronic effects associated with ozone pollution, he mentioned airway inflammatory responses, slowed lung development, slowed muscle ciliary clearance and impaired or lost macrophage function. Macrophage function involves the reticuloendothelial system which, when properly functioning, assists in the elimination of worn out cells, especially red blood cells. It is also involved in the repair of injured tissue, and in defense mechanisms, both local and general, of the body.

The surface-level ozone or "urban smog" that cause these health problems come from such sources as hydroelectric power plants, coal-fueld industrial complexes, petrochemical facilities and cars, trucks and other transportation vehicles.

Dr. Grant, who serves as an international advisor on air pollution issues for the World Health Organization, said thet millions of people in many countries are exposed to ozone levels at concentrations associated with the adverse health effects just decsribed. He siad that tropospheric ozone is a greenhouse gas that also contributes to warming and climate change. As well, it can facilitate the formation of acid aerosols which also effect respiratory function.

Suppressed immune system

Acidic particles suspended in the air or absorbed into water droplets to form acid fogs come from the combustion of sulpher-containing fossil fuels. The acid sulphates, especially sulpheric acid, are of most concern. These sulphates are of various sizes, some of which are small enough to deposit themselves deep in the respiratory tract where, depending on the site of deposition, can exert its effects in all regions of the respiratory system.

"Theoretically," Dr. Grant says, "deposition in the upper tracheo-bronchial region would be associated with pulmonary function effects, wheras deeper deposition would likely affect lung function and defence mechanisms. Mucous ciliary clearance of particles, especially sulpheric acid particles, is clearly affected.

Recently, both Canadian and U.S. environmental protection agencies have recommended that acid aerosols be listed as pollutant agents for government regulation.

"Future stratospheric ozone depletion and the global warming phenomena is projected to exacerbate acid aerosols and tropospheric ozone formation and their associated health and environemntal effects," says Dr. Grant.

Recently, the popular focus of the stratospheric ozone barrier becoming depleted has been on the increased incidence of skin cancer. According to Dr. Grant there are other more serious health implications that this issue.

Greater serious health threat

"Immune suppression and the potential from this for an increased incidence of varied infections may ultimately be recognized as a more serious health threat than the better known skin cancer problem."

Ozone depletion due to emissions of chlorofluorcarbons, halons and other trace gases results in increased ultraviolet-B radiation (UV-B) reaching the earth's surface. It is this incraesed UV-B radiation

Studies suggest ultraviolet rays could activate the AIDS virus in carriers

According to a Canadian Press report, recent studies indicating direct sunlight may activate the AIDS virus should be taken seriously, a University of Saskatchewan researcher says.

"I think there's something there," microbiologist Dr. Louis Qualtiere said. "If the virus is present, environmental influences or infectious agents may trigger its activity."

Studies by U.S. researchers suggest direct sunlight or the ultrviolet rays of the sun may be a catalyst in transforming the AIDS virus from a latent or dormant state, into an active, replicating and harmful state.

When infected cell cultures containing the AIDS virus were exposed to ultraviolet light, activity of the human immunodeficiency virus that transmits AIDS increased 50 to 150 times. ■

which has most commonly been linked to increased incidence of skin cancer. It is the nonmelanoma skin cancers which to date have been most clearly linked to the UV-B increase.

A 1% decrease in stratospheric ozone is projected to cause a 2% increase in surface UV-B radiation and an associated 4% to 6% increase in basal and squamous cell carcinomas. Both are nonmelanoma cancers. With this level of depletion (1% to 2%) of the ozone, it is estimated that this will cause between 7 and 10,000 new cases of these types of skin cancer per year in Canada. Most susceptible will be light-skinned caucasians living in higher latitudes. Canada is in the higher latitudes.

As Dr. Grant explained, the more extensive and critical damage from the increased radiation may be to the immune system's increased vulnerability to infection in the body.

Vector borne

Global temperature rises and shifts in moisture patterns are presently affecting the geographic distribution of vector borne diseases - diseases where the infectious microbial agent is transmitted by other agents: mosquitoes, fleas, ticks, rats, etc.

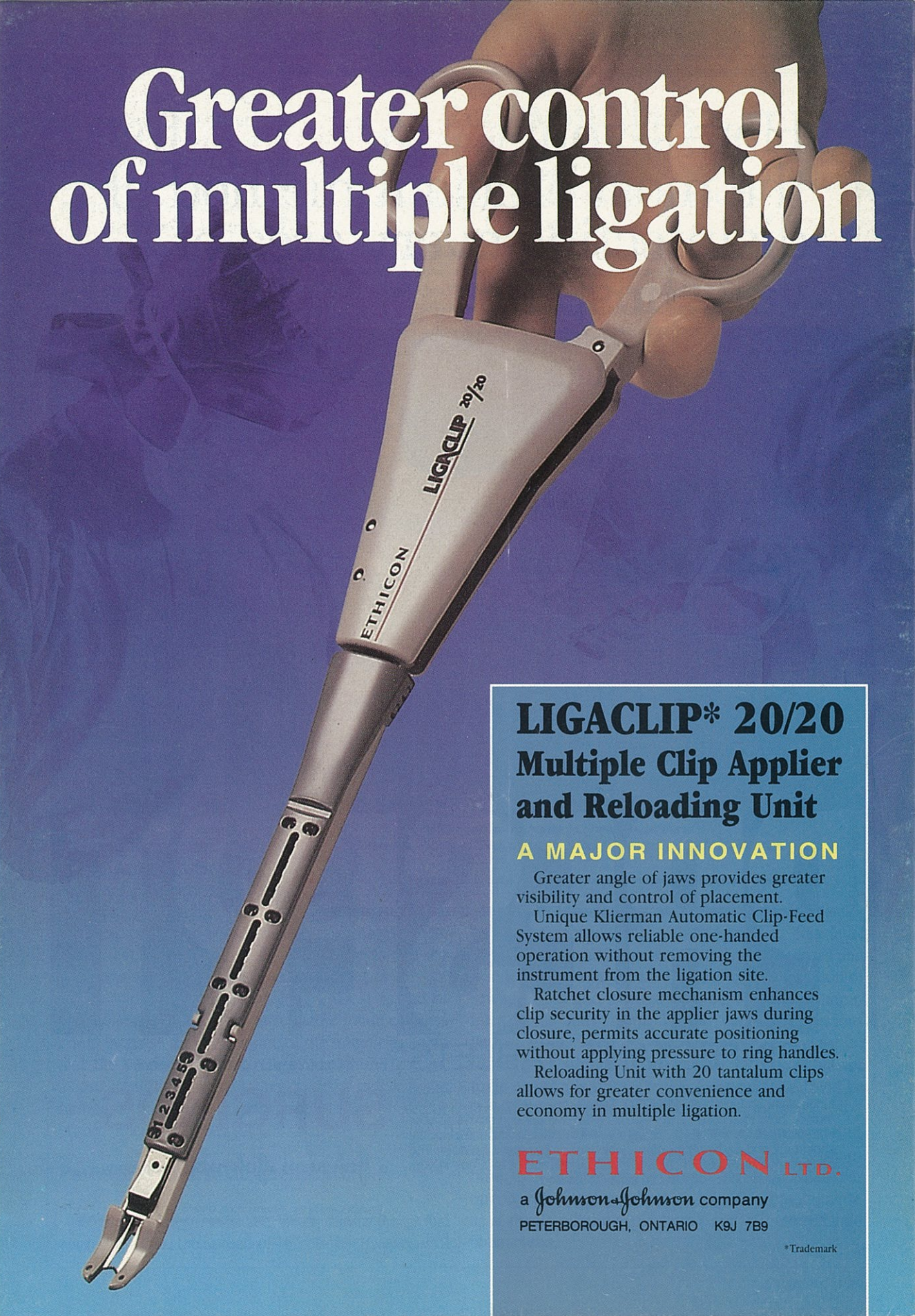
As well as affecting the geographical spread of these diseases, the pollution-related climate changes could increase the growth rate of the infectious agent and the carrier, and the biting rate of the carrier. These conditions would then greatly increase the human incidence of exposure to a host of vector borne infectious diseases.

Pathogens and toxic chemicals

With the likely rise in sea levels due to the global warming trend, the spread of infectious diseases will be further enhanced. Dr. Grant explains: "Sea level rises would result in more frequent storm surges and flooding of coastal areas. The resulting inundation of sewage lines and sewage treatment plants in populated areas may result in the spread of various pathogens as well as other effects secondary to flooding... Pathogens from coastal garbage dumps or toxic chemicals from flooded disposal sites could be spread through populated areas in the region."

"This may lead to general systemic suppression of the immune function, making pople more susceptible to a variety of diseases." He added that the opportunity for these diseases to occur may increase as a result of global warming and climate change phenomena. ■

Greater control of multiple ligation



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