

# SPAQI NEWSLETTER

Society for Perioperative Assessment and Quality Improvement

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## **THE PRESIDENT'S MESSAGE**

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Founding President SPAQI

Associate Professor of Anaesthesia, Harvard Medical School

Director, Weiner Center for Preoperative Evaluation; Brigham and Women's Hospital, Boston, MA

The Society for Perioperative Assessment and Quality Improvement, an international society based in the US, has recently been formed as a nonprofit, international organization with the goal of bringing together a variety of professionals in various disciplines to work together on all facets influencing optimal surgical outcomes. These elements include proper preoperative assessment and evaluation; optimization of pre-surgical status, appropriate and efficient resource use; integration of proper planning for postoperative pain management and appropriate use of alternative and complementary medicine techniques. We plan to share best practices, promote research, and provide a pathway for communication. Our board includes distinguished members of the perioperative medicine field in a variety of disciplines.

We have a unique opportunity to bring together a number of individuals from around the world that have common goals. Collaboration between the Preoperative Association United Kingdom (UK) and SPAQI began last year and would seem a natural way to extend networking and share learning on an international basis. A statement on our association has been included in their most recent newsletter, and we look forward to this partnership. Collaboration with groups in Australia and New Zealand is currently beginning, and we welcome their input. We share the goals of these groups and, as the Preoperative Association UK has stated in its previous newsletter, these shared goals include:

- To provide international, multidisciplinary professionals with networking opportunities and shared learning.

- To provide evidence of best practice and help both community and academic institutions share findings and benchmarks.

- To communicate national and international practice by publishing work, research, proposed algorithms and guidelines in the format of newsletters and conferences.

- To influence international strategy on implementation of best practices.

Collaboration between SPAQI and the Preoperative Association UK would provide an international focal point, as Jackson and Bramhall of the Preoperative Association UK described, 'a one-stop shop for external links to all matters affecting your preoperative process, clinic, patients and staff.'

Both societies have had recent successful perioperative summit

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## THE PRESIDENT'S MESSAGE (con't)

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meetings. The SPAQI/Cleveland Clinic meeting held in Cleveland last fall was graciously hosted by board members Drs. Borkowski, Jaffer and Bader along with Dr. Michota from the Cleveland Clinic. The meeting was a great success. We are looking forward to working towards a collaborative meeting in Cleveland sponsored by the Cleveland Clinic Foundation planned for September 9, 10, and 11 of this year. For those unable to make the US

meeting, a similar collaborative meeting is being planned in the UK. Jane Jackson, the head of the Preoperative Association UK, has provided us with a date for this meeting of November 1, 2007 to be held in the Manchester Conference Center. More information for this association and the European meeting can be found on their website ([www.pre-op.org](http://www.pre-op.org)), which also contains their recent newsletter.

We hope that interested individuals will consider joining or continuing membership with SPAQI ([www.spaqi.org](http://www.spaqi.org)). Together we hope to be a major international force in identifying evidence-based best practices in this area that affect all parts of the perioperative process and hopefully result in best possible outcomes under streamlined resource and operational infrastructures.

## REPORT OF THE 1<sup>ST</sup> ANNUAL MEETING

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 Secretary/Treasurer SPAQI  
 Instructor of Anaesthesia, Harvard Medical School  
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The first annual scientific meeting of SPAQI was held in conjunction with the Cleveland Clinic at the time of their 2nd Annual Perioperative Medicine Summit on September 18-19, 2006. The meeting was held at the beautiful InterContinental Hotel & MBNA Conference Center in Cleveland, Ohio.



The 280 attendees consisted of 214 physicians, 38 nurses, 10 physicians' assistants and 18 others who did not designate their profession. Attendees came from 30 States, with the greatest number from Ohio at 125, followed by 24 from Massachusetts, 17 from Michigan and 16 from Pennsylvania. Eleven participants were from 8 different foreign countries including 2 people each from Brazil, Mexico, and the Netherlands and 1 person each from Canada, Ecuador, Greece, Saudi Arabia and the United Arab Emirates.

The two full days of lectures and discussions included various topics offering evidence-based suggestions for comprehensive perioperative risk assessment and postoperative medical management in order to provide cost-effective, quality patient care. Speakers included Drs. Lee Fleisher, Reuven Pasternak, and Don Poldermans, world-renowned experts in the field.

Participants received updated information regarding the appropriate use of cardiac testing (EKG's and other non-invasive testing) for the assessment of patients before non-cardiac surgery and the most up-to-date evidence for appropriate use of beta-blockers and statins in the perioperative period. The components of a successful preoperative assessment process were discussed along with appropriate preoperative laboratory testing. Suggestions for effective communication between the various specialties involved in the care of surgical patients were also offered.

Perioperative issues discussed included those related to management of anticoagulants, diabetes, care of the elderly, rheumatologic issues and the prevention and treatment of wound infections. Other organ system based lectures included discussion of pulmonary risk reduction, management of valvular heart disease and heart failure, and minimizing complications in renal failure patients.



Breakout sessions offered on the first day provided information on postoperative fever, perioperative medication management, quality improvement processes, perioperative management of the opioid-tolerant and

suggestions for the development of perioperative medicine programs with examples of successful centers from the University of Chicago, Cleveland Clinic and Brigham and Women's.

Lunch sessions added to the didactic experience where on the first day participants were educated and entertained by Dr. Michael Roizen with information on the effect of age on perioperative outcome. The second day offered a choice between several meet the expert sessions.



The first day ended with a reception where posters were displayed on many interesting topics divided into perioperative innovations, clinical vignettes and research studies. The full collection of posters can be viewed on the *Cleveland Clinic Journal of Medicine* website, which can be accessed from the Meetings page on the SPAQI website ([www.spaqi.org](http://www.spaqi.org)).

The comments from the meeting participants were extremely positive, with many saying that things they learned will directly affect their daily clinical practice. We look forward to seeing many of you in September of this year in Cleveland for the third Annual Perioperative Medicine Summit co-sponsored by the Cleveland Clinic and SPAQI.

**SAVE THE DATES!**  
**September 9-11, 2007**  
**2<sup>nd</sup> Annual SPAQI meeting**  
**Cleveland, OH**



Angela Bader, MD, MPH, Founding President of SPAQI, has approached the Preoperative Association in UK, and invited us to collaborate as a means to extend and share our learning from inter-professionals interested in delivering peri-operative healthcare.

As Chair for the Preoperative Association, I am keen to support this collaborative approach because it will provide opportunities to share practice, audit and research in the wider international audience.

The Preoperative Association - [www.pre-op.org](http://www.pre-op.org) is supported as a specialist society by the Association of Anaesthetists for Great Britain and Ireland (AAGBI), and has recognition as well as support from Royal College of Anaesthetists and multiple professional bodies such as the Royal College of Surgeons.

The aim of the Preoperative Association is to provide the forum for inter professionals to share good practice regarding preoperative assessment, to exchange ideas and to plan for future development of the preoperative service.

Whilst we may have differing healthcare settings in the USA and in the UK, we have one prime objective, to provide quality patient care. If I am to single a few main objectives, I would say that the value of preoperative assessment is to improve patient outcomes, to optimise patients' health, provide better outcomes for patients during and following surgical intervention and to reduce cancellations.

In order to provide optimum patient care, preoperative assessment requires clinical practice that should embrace developments of all specialist fields; for this reason we have a strong inter-professional membership, including consultant anaesthetists and surgeons, as well as consultants specialising in cardiology and nephrology, pharmacists, and nursing staff.

The topics of discussion within our healthcare settings closely mirror topics from your 2006 conference, in particular anti-platelet therapy, treatment of anaemia prior to major joint surgery, and venous thromboembolism prophylaxis.

Through our inter professional associations, we have the unique opportunity not only to share clinical expertise within our own professional domains, but to share across the wider audience of the international setting.

We welcome the collaborative approach, and I thank SPAQI for contacting the Preoperative Association. Both our Associations are young, but are enthused with a strong drive from inter-professionals to share good practice.

On behalf of the Preoperative Association and our members, we look forward to meeting you during one or both of our conferences in 2007.

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## BETA-BLOCKERS: A PANACEA FOR CORONARY ARTERY DISEASE IN PATIENTS UNDERGOING GENERAL SURGERY?

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### Introduction

In 1999 Cruickshank stated that beta-blockers continued to surprise us.<sup>1</sup> Unexpectedly, the classic indications for beta-blocker use, hypertension and coronary artery disease, were expanding. Recently conducted trials showed an improved survival of patients on beta-blocker therapy with severe heart failure and atherosclerotic disease with symptomatic claudication intermittens. These findings changed classic contraindications for beta-blocker use to recommended therapy. In addition, studies of Mangano and Poldermans, showed that surgical patients with coronary artery disease benefited from beta-blocker use.<sup>2,3</sup>

### Sympathetic over-activation plays an important role in adverse perioperative cardiac outcomes.

Although the data on perioperative beta-blocker use originated from two small-randomized trials, supporting evidence was found from sub-studies of beta-blocker trials focusing on different populations. For instance, postoperative outcome in hypertensive patients treated with a single dose of beta-blockers at the initiation of surgery was used for the evaluation of their cardioprotective effect. The use of studies that were not specifically designed to address the effect of beta-blockers in the perioperative setting still hampers their widespread use. In the perioperative setting, specific precautions, compared to common clinical use, should be taken into account. During surgery, the beneficial effect related to heart rate control is difficult to manage. Over-treatment in combination with the sympatholytic effect of anesthetic agents may reduce heart rate too much, with detrimental postoperative outcome. On the other hand, under-treatment without effective heart rate

control is associated with an increased postoperative cardiac event rate. The optimal timing of initiation of beta-blocker therapy prior to surgery has not been assessed. To obtain an optimal balance between safety and effectiveness, timing and dosing of beta-blockers are mandatory. In this review we will address recent findings on the effect of beta-blockers for perioperative use, with respect to dosing and preoperative management.

Proper understanding of the pathophysiology of a perioperative myocardial infarction (MI) is compulsory to use beta-blockers appropriately, and to understand its limitations. Coronary plaque rupture, leading to thrombus formation and subsequent vessel occlusion, is an important mechanism, similar to MIs occurring in the non-operative setting. The incidence of plaque rupture, with superimposed thrombosis, is possibly increased by the stress response to major surgery. This leads to sympathetic activation promoting shear stress on arterial plaques, enhanced vascular reactivity conducive to vasospasm, reduced fibrinolytic activity, platelet activation, hypercoagulability, as well as increased myocardial oxygen demand (e.g., tachycardia and increased contractility) leading to myocardial oxygen supply/demand mismatch. Coronary artery stenosis leading to a sustained myocardial oxygen supply/demand mismatch during the stress of surgery followed by ischemia is also an important causative mechanism for perioperative MI. Both factors contribute equally to the incidence of perioperative MIs.<sup>4,5</sup>

### Effects and limitations of beta-blockers

Sympathetic over-activation plays an important role in adverse perioperative cardiac outcomes. Beta-adrenergic receptor blocking drugs have been proposed as a means for providing cardioprotection. Potential

cardioprotective mechanisms of beta-blockers include a) reduced heart rate and contractility and subsequently lower myocardial oxygen demand; b) a shift in energy metabolism from free fatty acids to the more energy efficient glucose; c) anti-arrhythmic effects; d) anti-renin/angiotensin properties; and e) anti-inflammatory effects possibly promoting plaque stability.<sup>1</sup> The effects on heart rate, contractility, and energy substrate shift occur almost instantly while the anti-inflammatory effects may only be observed after a prolonged beta-blocker usage.

### During surgery, beta-blocker handling requires specific skills.

Importantly, coronary plaque rupture is only partially prevented, as the anti-inflammatory effect is not a major effect as compared to therapies with aspirin or statins. The occurrence of acute coronary events, due to plaque rupture and thrombosis, at locations prior to surgery diagnosed as insignificant coronary artery lesions in patients on beta-blocker therapy supports this hypothesis.

### What do the beta-blocker trials teach us?

The trial results are conflicting. Basically, beta-blockers are well recognized in the treatment of patients with coronary artery disease in the general population, and similar results are to be expected in the operative setting, with the exception of a major plaque stabilization effect. During surgery, beta-blocker handling requires specific skills. Careful dosing and heart rate titration are important aspects. The so-called fixed dose regimens are probably not effective in the entire population. Raby published the first study addressing this issue. In a study of 150 patients, the presence and heart rate at which ischemia occurred was noted prior to surgery in

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## DISCUSSION OF PREOPERATIVE ASSESSMENT RESIDENT TEACHING ACROSS VARIOUS SPECIALTIES

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Our recently formed society, The Society for Perioperative Assessment and Quality Improvement (SPAQI), was created with the goal of bringing together health care providers in different fields to improve the perioperative management of patients (www.SPAQI.org). Among its goals is to provide outstanding preoperative assessment. In a detailed preoperative assessment, the evaluation of patients prior to surgical procedures identifies and stabilizes medical comorbidities to optimize surgical outcome. Risk stratification is an attempt to maximize appropriate therapy, particularly in patients who have been identified as having higher chance of postoperative morbidity and mortality. Several

### **Anesthesiologists are becoming accustomed to the concept of the perioperative physician.**

models of preoperative evaluation exist, including a surgeon-based preoperative assessment relying on consultants, a preanesthesia testing clinic under the supervision of an anesthesiologist, a primary care physician preoperative evaluation, and an internal medicine preoperative evaluation clinic (1). Surgeons, anesthesiologists, internists, hospitalists, family practitioners, cardiologists, nurses and nurse practitioners are among the practitioners of perioperative medicine who participate in this process and are responsible for demonstrating that patients are medically stable for a particular surgical procedure. Therefore, it would be appropriate to discuss preoperative assessment teaching across various specialties.

A preoperative evaluation starts at the surgeon's office after a diagnosis has been made and a surgical procedure planned with the patient. The program requirements for

residency education in surgery point to the provision of preoperative care and emphasize that participation in the surgical procedure without preoperative care is not adequate (2). Furthermore, guidelines point out that communicating effectively with other health care professionals is essential. However, because of residency work hour limitations and the fact that few patients are admitted prior to their surgical procedures, the education and exposure of the surgical resident to the area of risk assessment may not be adequate. Surgeons often defer to their consultant and anesthesiologist colleagues with regard to patients' stability for a proposed operation. Multiple providers may work together to reach this determination, and different providers from various fields can perform the same role. Close collaboration between surgeons, anesthesiologists, and other consultants should be the first step towards patient safety.

Anesthesiologists are becoming accustomed to the concept of the perioperative physician (3). The concept of the perioperative physician starts in the preadmission test center. These centers see the majority of pre-surgical cases, as very few patients are admitted prior to the day of their procedure (4). It is common for anesthesiologists to review the medical history and perform a physical examination (or review that performed by nurse practitioners), order tests as necessary, decide whether to order consultations with specialists, and evaluate the patient's readiness for surgery. Outside consultants and the patient's primary care physician may give feedback to the anesthesiologist, but the decision about whether to proceed with an elective case is the anesthesiologist's. Having recognized this, the residency review committee mandates that the clinical experience of the resident anesthesiologist must include involvement in the process of

preoperative evaluation and management (5). Furthermore, it defines one of the components of anesthesiology as the practice of medicine dealing with the assessment of, consultation for, and preparation of, patients for anesthesia. Starting in July of 2008, an updated program requirement will be in effect (5). It will put more emphasis on a structured preoperative program to include a one-month rotation in a preoperative evaluation clinic.

Hospitalists collaborate with surgeons and anesthesiologists to ensure optimal medical and surgical care. Some have argued that hospitalists should be the leaders during the perioperative period by coordinating the assessment and management of surgical patients with anesthesiology, surgery, nursing, and pharmacy services (6). To this end, hospitalists have embraced the perioperative management of surgical patients. *The Hospitalist*, an official publication of the Society of Hospital Medicine, devoted an entire special supplement to perioperative care (7).

### **Hospitalists collaborate with surgeons and anesthesiologists to ensure optimal medical and surgical care.**

Topics of interest to any perioperative practitioner, including preoperative cardiovascular risk evaluation, perioperative beta-blocker guidelines, and perioperative management of hypertension, are reviewed thoroughly in this supplement. In addition, other topics discussed such as postoperative management of diabetes, the management of venous thromboembolism in the perioperative setting, and prevention of surgical site infections are more applicable to hospitalists, whose responsibilities

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## CENTER FOR THE STUDY OF SURGERY AND PUBLIC HEALTH

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Despite accounting for more than half of hospital admissions and over 30 million operations per year in the United States alone, surgical care is surprisingly understudied. In the twenty-first century, it has become a central and essential tool in the sustenance of human life. The average American has nine operations in their lifetime. Surgery now has the capability to cure many cancers, to correct birth defects in the young and heart disease in the old, to reverse obesity, to replace arthritic hips and knees, to allow the elderly to live independently far longer than ever before, to transplant organs, to remove diseased gallbladders, spleens, lung, and other tissues through tiny, band-aid sized incisions, and to use robots in operations. Yet, we have remarkably little solid information about the adequacy of surgical resources for meeting the needs of our aging population, about the quality of surgical care and how to improve it, about who has appropriate access to needed operations and who does not, and about how to improve that access both at home and abroad. In addition, as one of the most documented interactions in medicine, surgical care remains a potentially powerful source of information for examining fundamental questions about the delivery of health care and the improvement of public health.

We have, therefore, established the Brigham and Women's Hospital (BWH) Center for Surgery and Public Health, as a joint program of Harvard Medical School and the Harvard School of Public Health, to begin to remedy the knowledge deficit, to provide direction for patients, physicians, and policymakers, and to continue to improve the public health. There is no such center like this in existence anywhere. With the collaborative effort of experts both inside and outside of surgery, we expect that it will very quickly become

the pre-eminent institution in the world for research and "know-how" for the many concerns at the intersection of surgery, public policy, and public health. We have identified three specific directions for the focus of our initial work: (1) quality of care; (2) the appropriate use of manpower, technology, and other resources in the United States; and (3) the appropriate use of such resources internationally.

*Quality of care.* This is an area in which we have an already growing body of work examining what is required to increase the safety and quality of health care. In 1999, Gawande, Zinner, Brennan, and Studdert published a chart review study of 15,000 admissions to 28 hospitals in Utah and Colorado in which we discovered that avoidable adverse events occur in nearly two percent of patients who receive surgical care and that several common procedures have markedly higher rates of preventable injury to patients. A \$4

### **Access to surgical care is known to be acutely dependent on the resources available.**

million Agency for Healthcare research and Quality (AHRQ) funded project to collect and examine medical malpractice cases involving error in surgical care, obstetric care, diagnosis, and medication administration for patterns in how such errors occur is now underway. Others pursuing quality of care research here include: (1) Selwyn Rogers, a surgeon, has been collaborating with John Ayanian, an internist, on research concerning the quality of colon cancer care and racial disparities; (2) Michael O'Leary, a BWH urologist, has conducted an extensive amount of outcomes research on the treatment of prostate disease, (3) Michael Gustafson, the director of the BWH Center for Clinical Excellence, has created a database for

tracking quality at the Brigham and begun a group of studies on quality and human factors in surgery; (4) Caprice Christian, a surgical oncologist, is conducting a detailed study of pitfalls in operating room care processes and variation in cancer care. The center's central goal in these areas will be to provide resources and seminars to encourage greater cross-collaboration and a focus on finding concrete solutions to improve quality of care, to establish stronger ties with Harvard School of Public Health researchers who have greater quantitative expertise, and to disseminate the results of our findings.

*Manpower and use of surgical resources in the United States.* Access to surgical care is known to be acutely dependent on the resources available. There are two critical circumstances, however, in which we appear to be unprepared for resource shortages. One is the growing lack of insurance for people in the United States (now over 45 million people). We have little information about whether and how the uninsured get access to needed surgical care or about how that might be improved. The second circumstance is the rising number of the elderly. We now have suggestive evidence that as the baby boomer population ages, we are going to come up against a shortage of surgeons, operating rooms, and other resources to manage the expected doubling or tripling of the incidence of breast cancer, colon cancer, and other serious illnesses. We thus have a pressing need to establish how surgical care is currently utilized and distributed, to construct models that would allow us to predict future demands for resources and manpower, and to formulate appropriate policies to meet them.

*Use of surgical resources internationally.* In international public health planning, particularly for developing countries, surgical care has received relatively little attention. Many who work in these fields have

## LITERATURE REVIEW: PREOPERATIVE ASSESSMENT AND OPERATING ROOM EFFICIENCY

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Literature describing the impact of preoperative clinics on hospital resource utilization in terms of reductions in preoperative consults and test ordering has existed for over a decade. The impact of coordinated organizational preoperative structures on operating room efficiency is less well studied. Several recent articles, which include work by some of our SPAQI Board members, provide information to help with this discussion.

Operating room efficiency can be divided into several components. Recent work by Dexter's group details methods for calculations of inefficiencies of operating room use (1). This article provides an excellent tutorial on the impact of operating room (OR) management on productivity. Two obvious components considered in these analyses are first case start times and turnover times. The article notes that prolonged turnover times may be the result of case cancellation. Long turnover times leading to operating room inefficiency resulting in over-utilized OR time (e.g. room staffed until 4; room runs until 6 = 2 hours of over-utilized operating room time) contributes to financial inefficiency. Under-utilization of operating room time because of cancellations and long turnovers due to inadequate patient preparation similarly contributes to financial inefficiency. Although the role of adequate preoperative preparation is not specifically addressed in this article, it is obviously critical to optimize operating room financial efficiency by eliminating any component of inadequate preparation on over- or under- utilization of operating rooms.

Recent work by Sweitzer's group specifically analyzed the financial impact of a preoperative clinic visit on day of surgery cancellations and delays and hence on operating room utilization (2). This study directly compared patients who had a

preoperative anesthesia clinic visit to those not seen in the clinic. These investigators reported that patient visits to an anesthesiologist-directed preoperative evaluation clinic resulted in a significant reduction in day of surgery case cancellations and case delays. The discussion includes the negative financial impact of such delays, particularly when operating rooms are running at or above full capacity or when staffing costs are paid hourly instead of salaried.

**... patient visits to an  
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Daytime delays can increase the use of overtime staffing, which can increase the cost of operating room utilization by 50-75%. Cancellations include the costs of unnecessary setups and unbilled operating room time. The specific reasons for cancellations and delays were not described.

Recent work would indicate that the reduction in cancellations and delays from a preoperative visit is due to the ability to identify and obtain information regarding management and stability of known comorbidities as well as new problems first identified at the time of the preoperative visit. Correll et al reported that a significant number of patients seen in the preoperative clinic at a high acuity, tertiary care institution had either known comorbidities requiring retrieval of information from outside institutions or new problems requiring further testing be done prior to surgery (3). Leaving these issues unknown until the morning of surgery would potentially result in case cancellation

or delay. Also, cancellation and delays due to inappropriate or inconsistent patient preoperative instruction can be prevented with a preoperative visit, as all instruction would occur through a standardized process. These authors categorized issues based on whether they were new (identified at the time of the preoperative visit) or old (regarding known medical problems). The vast majority of problems were cardiac in origin. Most of the new problems required that new information be obtained, while most of the old problems required retrieval of medical information existing outside the institution. Even retrieval of old information may result in delay if left until the day of procedure. Also, 18% of new problems resulted in either delay or cancellation in the preoperative clinic of the planned date of surgical procedure, although the timing potentially allowed another case to be scheduled in its place.

Increases in over-utilization of operating rooms as described above due to inadequate preoperative assessment can also impact cost by potentially influencing complication rate. Wright et al performed an interesting recent study attempting to look at the influence of time of day on the incidence of adverse anesthetic events (4). Patients anesthetized at the end of the workday compared with the beginning of the day had a higher incidence of anesthetic adverse events, possibly due to medical care delivery factors such as caseload, fatigue, and care transitions. Therefore, it is also possible that decreasing delays during the day, in institutions with high operating room utilization rates, and decreasing operating utilization may result in fewer anesthetic adverse outcomes.

Finally, Khuri and his group have published data that support the view that identification and optimization of preoperative risk factors will need to

## CLINICAL UPDATE: PREOPERATIVE CARDIAC STENTS

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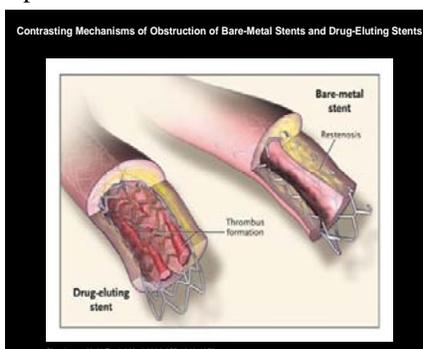
Historically, there has always been a debate whether the cost and the immediate morbidity and mortality of revascularization are justified before non-cardiac surgery (NCS). Generally, the conclusions were that if revascularization offered long-term benefits, then it “made sense” to do it prior to NCS. However, a recent multicenter VA hospital study of patients with 1 or 2 vessel coronary artery disease by angiogram undergoing major vascular surgery demonstrated no advantage of preoperative coronary revascularization (coronary artery bypass graft-CABG or percutaneous coronary intervention-PCI), compared to aggressive medical management.<sup>1</sup> Recently, a much different concern has surfaced - does PCI with stents and especially drug-eluting stents (DES) increase risk if antiplatelet therapy is interrupted for NCS?

In 2000, Kaluza et al reported catastrophic outcomes in patients who had NCS soon after PCI. There were 7 myocardial infarctions (MI), 11 major bleeding episodes, and 8 deaths in the 40 patients who had PCI with stenting within 6 weeks of major NCS.<sup>2</sup> Posner et al showed that PCI within 90 days of NCS was associated with rates of perioperative cardiac complications similar to those in patients with coronary artery disease (CAD) without revascularization.<sup>3</sup> More recent data suggest that the risk of stent thrombosis with DES lasts for an extended period.<sup>4</sup>

The BASKET-LATE study (presented at the March 2006 American College of Cardiology scientific sessions in Atlanta)<sup>4</sup> and more recently, the Camenzind meta-analysis (presented at the September 2006 European Society of Cardiology annual meeting/World Congress of Cardiology meeting in Barcelona)<sup>5</sup> showed a significant increase in the rate of death and MI in patients for up to 3 years after stent implantation.

Recently, the FDA concluded that, when used as per label directions, DES

were associated with an increased risk of stent thrombosis, but no increased risk of death or MI. ([www.fda.gov/cdrh/news/010407.htm](http://www.fda.gov/cdrh/news/010407.htm)) The same DES advisory panel recommended that the FDA change the labels of the two approved coronary devices to warn that *off-label* use may increase the risk of thrombosis, MI and death. It is estimated that, of the 3 million DES in the US, 60% are “off label”, that is, in patients with more complex medical conditions and lesions (e.g., diabetes, renal failure, acute MI, arterial bifurcations, multi-vessel or left main CAD). Currently, the American College of Cardiology/American Heart Association (ACC/AHA)<sup>6</sup> guidelines recommend aspirin indefinitely with a minimum of 3 months of clopidogrel for sirolimus-coated (Cypher) stents and 6 months for paclitaxel-coated (Taxus) stents, with 12 months of clopidogrel being optimum.



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DES substantially impair arterial healing compared to bare metal stents (BMS).<sup>7</sup> This has advantages long-term in decreasing the incidence of in-stent stenosis. However, this delay in endothelialization may increase the risk of thrombosis when anti-platelet agents are not used due to a persistent “thrombogenic” surface. Thrombotic events are a major cause of death after PCI. What causes DES thrombosis, how often or under what circumstances it occurs, or what the risk of occurrence is in a given patient is unclear. Two recent studies in the

*Journal of the American College of Cardiology* and the *Journal of the American Medical Association* suggest that, unless patients with DES continue to take clopidogrel indefinitely, the risk of MI or death may double.<sup>8-9</sup> Recently, Drs. Schouten and Poldermans<sup>8</sup> from the Erasmus Medical Center in the Netherlands recommended that, until more evidence is available, antiplatelet therapy should be continued during surgery unless absolutely contraindicated. This was based on their finding a significant increase in major adverse cardiac events in patients with PCI with stents (both DES and BMS) who discontinued (31%) versus continued (0%) antiplatelet agents; there was no difference in transfusions or units of blood transfused.

Just prior to this newsletter’s publication, several professional organizations in the United States (including the ACC/AHA, American College of Surgeons and American College of Physicians, among others) published a joint science advisory with the following recommendations (not all listed here)<sup>10</sup>:

- In patients who are undergoing preparation for PCI and are likely to require invasive procedures within the next 12 months, consideration should be given to implantation of a bare metal stent (BMS) or balloon angioplasty alone instead of a DES.
- Healthcare providers who perform invasive procedures must be aware of the potentially catastrophic risks of premature discontinuation of thienopyridine (e.g., clopidogrel or ticlopidine) therapy. Such professionals should contact the patient’s cardiologist to discuss optimal strategies if issues regarding antiplatelet therapy are unclear.
- Elective procedures involving risk of bleeding should be deferred until an appropriate course of

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## SPAQI FILLS AN UNMET NEED: A HOSPITALIST'S PERSPECTIVE

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Perioperative Medicine is a unique discipline in that the medical care of the surgical patient is not "owned" by one specialty, but rather several providers from various disciplines constitute the "team" that provides care to the surgical patient. At a time when baby boomers are aging, living longer and undergoing more surgeries than ever before, the cost associated with complications continues to rise. Over 35 million surgeries are done every year and over 1-million serious adverse events occur annually costing the US health care system about \$450 billion.<sup>1</sup>

Hospitalists can work side by side with anesthesiologists to help the surgical team prevent complications, and thereby cost, by performing systematic preoperative risk assessment and implementing therapies to prevent the risk of complications postoperatively. The invaluable lessons and tools hospitalists have learned in quality improvement and in augmenting systems of care are perfectly suited for improving safety on the surgical services in hospitals. About 10-years ago when a survey queried hospitalists about their involvement with perioperative case, the responses suggested that 82% were involved with preoperative evaluations in the inpatient setting.<sup>2</sup> About 44% were involved with non-medical patients in the inpatient setting and only 21% were involved in a formal medical consultation service. Today, I am quite sure the numbers are quite

different and I suspect it is the rare hospitalist that is not involved with medical management of the surgical patient.

The Society of Hospital Medicine (SHM) estimates that there are over 8,000 hospitalists in the country and this number is rapidly increasing. It is expected that the numbers will exceed 25,000 over the next decade. SHM

### ... there is a need for a multidisciplinary forum for the various perioperative medicine providers...

organizes and hosts a great annual meeting with renowned experts speaking on topics relevant to inpatient medicine. There is also a dedicated pre-course in Perioperative Medicine held every year, in addition to several sessions covering various aspects of perioperative care within the main meeting. However, the majority of the attendees at these sessions are hospitalists. Since hospitalists work closely with anesthesiologists in providing care for the surgical patient, there is a need for a multidisciplinary forum for the various perioperative medicine providers other than their principal organizations (i.e. SHM for hospitalists, American Society of Anesthesiologists (ASA) for anesthesiologists). I believe the Society for Perioperative Assessment and Quality Improvement (SPAQI) under the leadership of Angela Bader (an anesthesiologist), and the

preeminent founding board members, will bring "...together a variety of professionals in various disciplines to work together on all facets influencing optimal surgical outcomes...", as per the mission statement of this organization, to fulfill this unmet need. The society also plans to share best practices, promote research, and provide a pathway for communication amongst the various providers. In 2006, they co-sponsored the 2<sup>nd</sup> Cleveland Clinic Perioperative Medicine Summit and this served as SPAQI's first Annual meeting. The proceedings of the meeting are available

at <http://www.cejm.org/toc/2006periop.htm>, and select web casts from the meeting are available at <http://www.clevelandclinicmeded.com/webcast/perioperative/>.

Hospitalists involved in perioperative care are encouraged to consider joining this organization ([www.spaqi.org](http://www.spaqi.org)), in addition to being members of their own organization (SHM). It is my belief that they will find it educationally rewarding, just as I have.

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### BETA-BLOCKERS (con't)

(continued from page 13)

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## REGIONAL COLLABORATIVE ON PREOPERATIVE BETA BLOCKERS

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The Greater Cincinnati Health Council (GCHC) is a collaborative group of acute care hospitals covering a three state area surrounding Cincinnati, Ohio. This group includes all 35 acute care hospitals and, within these, all health systems. This collaborative has a history of accomplishing quality improvement projects on a regional basis in an effective manner, including receiving the Joint Commission on Accreditation of Healthcare Organizations' Codman Award for a regional effort to reduce and, in most cases, eliminate central line sepsis.

In the spring of 2006, several hospital members asked for support concerning the implementation of beta blocker recommendations, especially the initial recommendations from the American College of Cardiology/American Heart Association.<sup>1</sup> Further urgency was placed upon this effort, as it was anticipated that local and national agencies may adopt these as measures of quality for purposes of pay for performance and regulatory compliance.

Dr. Reuven Pasternak, Executive Vice President and Chief Medical Officer of the largest of the regional systems, the Health Alliance of Greater

Cincinnati, and an anesthesiologist, chaired a work group that included anesthesiologists, hospitalists, office-based practitioners, nurses, and hospital administrative staff. An initial survey of proposed policies revealed a wide disparity of guideline application that, in almost all cases, resulted in administration of beta-blockers to a broad range of patients at low risk for cardiac events during low risk procedures. The group then went through a process to better define the appropriate guidelines, including:

- Literature review of the current subject with particular attention to analyses of current studies and guidelines from professional societies.
- Arrangement of a visit by Dr. Lee Fleisher to address the group about current and future guidelines for beta-blocker therapy.
- Discussion about practical implementation plans.

The GCHC work group is currently finishing an algorithm based on these considerations and the most recent beta-blocker guidelines published in June of last year.<sup>1</sup> To our knowledge, this represents the first

ever effort to address an issue of perioperative safety and preparation on a regional basis. Perhaps of greater significance is that the GCHC is initiating an effort to assure that all patients in the region receiving elective surgery will have an appropriate preoperative assessment to identify and, when possible, modify perioperative risk factors. The first step in this initiative is a new work group to design a standardized preoperative assessment form for the tri-state area of Ohio, Indiana and Kentucky that will enhance the ease of data acquisition and management. Following this, a standing group for surgical and anesthesia safety will be established to serve as a resource for appropriate testing and guidance on perioperative and postoperative guidelines and safety initiatives.

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## SURGERY AND PUBLIC HEALTH (con't)

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believed that the technology involved and the skills required are beyond the capacity of non-industrialized countries and that spending limited resources on surgical care would be cost-ineffective. And it is true that, as delivered here in the United States, surgical care would be. However, there are potentially several important domains of surgical care in which highly cost-effective, life-saving treatment is possible. One example is childbirth. In large territories of southern Africa and Asia, cesarean

section is simply unavailable. When a mother cannot pass a baby through the birth canal, both are routinely left to die. A small project in Ghana, however, has shown that nurses can be taught to perform cesarean sections using inexpensive injected anesthetic (ketamine) and equipment (a scalpel, forceps, silk sutures) and save hundreds of lives each. With a modest amount of research, we would likely be able to provide a much improved understanding of how surgical resources are currently used

internationally and what policy ought to be for the rational introduction and utilization of this form of care.

Through the efforts of the Center for Surgery and Public Health, we hope to illuminate far broader questions in health care—including the causes of error in medicine, the nature of racial disparities, directions in quality improvement, and the appropriate use of manpower and public health resources.

## ALPHABET SOUP IN THE PERIOPERATIVE ARENA: SCIP, P4R AND P4P

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In 2003, the Centers for Medicare and Medicaid Services (CMS) and the Center for Disease Control (CDC) initiated a partnership with both the government and private sector to develop a collaboration to reduce surgical morbidity and mortality. During the past decade, the Veterans Administration National Surgical Quality Improvement Project (NSQIP) demonstrated that surgical deaths and complications could be reduced through constant monitoring and adoption of best practices. The SCIP (Surgical Care Improvement Project) partnership was formed and included representatives from the American Hospital Association, the American College of Surgeons, the American Society of Anesthesiologists (Robert Lagasse, Ron Gabel and Lee Fleisher), the Association of Perioperative Registered Nurses, the Joint Commission on Accreditation of Healthcare Organizations, the Institute for Healthcare Improvement (IHI), the Department of Veterans Affairs (VA), the Agency for Healthcare Research and Quality (AHRQ), CMS and CDC (see [www.medqic.org/scip](http://www.medqic.org/scip)). In 2005, the group set the goal of reducing surgical complications by 25% by the year 2010. Four major areas of surgical complications were identified: prevention of surgical site infections, perioperative myocardial infarction, post-operative pneumonia and venous thromboembolism (pulmonary embolism and deep vein thrombosis).

The partnership has utilized expert panels, which included members from the steering committee and from more than 20 additional organizations. The goals are to identify best practices supported by the literature, or preferably identified as Class I recommendations in Guidelines developed by the appropriate Societies. For example, the recommendations for perioperative beta-blockade were restricted to Class I recommendations by the American College of Cardiology/ American Heart Association Guidelines for

Perioperative Cardiovascular Evaluation.<sup>1</sup> In fact, the Focused Update on Perioperative Beta Blockade was published in part to ensure that the SCIP measures would be consistent with the most current evidence. The measures for venous thromboembolism are based upon recommendations from the American College of Chest Physicians.<sup>2</sup> The most well described measures are those related to the prevention of surgical site infections. Both timing and appropriateness of perioperative antibiotics were incorporated from the previously commissioned Surgical Infection Project (SIP).<sup>3</sup> Additional measures such as perioperative normothermia in colon surgery and perioperative glucose control in cardiac surgery were also part of this "module". While many investigators have suggested that both of these measures may be appropriate in a wider surgical population than identified above, the steering committee of SCIP has attempted to stay more restrictive in order to avoid the unintended consequences that may occur if the measure is diffused beyond the available evidence.

**...it is unlikely that this trend of P4R and P4P will not be widely adopted.**

At the current time, the SCIP measures are voluntary. Hospitals can report on any one of the four major areas, but they must report on all of the measures in that area. The IHI has also included the SCIP project in its national agenda. Therefore, there will be voluntary reporting. However, the antibiotic measures of SCIP which were incorporated in SIP are part of the new P4R, or Pay-for-reporting, initiative incorporated into the Medicare reimbursement policy.<sup>4</sup> Many private insurers and states are also incorporating this measure, and eventually the overall performance on this measure may effect payment (P4P

or pay-for-performance) rather than just reporting.

Although the United States Congress has clearly identified P4P as an important approach to controlling health care costs and improve quality, there are several investigators who are concerned that better performance on process variables (ie. antibiotic timing) may not lead to improved outcome. Werner and Bradlow found that hospital performance measures only predict small differences in hospital risk-adjusted mortality rates.<sup>5</sup> Despite these concerns, it is unlikely that this trend of P4R and P4P will not be widely adopted. In fact, separate measures are being developed for physicians, which will be a topic in a future issue. It will become increasingly important to be aware of these measures and be part of the hospital team that implements them.

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