

## • MASKS

A number of hospitals, with the approval of the Infection Prevention Committees, have deleted the requirement for the circulating staff and the anaesthetist to wear masks. Masks are not worn during the entire sterile set up and surgical procedure. Procedures where prosthesis are being implanted have been maintained as the exception. Rates of infection have not changed. Significant cost savings can be achieved, however, the practice will likely take a long time to change. New concerns are being raised about the exposure to the aerosols with body fluids liberated from the pneumoperitoneum as instruments move in and out of ports during endoscopic surgery, particularly near the anaesthetist. Masks provide some protection from splatters. Some Scandinavian countries have only used masks for the scrub team for years.

## • COVER GOWNS

Rigid rules existed for nurses to wear specific cover gowns, buttoned up, when leaving the operating suite, again to protect their operating attire from the dreaded organisms outside the suite. The theory was challenged that if surgeons and anaesthetists do not wear cover gowns and definitely do not button up, what purpose does it serve? Is it conceivable that only nurses contaminate the environment? Highly unlikely.

A study over a one year period was done at Foothills Hospital in Calgary, with the approval of the Infection Prevention Committee and the Operating Room Management Committee. Parameters to monitor infection rates were established and all cover-up gowns were removed. The change made no difference. The cover up gowns were permanently eliminated with significant cost savings for the laundry.

## • CLOSED PANT CUFFS ON SCRUB SUITS

The long discussed topic of perineal fallout and skin shed having to be contained with closed pant cuffs was also studied at Foothills Hospital. The impact of closed versus open cuffs was measured using a slit sampler technique. There is no need for a closed cuff.

## • SKIN PREP SOLUTION

The use of aseptic paint is being challenged, some areas use only a scrub brush and rinse with saline, others believe a saline wash may be just as effective. The psychological comfort of the prep solution color within draping margins probably will sustain the practice.

## • SCRUB TIMES

The times have been reduced from ten, to five, to three minutes. Some challenge the use of a brush and claim a wash and disinfectant dip will be just as effective. Much ritual surrounds scrubbing, and it also can be somewhat of a social event with little real attention paid to the clock, except of course for the nurse.

## The Future for the Sacred Cows

Where do we go from here? Immediate answers are not in front of us, we must search, study, review and be brave to lead the revolution. Laying on the track as the train moves forward, usually results in one of two situations - dead or cut off at the knees. Neither is acceptable. Unless we are able to prove the principles and practices make a difference, the aseptic practices will be dismantled like the Berlin wall.

The other scenario, is that the antibiotic resistant organisms, the new viruses and the resistant tuberculosis may become out of control. A reign of fear could bring back many of the Sacred Cows currently in the pasture to once again stalk the halls of the operating room suite. An attitude of "I told you so", might be in the offing, however it may be far enough down the road that the new investigative research teams will develop new strategies we have not imagined.

Every health care provider should read *The Hot Zone*; Richard Preston; Anchor Books Doubleday, a pocket book currently on the high profile newstands and book stores. The book describes the real, horrific disease process of the deadly *Ebola virus*. Major cities in Canada that receive international flights have protocols in place to deal with an infected patient. When this virus, or its hemorrhagic relatives arrive, there will be a terror that may well bring a whole herd of Sacred Cows back, on the gallop.

### Summary

The black and white Sacred Cows are clearly having a tough challenge against extinction with the lack of scientific proof of validity. The profession is increasingly challenged by increased work and stress, leaving little time to step back and study what is happening. We must not be defensive but seek to find the truth in the best interest of patient care, health and safety of the health care providers and a safe environment. Credibility of our specialty must also be preserved through thoughtful, focused, research based change. Finally maximizing the use of resources with cost reduction is also very high on the agendas of health care reform. ■

# Bowel Technique in the O.R. Is it Really Necessary?

By Joan Porteous, Delores Gembey & Marlene Dieter

## Introduction - Research Problem

The perioperative nurse has a responsibility to provide quality care to all surgical patients during their surgical experience. An integral part of this responsibility involves serious efforts to reduce the post surgical infection rate. A major nursing goal is to prevent contamination to the surgical wound.

During surgical procedures involving the bowel, bowel technique may be carried out to prevent the spread of microorganisms from the gastro-intestinal tract to the peritoneal cavity and the tissues of the abdominal wall. In bowel technique, instruments

which have come into contact with the intestinal mucosa are not used after the lumen of the intestinal tract has been closed.

The use of bowel technique is often based on surgeon's preference, and each surgeon may want to use a different technique during bowel resections. Some surgeons use bowel technique for every bowel case, others use a modified bowel technique, and some surgeons use no bowel technique at all.

During bowel surgery, the scrub nurse is in a position to isolate instruments which have come into contact with the bowel mucosa. Does this procedure contribute to the safety of the surgical patient? As one of the patient's advocates during surgery, the perioperative nurse is responsible and accountable for providing optimal nursing care. It is essential that nurses be persistent in their efforts to provide the rationale for the care they give.

**Research Problem:** There is an inconsistency in the practice of isolating surgical instruments which have come into contact with the contaminated mucosal lining of the bowel.

**Purpose of the Study:** The purpose of the study is to determine if there is significant contamination to surgical instruments which have come into contact with bowel mucosa.

## Authors

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## Abstract

Existing inconsistencies in the practice of bowel technique prompted a study to validate this operating room procedure. Minimal reference to intra-operative bowel technique was found in the literature. Needle drivers and tissue forceps utilized to anastomose large bowel were cultured, and the results were analysed. Needle drivers and tissue forceps used to anastomose small bowel were also cultured and used as a control group. Only elective bowel surgery cases were included in the study. The study demonstrated that there was consistent contamination to those instruments used for bowel anastomosis, with significantly greater contamination for large bowel resections. These results indicate that isolating those instruments and equipment which come into direct contact with the bowel lumen is a perioperative practice which will reduce the surgical patient's risk of postoperative wound infection.

## Review of Literature

The aim in the O.R. is to prevent contamination of the open wound, as well as to create and maintain a sterile field in which surgery can be performed safely (Oliver, 1992).

Bowel technique is usually carried out during surgical procedures involving the small and large bowel. The flora in the bowel varies from that found in the upper gastro-intestinal tract. Also, the number of bacteria increases as one moves down the gastro-intestinal tract (Volk, Benjamin, Kadner and Parsons, 1991). Bowel technique is carried out to prevent these organisms from spreading into the peritoneal cavity and the abdominal wall. In bowel technique, all instruments that have come into contact with bowel mucosa are not used after the lumen of the intestinal tract has been closed.

An extensive literature search revealed minimal information regarding the effectiveness of bowel technique. Atkinson (1992) as well as Meeker and Rothrock (1991) state that separation of instruments used for bowel resection and anastomosis, from those used for abdominal closure is essential. However, no other data were found regarding the effectiveness of bowel technique.

The American Operating Room Nurses' Association does not have a specific bowel technique procedure recommendation (A.O.R.N., 1991). No information is offered by Canadian nursing organizations. No studies in this area were identified.

## Hypothesis

It was our hypothesis that bowel technique procedures carried out for the surgical patient by the surgical team decreases the amount of contamination to the abdominal wall and peritoneal cavity from the open bowel.

## Research Method

In order to determine that the type of research selected was appropriate for the problem to be studied and the purpose of the study, we collaborated with the Infection Control Department within our hospital.

References in this study to large bowel include cecum, ascending, transverse, descending and sigmoid colon, as well as rectum (excluding the anal canal). References to small bowel include duodenum, jejunum and ileum, all of which are unobstructed at the point of surgical anastomosis.

The study compared the amount of contamination to instruments used during large bowel surgery, to the

amount of contamination to instruments used in comparative cases. The comparison cases included surgical procedures involving small bowel which has less microbial growth.

Forty cultures were taken from twenty surgical cases involving the large bowel. Two instruments from each case were cultured. These instruments included the needle driver which was used to grasp the needle that perforated mucosa when the cut bowel was anastomosed, and the tissue forceps which was used to grasp the edge of the cut bowel during anastomosis. Twenty cultures were also taken from the comparative cases involving small bowel. The same two instruments were also cultured.

The study consisted of only elective bowel surgery cases. The pre-operative bowel preparations varied from surgeon to surgeon, and were not considered in this study.

## Data Collection

The surgical instruments were put into separate sterile plastic pouches and transported to the microbiology laboratory wrapped in sterile towels. Each instrument was immersed in a culture bottle containing 5ml of trypticase soy broth and agitated vigorously with a "to and fro" motion 20 times followed by vortexing for 5 seconds. Aliquots of 0.01 and 0.001ml respectively were transferred from each culture bottle to each of the following plates: Blood Agar (BA), MacConkey Agar, Brucella Agar supplemented with Vitamin K (BAK), and Laked Brucella Blood Agar containing Kanamycin and Vancomycin (L.K.V.). In addition, one aliquot of 0.5ml was transferred to Robertson's meat broth. The L.K.V. and B.A.K. plates were incubated anaerobically and the remaining plates and broth bottles, including the remaining approximately 4ml of original broth suspension, were incubated aerobically. All cultures were held for five days. All organisms detected were identified by routine methods, and colony counts were performed for quantitative analysis.

Each surgical procedure involved in the study was assigned a specific number. This "case number" was the only means of identification recorded on the microbiology requisition accompanying the instruments to be cultured.

In order to promote effective communication to all O.R. staff during the study, a protocol was developed which offered guidelines for managing the instruments to be sent directly to the lab for culturing.

## Data Analysis

The total number of instruments with positive cultures were compared between the large and small bowel operations. The mean number of organisms for all individuals, and for only those with positive cultures were also compared. Chi-squared tests or Wilcoxon-Rank Sum tests were used where appropriate. The proportion of all organisms which were anaerobic, suggesting a large bowel source, were then compared to the needle driver and tissue forceps used for large and small bowel cases.

The results are summarized in **Table 1**. Although the numbers enrolled were small, the proportion of individuals with any positive cultures tended to be higher for the large bowel needle drivers only. The total number of organisms isolated was markedly greater for the large bowel than for the small bowel group. The mean numbers of organisms was significantly greater for large bowel, for the needle drivers for all individuals enrolled, and for the tissue forceps when considering only the mean number of organisms per positive culture.

In addition, the proportion of anaerobic organisms was greater in the large bowel group for both needle driver and tissue forceps. This was significant only for the tissue forceps, however. Concordance in isolation of organisms between the needle driver and tissue forceps was uncommon. Thus, for the large bowel, only 13 (31%) of species occurred in both the needle driver and tissue forceps, and for the small bowel only 2 of 9 (22%) occurred in both. **Table 2** compares the organisms isolated in the surgical cases studied.

## Discussion

A total number of 30 cases was adequate to clearly demonstrate the significant difference in the level of contamination to instruments between large and small bowel resections. The data demonstrate that there is definite contamination to instruments coming into contact with the bowel lumen during bowel resection surgery. Therefore, a greater potential exists for contamination to the peritoneal cavity and abdominal wall tissue from these bowel organisms if those instruments are not isolated.

Perioperative nurses should support and encourage bowel technique procedures initiated by surgeons. A standard bowel technique practice should be developed between nurses and surgeons in each health care facility so that consistent practices can be easily taught and maintained during all bowel surgery procedures. In all bowel cases, the scrub nurse should consistently

isolate any instruments, needles or equipment which have come into contact with the bowel lumen. This isolation procedure is a nursing activity which will decrease the surgical patient's risk for post-operative wound infection.

Additional research is needed to compare the types of organisms involved in post-surgical wound infections in those patients who undergo bowel surgery to the types of organisms isolated and identified in this study. ■

## Appendix A

Table 1:

	Large Bowel (n=20)		Small bowel (n=10)	
	Needle	Tissue	Needle	Tissue
positive	12 (60%)	11 (55%)	3 (30%)	5 (50%)
broth only	5	7	1	2
number of organisms	33	37	4	7
mean*	1.65	1.85	0.4	0.7
mean/positive**	2.75	3.36	1.33	1.4
organisms+				
anaerobic	18	24	1	1
other	15	13	3	6

\* p = 0.045 needle, p = 0.1099 tissue

\*\* p = 0.14 needle, p = 0.05 tissue

+ p = NS for needle, p = 0.020 tissue

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## Appendix B

Table 2: Organisms isolated

	Large Bowel		Small Bowel	
	Needle	Tissue	Needle	Tissue
Anaerobic gram negative bacillus	7	6	1	1
Anaerobic non-sporeforming gram -ve bacillus		4		
C. perfringens	3	3		
Anaerobic gram positive cocci	3	2		
Anaerobic non-sporeforming gram +ve bacillus	2	3		
E. coli	6	7	1	1
E. faecalis	2	1		
Diphtheroids	2	1		
S. bovis			1	2
P. aeruginosa	1			
E. aerogenes			1	
viridans streptococcus	2	3		2
Streptococcus coagulase negative	2			
B. melaninogenicus		3		
Clostridium spp		1		
Anaerobic non-spore-forming gram +ve cocci		1		
Non-fermenter species		1		

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# Planning for the Profession:

## Recruitment, Retention, Research, Resources

By Gloria Stephens

In order to plan for the profession of nursing, we must first "care" about the profession.

The complexity of patient care, advanced technology and financial constraints within the operating room requires nurses of this specialty to have specific competencies, a matrix of practice levels, as boundaries shift and perhaps overlap for a time, in response to these variable demands.

To cope, we as nurses must learn to plan our nursing resources, cost our services and document our effectiveness in terms of interventions and patient outcomes.

The future of nursing may well depend on the study of its history. The vision of nursing needs to be controlled by nurses. The vision must have a basis for change anchored in the past. Tradition needs an openness to the future. The movement from vision to action requires creativity, imagination and a singleness of purpose - inspired by those who are living examples of the profession's values and mission.

Post Basic Operating Room Nursing programs are essential, and to be valued and credible, they must provide career laddering for the graduate, and benefit the employing agencies by enhancing recruitment and retention.

Florence Nightingale saw nursing as an unending experience in learning, so she never believed in ceremonies to mark the completion of nursing education. In her *Notes on Nursing* (1859) she states: "No system can endure that does not march". Are we marching to the future or to the past? What is your vision of the future of our nursing profession?

I believe a future vision to be interactions that nourish the human spirit where we live and work. We need to be deliberate with our time, energy and resources as we work towards our goals and no longer

drain our energies on dead-end issues. We need to lead others to lead themselves. We need to envision and coordinate other modalities of delivering care - not only to the patients we serve, but to each other, if we are to survive as a profession. Fundamental to our nursing profession's future is our ability to honour, respect and value ourselves, as well as our interpersonal and inter-professional relationships.

The basic tools will be the use of our intuition, and a genuine human response to "caring" and "trust" which is so important in this topsy-turvy world. It is definitely time to end this litany and theme: "Why can't nurses get unified?" Unity begins on the smallest units in every aspect of our working environment. Every nurse counts!

We must use and/or develop skills of valuing diversity, encourage discussions and transform conflict into windows of opportunity. The following are the four R's of preparing for the profession of nursing: recruitment, retention, research and resources.

### 1) Recruitment

We must "woo" the high school students to the nursing profession through our image. We must market ourselves as professionals and take a business approach to our career. Learn to dress for power and

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This article was originally presented to the IX World Conference of Operating Room Nurses in Hamburg, Germany in September of 1995.

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