In the United States, we are all familiar with the obesity epidemic. Not only do we deal with health complications associated with high BMI, such as diabetes, hypertension, hyperlipidemia and degenerative joint disease, but also challenges for nursing care of bariatric patients from adequate sized gowns, beds, wheelchairs and other equipment to proper drug dosing, vascular access and specialized skin care. There are numerous studies describing the risks for postop complications for general surgery patients with high BMI, but does that translate to cardiac surgery? You may be surprised to learn the answer is, “not necessarily.”

Most studies that have looked at the association between obesity and CABG risk have mined extensive patient databases retrospectively. In addition to the U.S., research has also been done in Saudi Arabia, Canada, and Taiwan. This process is very complicated and requires sophisticated data modeling to differentiate the effect of BMI separate from the complications associated with weight. For example, are postop wound infections related to diabetes that occurs with obesity, or the obesity and body habitus itself?

**Retrospective Studies**

Baslaim et al looked at 462 cardiac surgery cases done over 4 years; 147 (32%) had BMI ≥ 30. Obese patients were older and more likely to have diabetes and hypertension. There was no difference in operative or in-hospital mortality in obese patients, nor was BMI a predictor of any major complication from IABP, wound infection, and reoperation to respiratory complications, CVA, renal failure, or ICU / hospital readmission.

Bhamidipati et al reviewed 742 CABG patients who had off-pump surgery over 7 years; 340 (46%) had BMI ≥ 30. As with Baslaim et al, BMI did not influence adjusted odds of any complication, and risk-adjusted models for mortality were similar among all BMI. In addition, there was no significant difference in operative procedure or resource utilization by obese patients.

Thourani et al examined 4247 patients who had valve surgery with or without CABG over 8 years; 436 (10%) had BMI ≥ 35, 2284 (54%) had BMI 25-35, and 1527 (36%) had BMI ≤ 24. Researchers discovered obese patients had longer pump times, longer crossclamp times, a higher rate of IABP, longer ICU and hospital length of stay. But, there was no increase in in-hospital mortality. These researchers found significantly greater in-hospital and long-term mortality in those patients with low BMI, regardless of surgical procedure.

Del Prete et al looked at 1163 CABG patients over 10 years; 472 (41%) had BMI ≥ 30. While obese patients were younger and less likely to smoke, there was no difference in short- or long-term risk-adjusted mortality.

**Resource Utilization**

Three other studies examined resource utilization. Choi et al compared 56 morbidly obese (BMI ≥ 40) CABG patients with 168 matched controls over 10 years at a VA hospital. Obese patients had, on average, 29 minute longer surgery, 1.9 day longer ICU stay and 4.7 day longer hospital stay. There was no difference in outcomes. Rough costs for additional OR time are between $450 and $1500 (room charge only) and for additional ICU days, $9000. The authors note that Medicare does not consider obesity a condition that qualifies for increased reimbursement.

Turer et al reviewed 22,877 catheterized patients over 18 years, separating into three groups: 7737 (34%) had PCI, 7258 (32%) had CABG, and 7882 (34%) were managed with medication alone. Across all BMI, CABG had the highest survival. There were 711 (3%) with BMI ≥ 40; in this group 32% had medications only, 43% had PCI and 25% CABG. Even those with left main or 3-vessel disease had lower rates of CABG if they were obese, even though CABG is associated with better long-term survival regardless of weight. The researchers question whether there is a bias against offering surgery to morbidly obese patients, perhaps due to erroneous thinking that it is much riskier.

A Canadian study examined a database of 27,460 persons who had a cardiac cath over 3 years; 6601 (24%) had BMI 18.5-24.9, 11,386 (42%) had BMI 25-29.9, and 9473 (35%) had BMI >30. Overweight and obese patients had higher rates of PCI and CABG, but CABG decreased as BMI increased. When BMI was ≥ 35, there was significantly less PCI or CABG.

**At the Cell Level**

Obesity-related changes include alterations in the vascular endothelium and changes in ventricular load and efficiency. Adipose tissue acts as an endocrine organ. Persons with BMI ≥ 25 had significantly higher triglycerides, H/H, and albumin and significantly lower levels of adiponectin, high-sensitivity CRP, and NT-proBNP. These lower levels may be the mediating factors protecting obese patients. Higher inflammatory mediators may lead to cardiac cachexia, in which nutritional intake does not meet the increased metabolic demands of CAD and heart failure; this exacerbates the catabolic stress of cardiac surgery. In addition, low BMI is associated with greater hemodilution during bypass and greater postoperative coagulopathy.
In the Literature

**Satisfied Nurses = Satisfied Patients**

A nurse researcher from the University of Rochester (NY) has provided an important analysis of the relationship between patient satisfaction (n=1532) and the health of the work environment for critical care nurses (n=671). Overall quality of nursing care was 4.5/5 with the highest scores for friendliness and courtesy, followed by willingness to listen to concerns. Comparing 4 ICUs, nurses’ favorable perception of the nurse manager correlated to higher patient satisfaction. This is a must-read to understand the far-reaching effects of unit-level nursing leadership – for good or ill.

Source: Boev C: The relationship between nurses’ perception of work environment and patient satisfaction in adult critical care. *Journal of Nursing Scholarship* 2012;44(4):368-375. PubMed Citation

**Where Has That Stethoscope Been?**

The current issue of the *American Journal of Infection Control* has research on pediatric health care providers’ behavior toward stethoscope disinfection. While 79% of those responding agreed that scopes should be disinfected after each use, only 24% reported doing so. This is an interesting examination of why professionals do not follow through with actions they believe are optimal practice.


**A Peek in the Crystal Ball**

The current issue of *Nursing Economics* provides a comprehensive analysis of the readiness of the national nursing workforce for the challenges and opportunities that will come with the full implementation of the Affordable Care Act. The authors provide results from the National Survey of Registered Nurses and discuss the relationships between where we are and where we need to be to optimize the ACA and the 2010 IOM report *The Future of Nursing*. This is a great preview of what can be positive, exciting changes for nursing practice in the coming years.


**Markers Can Spread Infection**

With increased awareness of wrong site procedures, we mark areas to confirm the correct site and keep the Joint Commission happy. The FDA does not require approval of markers, so facilities need to do a little more homework to determine which type of marker is best and then how to use it correctly. The current issue of *Orthopaedic Nursing* provides a review of the literature with dos and don’ts and best practices for optimal skin marking.

Source: Driessche AM: Surgical site markers: potential source for infection. *Orthopaedic Nursing* 2012; 31(6):344-347. PubMed Citation

**Clinical Update for the Professional Nurse**

**On the World Wide Web**

**Surgery Tools**

The STS Risk Calculator for cardiac surgery is online: http://tiny.cc/a33ipw Enter patient data and the site automatically calculates risks relating to the procedure such as mortality, length of stay, prolonged ventilation, and renal failure. A PDF of variables and background information is here http://tiny.cc/od4ipw

UCLA has a collection of cardiothoracic surgery tools including operative forms, calculators, and education modules for adult and congenital surgery at http://tiny.cc/q83ipw

CTSNet provides a collection of apps for iPhone and iPad at http://tiny.cc/cil3ipw

iMedicalApps is a site dedicated to reviews of apps for Apple devices and Android, for and by medical professionals http://www.imedicalapps.com/

Top 15 Android apps http://tiny.cc/io4ipw

Top 20 free iPhone apps http://tiny.cc/7o4ipw

Top 15 iPad apps http://tiny.cc/7r4ipw

increased risk is clear. This is particularly interesting given the NIH uses 18.5 as the marker for underweight. Going forward, researchers will need to clarify if there are differences among low BMI, malnutrition, hypoalbuminemia, and frailty and which has the greatest effect on outcomes.

**Sources**


9. Bhamidipati CM, DJ LaPar, GS Mehta, et al.: Albumin is a better predictor of outcomes than body mass index following coronary artery bypass grafting. *Surgery* 2011;150:626-634. PubMed Citation