Emergency Medicine
Current Awareness Newsletter

May 2016
Outreach

Your Outreach Librarian can help facilitate evidence-based practice for all ED members of staff, as well as assisting with academic study and research. We can help with literature searching, obtaining journal articles and books, and setting up individual current awareness alerts.

Literature Searching

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Critical Appraisal Training

We also offer one-to-one or small group training in literature searching, accessing electronic journals, and critical appraisal/Statistics. These are essential courses that teach how to interpret clinical papers.

For more information, email: katie.barnard@uhbristol.nhs.uk

Books

Books can be searched for using SWIMS our online catalogue at www.swims.nhs.uk. Books and journals that are not available on site or electronically may be requested from other locations. Please email requests to: library@uhbristol.nhs.uk
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1:  Tables of Contents from May’s Emergency Medicine journals

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Tables of Contents from Emergency Medicine journals

If you require full articles please email: library@uhbristol.nhs.uk

Emergency Medicine Journal
May 2016, Volume 33, Issue 5

Annals of Emergency Medicine
May 2016, Volume 67, Issue 5

Academic Emergency Medicine
May 2016, Volume 23, Issue 5

European Journal of Emergency Medicine
June 2016, Volume 23, Issue 3

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New NICE Guidance

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NG46   Controlled drugs: safe use and management
QS2    Updated Stroke in adults

New activity in UpToDate

www.uptodate.com

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Adverse outcomes with lack of follow-up following emergency department visit for biliary colic (April 2016)

Proper follow-up of patients being discharged from the emergency department following an episode of symptomatic gallstones is important to avoid adverse outcomes. This was examined in a study of more than 11,000 Texas Medicare patients age 66 and older with symptomatic gallstones who were discharged from the emergency department without undergoing cholecystectomy [9]. A quarter of the patients did not see a physician in follow-up. Subsequent emergency hospitalization was required in 78 percent of those patients (compared with 8 percent of those who saw a surgeon and 15 percent of those who saw a physician other than a surgeon). Of the patients with biliary colic, 17 percent required emergency cholecystectomy, with a complication rate of 41 percent (compared with a 19 percent complication rate for elective cholecystectomy). This study reinforces the importance of appropriate follow-up and management for patients with symptomatic gallstones. (See "Uncomplicated gallstone disease in adults", section on 'Cholecystectomy'.)

Simplified approach to acetylcysteine infusion for acetaminophen poisoning (April 2016)

The treatment of acetaminophen poisoning with acetylcysteine is sometimes complicated by nonallergic anaphylactic reactions (NAARs). The results of a large retrospective study, in addition to recent clinical experience, suggest that these reactions can be reduced by using a two-bag regimen instead of the traditional three-bag regimen described in the manufacturer's package insert and most dosing references. In the study, NAARs occurred in 10 percent of the 389 patients treated with the standard regimen versus 4.3 percent of the 210 patients treated with a modified two-bag regimen [40]. In both regimens, acetylcysteine was infused over 20 hours. While further study is
needed to ensure the safety and effectiveness of this regimen, we believe this is a reasonable approach to treatment in adults and older adolescents with acetaminophen poisoning. (See "Acetaminophen (paracetamol) poisoning in adults: Treatment", section on 'Simplified 20 hour IV protocol'.)

Management of midshaft clavicle fractures (April 2016)

Debate continues about the best treatment approach for displaced midshaft clavicle fractures. A recent meta-analysis of 15 randomized trials found no clinically significant difference in outcome among surgically versus conservatively treated patients, with similar complication rates and similar needs for additional surgery [43]. Although the secondary surgery rates were similar in the operative and nonoperative groups, secondary surgery for complications following nonoperative management (usually nonunion) are more complex and accompanied by higher complication rates than secondary surgery to remove hardware. In addition, secondary surgery is often performed longer than 12 months after the initial injury, beyond the follow-up period for many studies. Available studies remain limited with a high risk of potential bias. While we recommend orthopedic referral for displaced midshaft clavicle fractures, decisions about treatment must be individualized. (See "Clavicle fractures", section on 'Indications for orthopedic referral'.)

Quick Exercise

Heterogeneity

Heterogeneity is the extent to which studies brought together in a systematic review demonstrate variation across a range of key variables.

Match the different types of heterogeneity:

1. Statistical heterogeneity (conventionally just known as 'heterogeneity')
2. Methodological heterogeneity
3. Clinical heterogeneity

A. Variability in the participants, interventions and outcomes studied
B. Variability in study design and risk of bias
C. Variability in the intervention effects being evaluated in the different studies
Current Awareness database articles

If you require full articles please email: library@uhbristol.nhs.uk

Title: Direct Versus Video Laryngoscopy Using the C-MAC for Tracheal Intubation in the Emergency Department, a Randomized Controlled Trial.

Citation: Academic emergency medicine : official journal of the Society for Academic Emergency Medicine, Apr 2016, vol. 23, no. 4, p. 433-439, 1553-2712 (April 2016)

Author(s): Driver, Brian E, Prekker, Matthew E, Moore, Johanna C, Schick, Alexandra L, Reardon, Robert F, Miner, James R

Abstract: Direct laryngoscopy (DL) has long been the most common approach for emergency endotracheal intubation, although the use of video laryngoscopy (VL) is becoming more widespread. Current observational data suggest that VL has higher first-pass success, although randomized trials are lacking. The objective was to compare first-pass success in patients undergoing emergency intubation with DL or VL using a C-MAC device. This was an open-label, prospective, randomized, controlled trial in an academic emergency department of patients undergoing emergency intubation with a plan of DL for the first attempt. Patients were randomly assigned in a 1:1 ratio to either DL or VL using a C-MAC device for the first intubation attempt. The primary outcome was first-pass success. Secondary outcomes included time to intubation, development of aspiration pneumonia, and hospital length of stay (LOS). The study was registered at Clinicaltrials.gov, number NCT01710891. A total of 198 patients were enrolled and intubated with either DL (n = 95) or VL (n = 103). First-attempt success was 86 and 92% for the DL and VL groups, respectively (difference = -5.9%, 95% confidence interval = -14.5% to 2.7%, p = 0.18). Time to intubation, rates of aspiration pneumonia, and hospital LOS were not different between the two groups. In patients undergoing emergency intubation in whom DL was planned for the first attempt, we did not detect a difference between VL or DL using the C-MAC device in first-pass success, duration of intubation attempt, aspiration pneumonia, or hospital LOS. © 2016 by the Society for Academic Emergency Medicine.

Title: Implementation of hospital-wide reform at improving access and flow: Impact on time to antibiotics in the emergency department.

Citation: Emergency medicine Australasia : EMA, Apr 2016, vol. 28, no. 2, p. 133-137, 1742-6723 (April 2016)

Author(s): Roman, Cristina P, Poole, Susan G, Dooley, Michael J, Smit, De Villiers, Mitra, Biswadev

Abstract: ED overcrowding has been associated with increased mortality, morbidity and delays to essential treatment. It was hypothesised that hospital-wide reforms designed to improve patient access and flow, in addition to improving ED overcrowding, would impact on clinically important processes within the ED, such as timely delivery of antibiotics. A single pre-implementation and post-implementation prospective cohort study was conducted prior to and after a hospital-wide reform (Timely Quality Care (TQC)). Among patients who had intravenous antibiotics prescribed in the ED, data were prospectively collected on times of presentation, prescription and administration of antibiotics. Demographics and discharge diagnoses were retrospectively extracted. There were 380 cases included with 179 cases prior to introduction of the TQC model and 201 cases after its
introduction. Time from presentation to administration of antibiotics improved significantly from 192 (99-320) min to 142 (81-209) min (P < 0.01). The time from presentation to prescription pre-TQC and post-TQC was 120 (51-230) min and 92 (49-153) min, respectively (P < 0.01). The times from prescription to administration pre-TQC and post-TQC were 43 (20-83) min and 34 (15-66) min, respectively (P = 0.03). Following implementation of hospital-wide reform directed at mitigating ED overcrowding through improved access and flow, times to administration of antibiotics were significantly reduced. These findings suggest that improved quality of care in this area may be achieved with processes aimed at improved hospital access and flow. Ongoing evaluation and vigilance is necessary to ensure sustainability and drive further improvements. © 2015 Australasian College for Emergency Medicine and Australasian Society for Emergency Medicine.

Title: The Long-Term Cost to the UK NHS and Social Services of Different Durations of IV Thiamine (Vitamin B1) for Chronic Alcohol Misusers with Symptoms of Wernicke's Encephalopathy Presenting at the Emergency Department.


Author(s): Wilson, Edward C F, Stanley, George, Mirza, Zulfiquar

Abstract: Wernicke's encephalopathy (WE) is an acute neuropsychiatric condition caused by depleted intracellular thiamine, most commonly arising in chronic alcohol misusers, who may present to emergency departments (EDs) for a variety of reasons. Guidelines recommend a minimum 5-day course of intravenous (IV) thiamine in at-risk patients unless WE can be excluded. To estimate the cost impact on the UK public sector (NHS and social services) of a 5-day course of IV thiamine, vs a 2- and 10-day course, in harmful or dependent drinkers presenting to EDs. A Markov chain model compared expected prognosis of patients under alternative admission strategies over 35 years. Model inputs were derived from a prospective cohort study, expert opinion via structured elicitation and NHS costing databases. Costs (2012/2013 price year) were discounted at 3.5 %. Increasing treatment from 2 to 5 days increased acute care costs but reduced the probability of disease progression and thus reduced the expected net costs by GBP87,000 per patient (95 % confidence interval GBP19,300 to GBP172,300) over 35 years. Increasing length of stay to optimize IV thiamine replacement will place additional strain on acute care but has potential UK public sector cost savings. Social services and the NHS should explore collaborations to realise both the health benefits to patients and savings to the public purse.

Title: CURB-65 Performance Among Admitted and Discharged Emergency Department Patients With Community-acquired Pneumonia.

Citation: Academic emergency medicine : official journal of the Society for Academic Emergency Medicine, Apr 2016, vol. 23, no. 4, p. 400-405, 1553-2712 (April 2016)

Author(s): Sharp, Adam L, Jones, Jason P, Wu, Ivan, Huynh, Dan, Kocher, Keith E, Shah, Nirav R, Gould, Michael K

Abstract: Pneumonia severity tools were primarily developed in cohorts of hospitalized patients, limiting their applicability to the emergency department (ED). We describe current community ED admission practices and examine the accuracy of the CURB-65 to predict 30-day mortality for patients, either discharged or admitted with community-acquired pneumonia (CAP). A retrospective,
observational study of adult CAP encounters in 14 community EDs within an integrated healthcare system. We calculated CURB-65 scores for all encounters and described the use of hospitalization, stratified by each score (0-5). We then used each score as a cutoff to calculate sensitivity, specificity, positive predictive value, negative predictive value (NPV), positive likelihood ratios, and negative likelihood ratios for predicting 30-day mortality. The sample included 21,183 ED encounters for CAP (7,952 discharged and 13,231 admitted). The C-statistic describing the accuracy of CURB-65 for predicting 30-day mortality in the full sample was 0.761 (95% confidence interval [CI], 0.747-0.774). The C-statistic was 0.864 (95% CI, 0.821-0.906) among patients discharged from the ED compared with 0.689 (95% CI, 0.672-0.705) among patients who were admitted. Among all ED encounters a CURB-65 threshold of ≥1 was 92.8% sensitive and 38.0% specific for predicting mortality, with a 99.9% NPV. Among all encounters, 62.5% were admitted, including 36.2% of those at lowest risk (CURB-65 = 0). CURB-65 had very good accuracy for predicting 30-day mortality among patients discharged from the ED. This severity tool may help ED providers risk stratify patients to assist with disposition decisions and identify unwarranted variation in patient care. © 2016 by the Society for Academic Emergency Medicine.

Title: Do physiological scoring and a novel point of care metabolic screen predict 48-h outcome in admissions from the emergency department resuscitation area?

Citation: European journal of emergency medicine : official journal of the European Society for Emergency Medicine, Apr 2016, vol. 23, no. 2, p. 130-136, 1473-5695 (April 2016)

Author(s): Jafar, Anisa J N, Junghans, Cornelia, Kwok, Chun Shing, Hymers, Chrissie, Monk, Kerri J, Gold, Ed, Harris, Tim R

Abstract: We aimed to compare the performance of a widely used physiological score [Modified Early Warning Score (MEWS)] and a novel metabolic score (derived from a blood gas) in predicting outcome in emergency department patients. We carried out a prospective observational study using a convenience sample of 200 patients presenting to the resuscitation area of an inner-city teaching hospital over 4 months. We looked primarily at whether either score predicted new organ failure at 48 h. Our secondary outcome measures were escalation of care and mortality at 48 h. In univariate analysis, MEWS and the metabolic score predicted 48-h organ failure [odds ratio (OR) 1.19, 95% confidence interval (CI) 1.04-1.35, P=0.009, and OR 1.34, 95% CI 1.015-1.62, P<0.001, respectively]. Both MEWS and the metabolic score predicted 48-h death (OR 1.32, 95% CI 1.02-1.71, P=0.03, and OR 1.56, 95% CI 1.18-2.06, P=0.002, respectively) in univariate analysis. Neither predicted 48-h escalation of care. The metabolic score remained statistically significant at predicting organ failure or death after controlling for MEWS parameters (OR 1.35, 95% CI 1.13-1.62, P=0.001, and OR 1.74, 95% CI 1.13-2.69, P=0.01, respectively). In contrast, MEWS was no longer associated with these outcomes; however, our study has small participant numbers. This pilot data suggest that a blood gas-derived metabolic score on emergency department arrival may be superior to MEWS at predicting organ failure and death at 48 h.

Title: STONE PLUS: Evaluation of Emergency Department Patients With Suspected Renal Colic, Using a Clinical Prediction Tool Combined With Point-of-Care Limited Ultrasonography.

Citation: Annals of emergency medicine, Apr 2016, vol. 67, no. 4, p. 439-448, 1097-6760 (April 2016)

Author(s): Daniels, Brock, Gross, Cary P, Molinaro, Annette, Singh, Dinesh, Luty, Seth, Jessey, Richelle, Moore, Christopher L
Abstract: We determine whether renal point-of-care limited ultrasonography (PLUS) used in conjunction with the Sex, Timing, Origin, Nausea, Erythrocytes (STONE) clinical prediction score can aid identification of emergency department (ED) patients with uncomplicated ureteral stone or need for urologic intervention. This was a prospective observational study of adult ED patients undergoing computed tomography (CT) scan for suspected ureteral stone. The previously validated STONE score classifies patients into risk categories of low (≈10%), moderate (≈50%), or high (≈90%) for symptomatic stone. Renal PLUS assessed for presence of hydronephrosis before CT scanning. The primary outcomes of symptomatic ureteral stone or acutely important alternative finding were abstracted from CT reports. The secondary outcome, urologic intervention, was assessed by 90-day follow-up interview and record review. Of 835 enrolled patients, ureteral stone was identified in 53%, whereas 6.5% had an acutely important alternative finding on CT. Renal PLUS modestly increased sensitivity for symptomatic stone among low and moderate STONE score categories. Moderate or greater hydronephrosis improved specificity from 67% (62% to 72%) to 98% (93% to 99%) and 42% (37% to 47%) to 92% (86% to 95%) in low- and moderate-risk patients, with likelihood ratios of 22 (95% CI, 4.2-111) and 4.9 (95% CI, 2.9-8.3), respectively. Test characteristics among high-risk patients were unchanged by renal PLUS. For urologic intervention, any hydronephrosis was 66% sensitive (57% to 74%), whereas moderate or greater hydronephrosis was 86% specific overall (83% to 89%) and 81% (69% to 90%) sensitive and 79% 95% CI, (73-84) specific among patients with the highest likelihood of symptomatic stone. Hydronephrosis on renal PLUS modestly improved risk stratification in low- and moderate-risk STONE score patients. The presence or absence of hydronephrosis among high-risk patients did not significantly alter likelihood of symptomatic stone but may aid in identifying patients more likely to require urologic intervention. Copyright © 2016 American College of Emergency Physicians. Published by Elsevier Inc. All rights reserved.

Title: Point-of-care troponin T is inferior to high-sensitivity troponin T for ruling out acute myocardial infarction in the emergency department.

Citation: European journal of emergency medicine : official journal of the European Society for Emergency Medicine, Apr 2016, vol. 23, no. 2, p. 95-101, 1473-5695 (April 2016)

Author(s): Ter Avest, Ewoud, Visser, Anniek, Reitsma, Bram, Breedveld, Rob, Wolthuis, Albert

Abstract: Point-of-care testing (POCT) cardiac troponin (cTn) measurements are being used increasingly, despite the fact that evidence on the safety of their use is outdated, not taking into account current ‘gold standard’ high-sensitivity cardiac troponin (hs-cTn) assays. In the present study, we aimed to compare the analytical and diagnostic performance of the AQT90-flex POCT cTnT assay (which is the POCT assay with the lowest reported 99th percentile cutoff currently available) with the laboratory-based Roche Modular E170 hs-cTnT assay. During a 4-month prospective observational cohort study, laboratory-based hs-cTnT and POCT cTn were measured simultaneously in 261 undifferentiated chest-pain patients presenting to the emergency department (ED) of the Medical Centre Leeuwarden to determine the diagnostic accuracy of both assays in predicting acute myocardial infarction (AMI) at presentation. The POCT cTn assay had a lower sensitivity [68 (49-82)] vs. 91 (75-98)] and a lower negative predictive value [95 (91-97) vs. 98 (95-100)] for the prediction of AMI at presentation compared with the hs-cTnT assay. Furthermore, in three patients, the POCT cTnT assay yielded unexpectedly high results, whereas hs-cTnT results were negative. None of these patients had an AMI, and no possible explanation could be found. The AQT90-flex POCT cTnT assay is not yet sensitive and reliable enough to be used to exclude AMI in the ED with a single blood draw at the time of presentation in the ED, and therefore, may have limited applicability in the ED setting.
Title: A Clinical Decision Rule to Identify Emergency Department Patients at Low Risk for Acute Coronary Syndrome Who Do Not Need Objective Coronary Artery Disease Testing: The No Objective Testing Rule.

Citation: Annals of emergency medicine, Apr 2016, vol. 67, no. 4, p. 478, 1097-6760 (April 2016)

Author(s): Greenslade, Jaimi H, Parsonage, William, Than, Martin, Scott, Adam, Aldous, Sally, Pickering, John W, Hammett, Christopher J, Cullen, Louise

Abstract: We derive a clinical decision rule for ongoing investigation of patients who present to the emergency department (ED) with chest pain. The rule identifies patients who are at low risk of acute coronary syndrome and could be discharged without further cardiac testing. This was a prospective observational study of 2,396 patients who presented to 2 EDs with chest pain suggestive of acute coronary syndrome and had normal troponin and ECG results 2 hours after presentation. Research nurses collected clinical data on presentation, and the primary endpoint was diagnosis of acute coronary syndrome within 30 days of presentation to the ED. Logistic regression analyses were conducted on 50 bootstrapped samples to identify predictors of acute coronary syndrome. A rule was derived and diagnostic accuracy statistics were computed. Acute coronary syndrome was diagnosed in 126 (5.3%) patients. Regression analyses identified the following predictors of acute coronary syndrome: cardiac risk factors, age, sex, previous myocardial infarction, or coronary artery disease and nitrate use. A rule was derived that identified 753 low-risk patients (31.4%), with sensitivity 97.6% (95% confidence interval [CI] 93.2% to 99.5%), negative predictive value 99.6% (95% CI 98.8% to 99.9%), specificity 33.0% (95% CI 31.1% to 35.0%), and positive predictive value 7.5% (95% CI 6.3% to 8.9%) for acute coronary syndrome. This was referred to as the no objective testing rule. We have derived a clinical decision rule for chest pain patients with negative early cardiac biomarker and ECG testing results that identifies 31% at low risk and who may not require objective testing for coronary artery disease. A prospective trial is required to confirm these findings. Copyright © 2015 American College of Emergency Physicians. Published by Elsevier Inc. All rights reserved.

Title: Patient characteristics associated with longer emergency department stay: a rapid review.

Citation: Emergency medicine journal : EMJ, Mar 2016, vol. 33, no. 3, p. 194-199, 1472-0213 (March 2016)

Author(s): Kreindler, Sara A, Cui, Yang, Metge, Colleen J, Raynard, Melissa

Abstract: Prolonged emergency department (ED) stays make a disproportionate contribution to ED overcrowding, but the factors associated with longer stays have not been systematically reviewed. To identify the patient characteristics associated with ED length of stay (LOS) and ascertain whether a predictive model existed. This rapid systematic review included published, English-language studies that assessed at least one patient-level predictor of ED LOS (defined as a continuous or dichotomous variable) in an adult or mixed adult/paediatric population within an Organization for Economic Cooperation and Development country. Findings were synthesised narratively. We identified 35 relevant studies; most included multiple predictors, but none developed a predictive model. The factors most commonly associated with long ED LOS were need for admission (10 of 10 studies) and older age (which may be a proxy for age-related differences in health condition and severity; 9 of 10), receipt of diagnostic tests or consults (8 of 8) and ambulance arrival (4 of 5). Acuity often showed a bell-shaped relationship with LOS (ie, patients with moderate acuity stayed longest).
Methodological choices made in the interests of rapidity limited the review's comprehensiveness and depth. Despite a sizeable body of literature, the available information is insufficiently precise to inform clinical or service-planning decisions; there is a need for a predictive model, including specific patient complaints. Deeper understanding of the determinants of ED LOS could help to identify patients and/or populations who require special intervention or resources to prevent a protracted stay. Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to http://www.bmj.com/company/products-services/rights-and-licensing/

Full Text:
Available from Highwire Press in *Emergency Medicine Journal*

**Title:** Diagnosing Acute Heart Failure in the Emergency Department: A Systematic Review and Meta-analysis.

**Citation:** Academic emergency medicine : official journal of the Society for Academic Emergency Medicine, Mar 2016, vol. 23, no. 3, p. 223-242, 1553-2712 (March 2016)

**Author(s):** Martindale, Jennifer L, Wakai, Abel, Collins, Sean P, Levy, Phillip D, Diercks, Deborah, Hiestand, Brian C, Fermann, Gregory J, deSouza, Ian, Sinert, Richard

**Abstract:** Acute heart failure (AHF) is one of the most common diagnoses assigned to emergency department (ED) patients who are hospitalized. Despite its high prevalence in the emergency setting, the diagnosis of AHF in ED patients with undifferentiated dyspnea can be challenging. The primary objective of this study was to perform a systematic review and meta-analysis of the operating characteristics of diagnostic elements available to the emergency physician for diagnosing AHF. Secondary objectives were to develop a test-treatment threshold model and to calculate interval likelihood ratios (LRs) for natriuretic peptides (NPs) by pooling patient-level results. PubMed, EMBASE, and selected bibliographies were searched from January 1965 to March 2015 using MeSH terms to address the ability of the following index tests to predict AHF as a cause of dyspnea in adult patients in the ED: history and physical examination, electrocardiogram, chest radiograph (CXR), B-type natriuretic peptide (BNP), N-terminal proB-type natriuretic peptide (NT-proBNP), lung ultrasound (US), bedside echocardiography, and bioimpedance. A diagnosis of AHF based on clinical data combined with objective test results served as the criterion standard diagnosis. Data were analyzed using Meta-DiSc software. Authors of all NP studies were contacted to obtain patient-level data. The Quality Assessment Tool for Diagnostic Accuracy Studies-2 (QUADAS-2) for systematic reviews was utilized to evaluate the quality and applicability of the studies included. Based on the included studies, the prevalence of AHF ranged from 29% to 79%. Index tests with pooled positive LRs ≥ 4 were the auscultation of S3 on physical examination (4.0, 95% confidence interval [CI] = 2.7 to 5.9), pulmonary edema on both CXR (4.8, 95% CI = 3.6 to 6.4) and lung US (7.4, 95% CI = 4.2 to 12.8), and reduced ejection fraction observed on bedside echocardiogram (4.1, 95% CI = 2.4 to 7.2). Tests with low negative LRs were BNP < 100 pg/mL (0.11, 95% CI = 0.07 to 0.16), NT-proBNP < 300 pg/mL (0.09, 95% CI = 0.03 to 0.34), and B-line pattern on lung US LR (0.16, 95% CI = 0.05 to 0.51). Interval LRs of BNP concentrations at the low end of “positive” results as defined by a cutoff of 100 pg/mL were substantially lower (100 to 200 pg/mL; 0.29, 95% CI = 0.23 to 0.38) than those associated with higher BNP concentrations (1000 to 1500 pg/mL; 7.12, 95% CI = 4.53 to 11.18). The interval LR of NT-proBNP concentrations even at very high values (30,000 to 200,000 pg/mL) was 3.30 (95% CI = 2.05 to 5.31). Bedside lung US and echocardiography appear to the most useful tests for affirming the presence of AHF while NPs are valuable in excluding the diagnosis. © 2016 by the Society for Academic Emergency Medicine.
Severity Scores in Emergency Department Patients With Presumed Infection: A Prospective Validation Study.

Citation: Critical care medicine, Mar 2016, vol. 44, no. 3, p. 539-547, 1530-0293 (March 2016)

Author(s): Williams, Julian M, Greenslade, Jaimi H, Chu, Kevin, Brown, Anthony F T, Lipman, Jeffrey

Abstract: The objectives of this study were to 1) validate a number of severity of illness scores in a large cohort of emergency department patients admitted with presumed infection and 2) compare the performance of scores in patient subgroups with increasing mortality: infection without systemic inflammatory response syndrome, sepsis, severe sepsis, and septic shock. Prospective, observational study. Adult emergency department in a metropolitan tertiary, university-affiliated hospital. Emergency department patients admitted with presumed infection. None. Consecutive emergency department patients admitted with presumed infection were identified over 160 weeks in two periods between 2007 and 2011. Clinical and laboratory data sufficient to calculate Mortality in Emergency Department Sepsis score, Acute Physiology and Chronic Health Evaluation II, Simplified Acute Physiology Score II, Sequential Organ Failure Assessment, and the Severe Sepsis Score were entered into a database. Model discrimination was quantified using area under the receiver operating curve. Calibration was assessed using visual plots, Hosmer-Lemeshow statistics, and linear regressions of observed and predicted values. A total of 8,871 patients were enrolled with 30-day mortality of 3.7%. Area under the receiver operating curve values for the entire cohort were: Mortality in Emergency Department Sepsis score of 0.92, Simplified Acute Physiology Score II and Acute Physiology and Chronic Health Evaluation II scores of 0.90, Sequential Organ Failure Assessment score of 0.86, and Severe Sepsis Score of 0.82. Discrimination decreased in subgroups with greater mortality for each score. All scores overestimated mortality, but closest concordance between predicted and observed mortality was seen with Mortality in Emergency Department Sepsis score. The decrease in area under the receiver operating curve seen in subgroups with increasing mortality may explain some variation in results seen in previous validation studies. Scores developed in intensive care settings overestimated mortality in the emergency department. Our results underscore the importance of employing predictive models developed in similar patient populations. The Mortality in Emergency Department Sepsis score outperformed more complex predictive models and would be the most appropriate scoring system for use in similar emergency department populations with a wide spectrum of mortality risk.

Full Text: Available from Ovid in Critical Care Medicine
from previous studies to establish the prevalence of adult alcohol related ED attendances and estimate the costs of clinical management and subsequent health service use. The setting was a large inner city ED in northeast England, UK. Data were collected via (i) retrospective review of hospital records for all ED attendances for four pre-specified weeks in 2010/2011 to identify alcohol related cases along with 12 months of follow-up of the care episode and (ii) prospective 24/7 assessment via breath alcohol concentration testing of patients presenting to the ED in the corresponding weeks in 2012/2013. The prevalence rates of alcohol related attendances were 12% and 15% for the retrospective and prospective cohorts, respectively. Prospectively, the rates ranged widely from 4% to 60% across week days, rising to over 70% at weekends. Younger males attending in the early morning hours at weekends made up the largest proportion of alcohol related attendances. The mean cost per attendance was £249 (SD £1064); the mean total cost for those admitted was £851 (SD £2549). The most common reasons for attending were trauma related injuries followed by psychiatric problems. Alcohol related attendances are a major and avoidable burden on emergency care. However, targeted interventions at weekends and early morning hours could capture the majority of cases and help prevent future re-attendance. Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to http://www.bmj.com/company/products-services/rights-and-licensing/

Full Text:
Available from Highwire Press in Emergency Medicine Journal

Title: Emergency Department Management of Sepsis Patients: A Randomized, Goal-Oriented, Noninvasive Sepsis Trial.

Citation: Annals of emergency medicine, Mar 2016, vol. 67, no. 3, p. 367, 1097-6760 (March 2016)

Author(s): Kuan, Win Sen, Ibrahim, Irwani, Leong, Benjamin S H, Jain, Swati, Lu, Qingshu, Cheung, Yin Bun, Mahadevan, Malcolm

Abstract: The noninvasive cardiac output monitor and passive leg-raising maneuver has been shown to be reasonably accurate in predicting fluid responsiveness in critically ill patients. We examine whether using a noninvasive protocol would result in more rapid lactate clearance after 3 hours in patients with severe sepsis and septic shock in the emergency department. In this open-label randomized controlled trial, 122 adult patients with sepsis and serum lactate concentration of greater than or equal to 3.0 mmol/L were randomized to receive usual care or intravenous fluid bolus administration guided by measurements of change of stroke volume index, using the noninvasive cardiac output monitor after passive leg-raising maneuver. The primary outcome was lactate clearance of more than 20% at 3 hours. Secondary outcomes included mortality, length of hospital and ICU stay, and total hospital cost. Analysis was intention to treat. Similar proportions of patients in the randomized intervention group (70.5%; N=61) versus control group (73.8%; N=61) achieved the primary outcome, with a relative risk of 0.96 (95% confidence interval [CI] 0.77 to 1.19). Secondary outcomes were similar in both groups (P>.05 for all comparisons). Hospital mortality occurred in 6 patients (9.8%) each in the intervention and control groups on or before 28 days (relative risk=1.00; 95% CI 0.34 to 2.93). Among a subgroup of patients with underlying fluid overload states, those in the intervention group tended to receive clinically significantly more intravenous fluids at 3 hours (difference=975 mL; 95% CI -450 to 1,725 mL) and attained better lactate clearance (difference=19.7%; 95% CI -34.6% to 60.2%) compared with the control group, with shorter hospital lengths of stay (difference=4.5 days; 95% CI -9.5 to 2.5 days). Protocol-based fluid resuscitation of patients with severe sepsis and septic shock with the noninvasive cardiac output monitor and passive leg-raising maneuver did not result in better outcomes compared with usual
Future studies to demonstrate the use of the noninvasive protocol-based care in patients with preexisting fluid overload states may be warranted. Copyright © 2015 American College of Emergency Physicians. Published by Elsevier Inc. All rights reserved.

Title: Mortality, admission rates and outpatient use among frequent users of emergency departments: a systematic review.

Citation: Emergency medicine journal : EMJ, Mar 2016, vol. 33, no. 3, p. 230-236, 1472-0213 (March 2016)

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Abstract: This systematic review examines whether frequent emergency department (ED) users experience higher mortality, hospital admissions and outpatient visits than non-frequent ED users. We published an a priori study protocol in PROSPERO. Our search strategy combined terms for 'frequent users' and 'emergency department'. At least two independent reviewers screened, selected, assessed quality and extracted data. Third-party adjudication resolved conflicts. Results were synthesised based on median effect sizes. We searched seven electronic databases with no limits and performed an extensive grey literature search. We included observational analytical studies that focused on adult patients, had a comparison group of non-frequent ED users and reported deaths, admissions and/or outpatient outcomes. The search strategy identified 4004 citations; 374 were screened by full text and 31 cohort and cross-sectional studies were included. Authors used many different definitions to describe frequent users; the overall quality of the included studies was moderate. Across seven studies examining mortality, frequent users had a median 2.2-fold increased odds of mortality compared with non-frequent users. Twenty-eight studies assessing hospital admissions found a median increased odds of admissions per visit at 1.16 and of admissions per patient at 2.58. Ten studies reported outpatient visits with a median 2.65-fold increased risk of having at least one outpatient encounter post-ED visit. Frequent ED users appear to experience higher mortality, hospital admissions and outpatient visits compared with non-frequent users, and may benefit from targeted interventions. Standardised definitions to facilitate comparable research are urgently needed. PROSPERO (CRD42013005855). Published by the BMJ Publishing Group Limited. For permission to use (where not already granted under a licence) please go to http://www.bmj.com/company/products-services/rights-and-licensing/


Title: Randomized Controlled Trial of Humidified High-Flow Nasal Oxygen for Acute Respiratory Distress in the Emergency Department: The HOT-ER Study.

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Abstract: Humidified high-flow nasal cannula (HFNC) is a novel method of oxygen delivery with increasing use in emergency departments and intensive care settings despite little evidence showing benefit over standard oxygen delivery methods (standard O2). The aim of this study was to determine whether HFNC compared with standard O2 given to subjects in acute respiratory distress
would reduce the need for noninvasive ventilation or invasive ventilation. This was a pragmatic open randomized controlled trial in adult subjects with hypoxia and tachypnea presenting to a tertiary academic hospital emergency department. The primary outcome was the need for mechanical ventilation in the emergency department. We screened 1,287 patients, 322 met entry criteria and 19 were excluded from analysis. Of these, 165 randomized to HFNC and 138 to standard O2 were analyzed. Baseline characteristics were similar. In the HFNC group, 3.6% (95% CI 1.5-7.9%) versus 7.2% (95% CI 3.8-13%) in the standard O2 group required mechanical ventilation in the emergency department (P = .16), and 5.5% (95% CI 2.8-10.2%) in HFNC versus 11.6% (95% CI 7.2-18.1%) in the standard O2 group required mechanical ventilation within 24 h of admission (P = .053). There was no difference in mortality or stay. Adverse effects were infrequent; however, fewer subjects in the HFNC group had a fall in Glasgow coma score due to CO2 retention, 0% (95% CI 0-3%) versus 2.2% (95% CI 0.4-6%). One in 12 subjects did not tolerate HFNC. HFNC was not shown to reduce the need for mechanical ventilation in the emergency department for subjects with acute respiratory distress compared with standard O2, although it was safe and may reduce the need for escalation of oxygen therapy within the first 24 h of admission. Copyright © 2016 by Daedalus Enterprises.
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