EDITORIAL

Cost Effective Preoperative Evaluation

The very object of preoperative assessment for patients undergoing surgical procedures and aneasthesia is to evaluate and apply measures to prepare higher risk patients for surgery as needed. But to achieve effectiveness, the clinicians concerned should be able to understand the risk connected with the particular type of proposed surgery and anaesthesia and link this risk to the patient's underlying acute and chronic medical troubles.

Both surgery and anaesthesia has its individual 'assault value' and consequence. To modify the body's response favorably to the patient and eliminate morbidity, relevant information about the patient's medical history and physical and mental conditions is always essential. It helps to determine which tests and consultations are needed for managing patient's perioperative care in light of effectiveness and minimum expense. Reduction of anxiety and informed consent should not be overlooked at the time of preoperative evaluation. Recovery occurs more quickly when the anesthesiologist allays the patient's concerns by discussing techniques and plans including that of postoperative analgesia.[1-4]

The practice of seeing patients preoperatively by an anaesthesiologist *just* before surgery still exists in this part of the world and yet a fair number make their way to OR without being seen at all. Globally, methods of preoperative evaluation are changing. In response to these changes, The American Society of Anesthesiologists (ASA) has developed a practice advisory for preanaesthetic evaluation. [5]

These changes signify that perioperative care must have its predictability and comprehensiveness so that no aspect of care is ignored to produce problems later. The change also gives guideline to achieve efficient and cost-effective preoperative care to save resources and time. Taking preoperative medical and surgical condition into consideration, the exact choice of laboratory tests, useful patient edification, produces a satisfying surgical outcome. Optimizing patient health before surgery and planning the most appropriate perioperative management plan improve outcome and reduce costs. There are studies supporting these claims. These studies done over four decades repeatedly indicated that patient's preoperative condition has the ultimate influence over postoperative morbidity.[5-11]

The studies recommended the preoperative evaluation should be done several weeks before the operation. This provides adequate space for preparation which may include further consultation(s), investigations and treatment. It becomes binding to the assessor to assess the patient through thorough history and be guided to identify the potential risk and to ask for laboratory tests that will be beneficial in planning perioperative care. Indeed, the American Society of Anesthesiologists (ASA) graded preoperative patients in terms of medical conditions and possible perioperative outcome. This provided latitude to the perioperative physicians (Anaesthesiologists) to optimize patients for choosing appropriate anaesthetic technique for the proposed surgery. [12,13]

In US, preoperative laboratory work up once routinely included a complete blood count, extensive blood chemistry profile, urinalysis, prothrombin time, partial thromboplastin time, electrocardiogram (ECG) and chest radiographs. Numerous studies have subsequently shown that most of these tests were ordered without a clear indication, and that only a very small percentage of the results were unexpectedly abnormal. Even among the small percentage of patients with unexpected abnormal results, management was unaffected. Current recommendations call for fewer routine tests and for selective ordering of laboratory tests based on the specific indications in a given patient. In addition, the availability of previous laboratory testing can obviate the need for additional preoperative tests.

After all if these extra tests are not doing any benefit then why one should increase the expense. This made an impact in the mind of clinicians of affluent countries and that has reached us too here in third world. The studies showed that unindicated testing may lead physicians to treat borderline and false-positive laboratory abnormalities. Roizen et al [14] in one of his

retrospective study examined the adverse effects of chest radiographs on patients and concluded that routine chest radiograph for patients whose history and clinical examinations do not suggest any disorder has a high cost benefit ratio To work out benefit -risk ratio review and analysis of literatures become necessary. Tests selected rationally by clinicians are likely to be more beneficial than risky for their patients. [12, 15-17] and that harm from false positives is 6/100.[18,19] Studies also revealed that patients undergoing minor or minimally invasive surgery after a careful medical history was obtained have little to benefit from more testing.[5,11,12]

Specific issues like patients with cardiac ailments, respiratory disorders, renal insufficiency, chronic liver disease, diabetes mellitus or any condition that may influence anaesthetic technique and alter surgical outcome should be addressed with a set protocol. Most of the hospitals have their own guideline regarding this. It is the job of preoperative assessor to determine the requirement of degree of consultation with the Physicians of different disciplines to optimize patient's condition for anaesthetic and surgical intervention.

It is also important to make the preoperative evaluation cost effective for the establishment, the tax payers and the patients. Roizen has pointed out in his reviews

(1989 & 2005) the very importance of proper evaluation with minimum tests which ultimately becomes 'purse friendly' to all concerned.[20,21] A summary of the proposal is outlined below.

Summary of Recommended Preoperative Laboratory Tests Depending on the History and Physical Findings

Condition	Indicated testing and other measures*
Healthy patient	
<= 40 years	Hemoglobin, urine screening for pregnancy in women of childbearing potential
> 40 years	Add ECG and blood glucose (age >=45 years)
Cardiovascular disease	ECG, chest radiographs, hemoglobin, electrolytes, BUN, creatinine, glucose (age >=45 years or history of diabetes)
Recent MI (<=6 weeks), unstable angina, decompensated CHF, significant arrhythmias, severe valvular disease	Cardiology consultation
Previous MI (>6 weeks ago), mild stable angina, compensated CHF, diabetes mellitus	Stress test if high-risk procedure or patient has low functional capacity; consider assessment of left ventricular function (i.e., echocardiography)
Rhythm other than normal sinus rhythm, abnormal ECG, history of stroke, advanced age, low functional capacity	Stress test if high-risk procedure and patient has low functional capacity
Pulmonary disease	Chest radiographs, hemoglobin, glucose (age >=45 years), ECG (age >40 years); provide patient with instructions for incentive spirometry or deep-breathing exercises
Asthma	Pulmonary function testing or peak flow rate to assess disease status
COPD	Consider pulmonary function testing and arterial blood gas analysis for assessment of disease severity
Cough	Evaluate for etiology
Dyspnea	Evaluate for etiology
Smoking	Counsel patient to stop smoking 4 to 8 weeks before surgery
Obesity	Provide patient with instructions for incentive spirometry or deep-breathing exercises
Abdominal or thoracic surgery	Provide patient with instructions for incentive spirometry or deep-breathing exercises
Malnutrition	Laboratory tests based on primary disease, plus albumin and lymphocyte count; if malnutrition is severe, consider postponing surgery and providing preoperative supplementation

ECG = electrocardiogram; BUN = blood urea nitrogen; MI = myocardial infarction; CHF = congestive heart failure; COPD = chronic obstructive pulmonary disease.

National Institute for Health and Clinical Excellence, UK, in its compilation of guidelines in 2003 edition has addressed the issue with great elaboration and the requirement of lab tests has been recommended on the basis of two grades. ASA grade and Surgery grade which are as follows.

Surgery grades

Grade 1 (minor) Excision of lesion of skin; drainage of breast abscess

Grade 2 (intermediate) Primary repair of inguinal hernia; excision of varicose vein(s) of leg; tonsillectomy/adenotonsillectomy; knee arthroscopy

Grade 3 (major) Total abdominal hysterectomy; endoscopic resection of prostate; lumbar discectomy; thyroidectomy

Grade 4 (major+) Total joint replacement; lung operations; colonic resection; radical neck dissection

Neurosurgery –

Cardiovascular surgery–

ASA grades

ASA (American Society of Anesthesiologists) grades are a simple scale describing

fitness to undergo an anaesthetic. The ASA clearly states that it does not

endorse any elaboration of these definitions. However, anaesthetists in the UK

often qualify (or interpret) these grades as relating to functional capacity – that

is comorbidity that does not (ASA Grade 2) or that does (ASA Grade 3) limit a

patient's activity

ASA Grade 1 "Normal healthy patient" (that is without any clinically

important comorbidity and without clinically significant

past/present medical history)

ASA Grade 2 "A patient with mild systemic disease"

ASA Grade 3 "A patient with severe systemic disease"

ASA Grade 4 "A patient with severe systemic disease that is a constant threat to life"

The detailing of the protocol is beyond the scope of the present editorial but its is readily available on the following web address. www.nice.org.uk/CG003 [28]

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