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Preanesthetic Assessment What do we really need?

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ASA PRACTICE ADVISORY

- Systematically developed reports to assist decision making
- Areas of insufficient scientific evidence
- Synthesis of opinions from experts, open forums, public sources

(Preanesthesia evaluation: Anesthesiology, 2002;96:485-96)

APPLICATION OF ADVISORY

- Anesthesiologists and those who provide care under the direction of an anesthesiologist
- Applies to all age groups
- All types of anesthesia and deep sedation
- Surgical and non surgical procedures
- Does not address emergency situations

PREANESTHESIA EVALUATION

- Process of clinical assessment preceding delivery of anesthesia
- Responsibility of the anesthesiologist
- Consideration of information from multiple sources
- Consultations may be necessary
- Preoperative tests may be ordered
- Informed consent may be obtained

PREANESTHESIA HISTORY AND PHYSICAL

- Precedes ordering, requiring or performance of specific preanesthesia tests
- Evaluation of pertinent medical records
- Patient interview
- Physical examination
- Assessment of risk is an essential component of basic anesthetic practice

TIMING

- High surgical invasiveness and should be done prior to day of surgery
- Medium surgery and prior to or on day of surgery
- Low risk surgery and day of surgery

PREANESTHESIA PHYSICAL EXAMINATION (MINIMUM)

- Airway assessment (100%, 100% consultants, ASA members)
- Pulmonary examination (88%, 85%)
- Cardiovascular examination (81%, 82%)
- Documentation of vital signs
- Healthcare system to provide appropriate assessment of severity of medical condition and invasiveness of surgery

ROUTINE TESTS

- Test ordered without clinical indication
- Preop status, surgical screening NOT clinical indications
- Indicated tests have specific clinical indication

TIMING OF TESTS

- EKG: Up to 6 months
- Chest X-ray: 1 month-1 year
- Hb: 1-3 months

- Chemistries: Up to 1 month
- Coagulation studies: 24 h-1 month
- Consensus: test results good for 6 months
- *Provided no interval change*

SHOTGUN LABS: WHY DO WE ORDER THEM?

- Good screening
- Best for patient and doctor
- Saves annual physical
- Medicolegally sound
- Required
- Income for hospital

HISTORICAL NOTES

- 1850's History and physical (J. Snow)
- 1930's Prolonged hospitalizations
- 1970's Ambulatory settings
- 1980's Cost containment
- 1990's Question of routine
- 2000 Large study results

ESCALATING COSTS

- What are the priorities?
- What can we do without?
- What makes a difference?
- What are the risk/benefit ratios?

ROUTINE TESTS

- Complete blood count, BUN, electrolytes
- EKG
- Chest X-ray
- Coagulation profile
- Pregnancy test
- Blood type and screen

ROUTINE TESTS

- Cost > $40 billion annually
- 60% not indicated
- 0.22% revealed pertinent abnormalities
- Abnormalities mostly ignored
- No adverse consequences
- False positives potentially harmful

(Roizen, Can J Anaesth 1989)

SURGEON	ANESTHESIOLOGIST
• Labs 90%	• Labs 53%
• EKG 55%	• EKG 43%
• Chest X-ray 50%	• Chest X-Ray 10%
• Early admit 13%	• Early admit 21%
	• Cost savings $75,000

(Rutten, et al. Ned Tijdsch Geneeskd 1995)

ABNORMAL RESULTS

- Occur in about 2-9%
- Rarely acted upon
- Do not change anesthesia or surgery
- Seldom useful for general screening
- Increase with age and ASA classification

PATIENTS WITH NO TESTING

- 1,044 data base
- Age 0-95 years
- No major perioperative morbidity
- No blood transfusions necessary
- Intraoperatively, 17 labs, 1 EKG
- Postoperatively ,42 labs, 2 EKGs

(Narr et al, Mayo Clin Proc 1997)

AND IN 2006

- 1,026 ambulatory and general surgical patients
- Randomized to receive routine tests or none
- All patients with DM had preop BS
- Primary outcomes: MI, CHF, stroke, hyper/hypotension, renal failure, Unanticipated admission
- No difference in groups re complications

(ASA abstract A370, Vairavanathan Chicago 2006)

MORE FROM 2006

- 192 surgical cases
- Complexity as expected in 78% when medical records only were read
- 85% with face to face evaluation and physical exam on day of surgery
- Up to date information reduces OR delays

(ASA: Chicago; Abstract 1384: Yale U.)

ROUTINE TYPE AND SCREEN

Unnecessary
Vaginal hysterectomy
Laparoscopic cholecystectomy (unless history of previous transfusion or antibody discovery)

(Transfusion incidence < 0.4%)

PREOPERATIVE EVALUATION

- Routine tests unnecessary
- History and physical
- Consent
- Fasting condition
- Tests only as indicated

PEDIATRICS URINALYSIS

- 486 cases
- Abnormal UA 15%
- 80% already known
- Cancellation may be dangerous
- Routine UA of no value

(O'Connor, et al. Anesth Analg 1990)

PEDIATRICS: MINOR ELECTIVE SURGERY

- 342 children over 1 year
- 684 tests, 63 (9.2%) abnormal (Hb, WBC, electrolytes)
- All insignificant
- No cancellations or postponements
- Pre op blood testing of limited value

(Mallick MS. Saudi Med J 2006;27:1831-4)

PEDIATRICS HB, HCT

- 2,000 patients
- 11 patients anemic, all over 5
- 3 cancelled for iron therapy
- 8 proceeded without problems
- Preoperative Hb testing unnecessary

(Roy et al, Can J Anaesth 1991)

PREGNANCY AND ADOLESCENTS 1

- Data base 444
- 8 thought they might be pregnant
- All pregnancy tests negative
- 1 false positive

History is sufficient

(Malviya, et al. Anesth Analg 1996)

PREGNANCY AND ADOLESCENTS 2

- Data base 801
- Positive pregnancy test in 6: cases cancelled
- 4 pregnant (0.49%); counseled
- 3 denied the possibility

(Pierre, et al. J Ped Adolesc Gyn 1998)

CARDIOVASCULAR DISEASE

- EKG weak predictor
- Exercise test of little value
- Selective screening most cost effective

PERIOPERATIVE CARDIAC RISK

- American College of Cardiology and American Heart Association
- Guidelines and data from studies
- Risk stratification, high, intermediate, low based on number of risk factors
- DM, HTN, CHF, MI, dysrhythmias, abnormal EKG, angina, age, surgery

(Kertai, et al. Prog CV Dis 2005;47:240-57)

PERIOPERATIVE CARDIAC RISK

- No risk factors and no additional evaluations for CAD
- 1-2 risk factors and beta blockade enough
- > 3 and non invasive testing may help
- Coronary revascularization only for highest risk

(Kertai, et al. Prog CV Dis 2005;47:240-57)

RESPIRATORY DISEASE

- Risks: smoking, surgical site, lung disease, obesity, older age, malnutrition, long anesthesia
- PFTs mostly useless: management tool only
- Spirometry for active asthmatics, smokers, cardiac and upper abdominal surgery
- Split lung function, CT for high risk to estimate residual lung parenchyma after surgery

(Chetta Acta Biomed 2006;77:69-74)

PULMONARY FUNCTION AND BARIATRIC SURGERY

- 146 patients for open bariatric surgery
- Group 1: Postop complications: Group 2: none
- Group 1: BMI 58, age 46, VC 80%, FEV1 84%, TVC89%, paO_2 76
- Group 2: BMI 51, age 40, VC 97%, FEV1 99%, TLC 99%
- PFTs are predictive; VC and age most

(Hamoui: Obes Surg 2006;16:1570-3)

CHILD WITH A RUNNY NOSE

- 1,283 data base
- WBC, chest X-Ray normal
- 2-7 fold increase in respiratory events
- Intubation increases risk 5 times
- No overall increase in morbidity

(Cohen et al Anes Analg 1991)

CATARACT EXTRACTION

- Data base 19,557
- 2 groups: routine tests or none
- No difference in intraoperative events
- No difference in outcome

Routine testing not indicated

(Schein, et al. NEJM 2000)

HIV SCREENING

- Routine testing: $57
- Universal precautions: $36

Up economically more feasible

(Lawrence, et al. J Clin Epidem 1993)

DISEASE STATES

- Diuretics
- Diabetes mellitus
- Leukemia
- Liver disease
- Renal failure
- CNS Disease
- Malabsorption
- Digoxin
- Bleeding disorder

INDICATIONS FOR HB, HCT, PCV

- Procedure risk class 2-3
- History of sickle cell disease
- Blood malignancy
- Cancer therapy
- Symptoms of a bleeding disorder
- Anemia, polycythemia
- Severe co-existing disease
- Not if obtained within 3 m and no interval change

(VPEC Practice guidelines)

INDICATIONS FOR WBC

- Infection that would contraindicate surgery
- Leukemia, lymphoma
- Cancer therapy
- Hypersplenism
- Aplastic anemia
- Autoimmune collagen vascular disease

(VPEC Practice guidelines)

INDICATIONS PLATELET COUNT

- Known platelet disorder
- Easy bruisability
- Blood disease
- Cancer therapy
- Transplant rejection
- Procedure risk 3
- Autoimmune disorder

(VPEC Practice guidelines)

INDICATIONS FOR BLOOD GLUCOSE

- Diabetes mellitus
- History of hypoglycemia
- Corticosteroid therapy
- Adrenal disease

(VPEC Practice guidelines)

BLOOD GLUCOSE CONTROL

- 108,593 patients over 10 years
- 989 died within 30 days of surgery
- 1,879 matched controls from survivors
- BS > 110 mg/dl and 1.7 X increased mortality, > 200 mg/dl: 2.1 X increase

(Noordzij. Eur J Endocrin 2007;156:137-42)

DIABETES MELLITUS

- Blood sugar below 110 mg/dl reduces morbidity and mortality in critical patients

- Co morbidities include CAD, autonomic neuropathy, nephropathy
- Hold oral hypoglycemic agents
- Give insulin
- Measure BS frequently, also postop.

(Tamai D. Conn Med 2006;70:621-30)

INDICATIONS FOR ELECTROLYTES

- Diuretics
- Kidney disease
- Adrenal disease
- Corticosteroids
- Pituitary disease
- Fluid shifts, bowel prep.
- Digoxin
- CNS disease
- Procedure risk class 3
- Severe dysrthymias

(VPEC Practice guidelines)

INDICATIONS FOR BUN/CR

- Diuretics
- Renal disease
- Adrenal disease
- IDDM
- Fluid shifts
- > 10 years hypertension
- Radiocontrast
- Procedure risk class 3

(VPEC Practice guidelines)

INDICATIONS FOR PT/PTT

- Suspected active liver disease
- Anticoagulants
- S and S bleeding disorder
- Malnutrition or malabsorption
- Procedure risk class 3

(VPEC Practice guidelines)

INDICATIONS FOR URINALYSIS

- Instrumentation of the urinary tract
- Implantation of urinary prosthesis
- Symptoms of urinary infection
- Immunosuppression

(VPEC Practice guidelines)

POSTOPERATIVE COMPLICATIONS

Predictors

- Higher ASA classification and surgical severity
- Poor nutritional status
- Greater age (?)
- (EKG, Chest X-ray, Blood sugar, PFT's)

(Velanovich Surg 1991)

PREOPERATIVE EVALUATION

- Facility visit prior to surgery
- Office visit before surgery
- Telephone visit (no visit)
- Review of health survey (no visit)
- Screening and visit on day of surgery
- Computer assisted information collection

CONCLUSIONS

- Too many tests
- History and physical key
- Patient need not be seen
- Appropriate tests only
- Age probably not a factor
- Education of HCW and public critical