Myths in Emergency Medicine

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“To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries, but his cup of joy is full when the results of his studies immediately find practical applications.”
—Louis Pasteur


17 years for 14% of original “discovery” to actually reach practice

TOPICS
• CT before LP
• SVT is Benign?
• ETOH Levels
• Protect My Lungs
• ICH and BP Control
• The Problems with PE
• Kayexalate Ain’t So Great
• Serum HCO3?
• Wellen’s Syndrome
• EGDT
• Let’s Be Prehn’s
• Contrast Allergies
• MB = Marker Bust
• D-dimer: Adjusted
• LR v. NS
• Orthostatic B.S.
• I (eye) + Anesthetics
• Are you Inferior?
• Strep Recs
• tPA and Intracranial Aneurysms
• Type 1 (A) (76%)
  - Deep symmetrically inverted T waves in precordial leads V2-V3

• Type 2 (B) (24%)
  - Biphasic T waves in V2-V3 identified as a distinctive upsloping followed by a sharp downslope that differs from T-wave inversion due to other etiologies


• “WS the lesion due to LMI is unilateral, its effect on oropharyngeal swallowing is bilateral.”
• “The remaining intact ipsilateral premotor neurons and the contralateral center in the medulla oblongata may eventually begin to operate and overcome the severity and long-term persistence of dysphagia.”

Vertebrobasilar or posterior inferior cerebellar artery of the brain stem:

Dysphagia, slurred speech, ataxia, facial pain, vertigo, nystagmus, Horner’s syndrome, diplopia, and possibly palatal myoclonus.
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Orthostatic VS

Annals of Emergency Medicine
Volume 20, Issue 6, Pages 606-610, June 1991

132 euveolemic, patients
Wide variation in Orthostatic vital signs
HR range ↓ 5.0 to ↑ 39.4; SBP: ↓ 20 to ↑ 25.7; DBP: ↓ 6.4 to ↑ 24.9; 43% were “positive”

Orthostatic VS

Ability to predict intravascular depletion?


100 Blood donors v. 100 non donors
Alone: HR > 20/min most sensitive: 9%
HR > 20 or DBP decrease of 10, Sensitivity: 17%
Age: No clinically important differences
No combo of Ortho VS (spec 95%) sensitive to detect 450 cc blood loss
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Shellfish?

- Iodine Content
  - Beef: 173 mcg/kg
  - Shrimp: 1000 mcg/kg
  - Chikin: 1248 mcg/kg

Choosing Wisely

American Academy of Allergy, Asthma & Immunology

Five Things Physicians and Patients Should Question

- Are you at an increased risk for allergy?
- Are you at risk for anaphylaxis?
- Are you at risk for anaphylactic reaction?
- Are you at risk for anaphylactic shock?
- Are you at risk for anaphylactic reaction with or without anaphylactic shock?
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CT First?

G. P. Duffy Lumbar Puncture in the Presence of Raised J 196
30 Pts (i Progres localiz

“A good quality plain x-ray film is important in the diagnosis of this condition”
Cremasteric reflex absent in 30% of normal individuals.

Cremasteric reflex is absent in 25% with epididymitis.

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**CPK MB?**
Luepker R.V., Apple F.S., Christenson R.H.. et al. Case definitions for acute coronary heart disease in epidemiology and clinical research studies: a statement from the AHA Council on Epidemiology and Prevention; AHA Statistics Committee; World Heart Federation Council on Epidemiology and Prevention; the European Society of Cardiology Working Group on Epidemiology and Prevention; Centers for Disease Control and Prevention; and the National Heart, Lung, and Blood Institute, Circulation 2003 108 (I) 2543-2549
- 12%-39%: Negative MBs with Positive Troponins
ETOH: What’s Your Level?
- Cutoffs: Do not account for individual tolerance and metabolic rates of clearance.
- Alcohol-tolerant individuals: BACs do not correlate with clinical assessments.
- Dose-dependent effect of alcohol on humans, there are far too many variables

“Attempting to relate observed signs of alcohol intoxication or impairment, or to evaluate sobriety, by quantifying blood alcohol levels can be misleading, if not impossible.”
HIGH INITIAL TIDAL VOLUMES IN EMERGENCY DEPARTMENT PATIENTS AT RISK FOR ACUTE RESPIRATORY DISTRESS SYNDROME

• ARDS: Fatal in 40% of cases
• Univ of MD
• 34 Pts: Retrospective ED Cohort: 2009-2011
• ARDS within 48 hours of hospital admission
• Exceeded by a mean of 80 ml or 1.5ml/kg
  – 5 pts were correct at outset
  – 14: Never met

PROPHYLACTIC PROTECTIVE VENTILATION: LOWER TIDAL VOLUMES FOR ALL CRITICALLY ILL PATIENTS? Lellouche, F., et al,
Intens Care Med 39(1):6, January 2013

1. Tidal volumes of 6-8 ml/kg
2. Use of predicted body weight based on height and gender not actual patient weight
3. Predicted body weight can be estimated as:
   Men: 50 + 0.91 (height (cm)-152.4 cm)
   Women: 45.5 + 0.91 (height (cm)-152.4 cm)
4. Static inspiratory pressures of less than 30 cm H2O PLATEAU
5. Initial PEEP of 8 cm H2O or greater (avoid atelectasis with lower TV)
6. FiO2 < 60%
7. Respiratory rates of 20-30 breaths per minute to counteract low tidal volumes

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Age-Adjusted = Age x 10 (above 50 yrs)
Age >75 years + unlikely probability + Age-adjusted D-dimer
Excluded PE: 6.4% to 29.7% No additional false-negatives

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Traditional Clinical Trial: Superiority
“A new treatment is compared with a standard treatment or placebo with the goal of demonstrating that the new treatment has greater efficacy. The null hypothesis for such a trial is that the two treatments have the same effect. Rejection of this hypothesis, implying that the effects are different, is signaled by a statistically significant P value or, alternatively, by a 2-tailed confidence interval that excludes no effect.

SMOKE & MIRRORS

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The incidence of deep venous thrombosis has been reported to be 6%-40%, with symptomatic pulmonary embolism occurring in 2%-13% of patients. Asymptomatic pulmonary embolism is said to occur in up to one third of patients with SVT based on lung scans.
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Systematic review
Safety of proparacaine and tetracaine for corneal abrasions
— 2 DBRCT ED (149 Pts)
1: 33 Pts Tx with 0.05% proparacaine v. placebo: Improved pain
2: 119 Pts Tx with 0.5% tetracaine v. placebo: No diff in pain scores
Pt-rated effectiveness
— 4 in Photorefractive Keratectomy (141 Pts)
6 studies: No diff in wound healing or complications; 1 week
IMPACT OF COMMON CRYSTALLOID SOLUTIONS ON RESUSCITATION MARKERS FOLLOWING CLASS I HEMORRHAGE: A RANDOMIZED CONTROL TRIAL


- 157 Pts: Prospective RCT
- Class 1 hemorrhage: <15% of blood volume (500 ml blood loss)
- 3 arms: 2L NS v. 2L LR v. Controls
- Sampling: Base deficit and Lactate
  - Post donation: All groups = Lactate 1.05-1.10
  - Post intervention: Mean Lactate: 1.54; 1.0; 1.36 (no IVF)
  - Base Deficit: NS 10x that of LR and 5x that of no IVF
- pH was lower with NS (7.36 (no fluid) vs. 7.32 vs. 7.34 (LR)

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THE EVALUATION AND MANAGEMENT OF ADULT INTRACEREBRAL HEMORRHAGE


“Recently, a phase III randomized controlled trial (INTERACT2) was published comparing early aggressive SBP goal of < 140 mm Hg versus conservative SBP control < 180 mm Hg. Results of this study suggested that aggressive SBP control led to a 13% reduction in poor outcome (defined as modified Rankin Scale 3–6) and a trend toward a decrease in hematoma growth, although both of these outcomes did not reach statistical significance”
Lowering the blood pressure (BP) reduces hematoma expansion but increases the risk of brain tissue ischemia. A target systolic BP of 140 mmHg is probably safe when the presenting systolic BP is 150-220 mmHg.

Anderson Interact 2: “In patients with intracerebral hemorrhage, intensive lowering of blood pressure did not result in a significant reduction in the rate of the primary outcome of death or severe disability.”

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- Prospective, observational study that included 1,398 acute ischemic stroke patients who received IV thrombolysis and underwent neurovascular imaging
- Multicenter study, 3.0% of patients had unruptured intracranial aneurysms. There was only one case of symptomatic intracranial hemorrhage and it was not due to aneurysmal rupture. The in-hospital mortality rate was 2.4%. Favorable functional outcomes occurred in 50%. In the comprehensive meta-analysis of 120 patients with aneurysms treated with thrombolysis, symptomatic hemorrhage occurred in 6.7%, and the relative risk in these patients was not different from patients without intracranial aneurysms.
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- Hyperkalemia in 43 patients, acute kidney injury in 69 pts
- Overall mean index serum potassium level was 5.8mEq/L
- First drug to be administered for hyperkalemia in 60.3%
- Avg time of 8.45 hours from the start of treatment, the mean first serum potassium was 4.87mEq/L
- 10 cases of new-onset hypernatremia, 31 cases of new-onset hypokalemia, 2 cases of new-onset bowel necrosis, 25 cases of nausea or vomiting, and 6 cases of hypoglycemia
Wiener, R.S., et al. TIME TRENDS IN PULMONARY EMBOLISM IN THE UNITED STATES: EVIDENCE OF OVERDIAGNOSIS, Arch Intern Med 171(9):831, May 9, 2011

- Introduction of CTPA 1998
- Incidence, Mortality, Complications
  - 1993-2006
  - 1993-1998: No change in incidence
    - 58.8-62.3 per 100,000 adults
    - 81% increase after (112.3 per 100,000)
  - 8% decrease in mortality v. 3%
  - PE case fatality rate decrease: 8% v. 36%
- Change in anticoagulation complications
  - 0 v. 71%


- CTPA False + rate of up to 42% of those with low pre-test probability
- Anticoagulation: 7% annual risk of major bleeding
- U.S. and Ireland
- Retrospective review: Rate of Overdiagnosis of PE with CTPA
  - 174 CTPA + for PE. Blinded review by “Chest Radiologists”
- Outcomes: Rate of Discordance between initial interpretation and the Expert Interpretation
  - 167 (61.5%): Multiple PEs (38.5%): Solitary PE
  - Results: 45/174 were incorrect: Discordance Rate: 25.9%
  - 46.2% of solitary PEs Dx and 13.1% of multiple PEs
  - Segmental: 26.8%, Subsegmental: 59.4%
  - Lower Lob, Solitary, Subsegmental: 66.7%
- Causes: 24: Motion artifact, 10: Beam hardening artifact, 8: Poor contrast opacification
- Conclusions: Avoid testing low risk populations and Improve CT quality
- Is there a bias toward Dx of PE by Radiologists? Same bias toward ordering by clinicians.


- 560 Pts hospitalized for first time syncope
- Discharged patients (1,867) were excluded
- Dx: High Pre-test probability (simplified Wells) and/or a + D-dimer and + Imaging.
- Ruled out in 330 (58.9%) based on Low Pre-test Probability and Negative D-dimer
- Dx of PE: 97 of the remaining 230 Pts: 42.2% of those imaged and 17.3% of those admitted and 3.7% of total group
- 205 (25.4%) of Pts with no other cause of syncope and 45/355 (12.7%) with a possible cause
The “evidence” for utility of anticoagulants was first reported in a study published in 1960, involving 35 patients with clinical signs felt to represent severe PE. Despite inconclusive findings in this small and methodologically flawed study, it has remained the “evidence base” for the widely held belief that anticoagulation is the standard of care for treating PE.

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Summary of the 2012 IDSA Guidelines
< 3 yrs: No work up: Rheumatic Fever and streptococcal pharyngitis are rare in this age group
Older Children: Cx is recommended when RAT is Negative
Adults: Cx not required in Adults with a negative RAT (Rheumatic fever exceptionally rare)
Asymptomatic Household Contacts: Testing/Tx not recommended
10-Day course of PCN or Amoxicillin is recommended
Centor & McIsaac


Tonsillar exudates
Tender anterior cervical adenopathy
History of fever
Absence of cough

55.7% likely to have Strep with 4/4
2.5% likelihood 0/4
6%-6.9% likelihood 1/4


Scoring system: 1 point for each +1 under 14 yrs and minus 1 over 44 years.
1-4: Frequency of Pharyngitis 2.5%, 5%, 11%, 28% and 53%

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CO2/Bicarb

• AG
• CO2
• Lactate

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