December 2011 Delirium Bibliography


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BACKGROUND: Delirium is a common neurologic complication after cardiac surgery, and may be associated with increased morbidity and mortality. Research has focused on potential causes of delirium, with little attention to its sequelae.

METHODS: Perioperative data were collected prospectively on all isolated cases of coronary artery bypass grafting (CABG) performed from 1995 to 2006 at a single center. The definition of delirium used in the study was that of the Society of Thoracic Surgeons. Characteristics of patients who became delirious postoperatively were compared with those of patients who did not. The outcomes of interest were long-term all-cause mortality, hospital admission for stroke, and in-hospital mortality, examined in all three cases through multivariate analysis.

RESULTS: Of 8,474 patients who underwent CABG within the defined period, 496 (5.8%) developed postoperative delirium and 229 (2.7%) died while in the hospital. At baseline, patients who developed delirium were more likely to be older and to have a greater burden of comorbid illness. Delirium was an independent predictor of perioperative stroke (odds ratio [OR]; 1.96; 95% confidence interval [CI], 1.22 to 3.16), but was not associated with in-hospital mortality (OR, 0.81; 95% CI, 0.49 to 1.34). Delirious patients had a median postoperative hospital stay of 12 days (interquartile range [IQR], 8 to 21 days) versus 6 days (IQR, 5 to 8 days) for those who were non-delirious. Delirium was identified as an independent predictor of all-cause mortality (hazard ratio [HR], 1.52; 95% CI, 1.29 to 1.78) and hospitalization for stroke (HR, 1.54; 95% CI, 1.10 to 2.17).

CONCLUSIONS: There was an association between delirium and adverse outcomes after CABG that persisted beyond the immediate perioperative period. Patients with delirium after CABG appear to have an increased long-term risk of death and stroke. The advancing age and rising rates of delirium in the CABG population make it necessary to address the prevention and management of delirium in this population.

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BACKGROUND: Delirium is a serious and frequent psycho-organic disorder in critically ill patients. Reported incidence rates vary to a large extent and there is a paucity of data concerning delirium incidence rates for the different subgroups of intensive care unit (ICU) patients and their short-term health consequences. OBJECTIVES: To determine the overall incidence and duration of delirium, per delirium subtype and per ICU admission diagnosis. Furthermore, we determined the short-term consequences of delirium. DESIGN: Prospective observational study. PARTICIPANTS AND SETTING: All adult consecutive patients admitted in one year to the ICU of a university medical centre. METHODS: Delirium was assessed using the Confusion Assessment Method-ICU three times a day. Delirium was divided in three subtypes: hyperactive, hypoactive and mixed subtype. As measures for short-term consequences we registered duration of mechanical ventilation, reintubations, incidence of unplanned removal of tubes, length of (ICU) stay and in-hospital mortality. RESULTS: 1613 patients were included of which 411 (26%) developed delirium. The incidence rate in the neurosurgical (10%) and cardiac surgery group (12%) was the lowest, incidence was intermediate in medical patients (40%), while patients with a neurological diagnosis had the highest incidence (64%). The mixed subtype occurred the most (53%), while the hyperactive subtype the least (10%). The median delirium duration was two days [IQR 1-7], but significantly longer (P<0.0001) for the mixed subtype. More delirious patients were mechanically ventilated and for a longer period of time, were more likely to remove their tube and catheters, stayed in the ICU and hospital for a longer time, and had a six times higher chance of dying compared to non-delirium ICU patients, even after adjusting for their severity of illness score. Delirium was associated with an extended duration of mechanical ventilation, length of stay in the ICU and in-hospital, as well as with in-hospital mortality. CONCLUSIONS: The delirium incidence in a mixed ICU population is high and differs importantly between ICU admission diagnoses and the subtypes of delirium. Patients with delirium had a significantly higher incidence of short-term health problems, independent from their severity of illness and this was most pronounced in the mixed subtype of delirium. Delirium is significantly associated with worse short-term outcome.

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OBJECTIVES: Based on a multifactorial model of delirium, to compare the types and magnitude of pre- and intraoperative predisposing factors for incident delirium in a stratified sample of individuals with and without preoperative dementia undergoing acute hip fracture repair.
DESIGN: Prospective cohort study.
SETTING: Academic medical center.
PARTICIPANTS: Four hundred twenty-five individuals with acute hip fracture and without delirium (mean age 80.2 ± 6.8, 73.2% female, 33.1% with probable dementia) admitted to a multidisciplinary hip fracture repair service.
MEASUREMENTS: A research nurse assessed each participant for delirium based on the Confusion Assessment Method (CAM) before study enrollment and from the second postoperative day until hospital discharge.
RESULTS: The incidence of delirium was higher in the group with probable dementia (56%) than in the group without dementia (26%) (P < .001). In the group without dementia (n = 284), age (odds ratio (OR) = 1.07, 95% CI = 1.02-1.13), male sex (OR = 2.81, 95% CI = 1.40-5.64), body mass index (OR = 0.92, 95% CI = 0.86-0.99), number of medical comorbidities (OR = 1.15, 95% CI = 1.01-1.32), and duration of surgery longer than 2 hours (OR = 2.53, 95% CI = 1.20-4.88) were independently associated with postoperative delirium. In the group with probable dementia, only the lag time from the emergency department to operating room was significantly associated (OR = 2.83, 95% CI = 1.24-2.25) with delirium.
CONCLUSION: Preoperative determination of dementia status is important for risk stratification for incident delirium after acute hip fracture repair surgery because types and magnitude of predisposing risk factors for postoperative delirium substantially differs based on preoperative dementia status.

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We conducted a retrospective study of 291 patients aged 75 years or older who were admitted to the emergency department and who underwent a computed tomography (CT) brain scan. Our aims were to assess the reasons for requesting an urgent CT brain scan, to record the diagnostic yield of cerebral imaging, and to seek out predictive factors of an intracranial pathology. The three main reasons for requesting an urgent CT brain scan were the presence of localizing signs (60%), delirium (21%), and disorders of consciousness with a Glasgow Coma Score of less than 14 (14.5%). In our elderly population, we found no typical patient profile when concerned with the risk of having an intracranial pathology. The multivariate logistic regression found that predictive factors for intracranial bleeding were localizing signs, disorders of consciousness with a Glasgow Coma Score of less than 14, head trauma, sudden-onset headache, or headache associated with at least two episodes of vomiting.

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Fibromyalgia is a common and disabling disease, and treatment can be challenging. More recently, pregabalin has been approved to treat pain associated with fibromyalgia. However, it can have serious neuropsychiatric sequelae. Several case reports have documented delirium secondary to pregabalin, usually in older patients with multiple medical comorbidities and concurrent medications. We describe a case of delirium in a young patient without significant medical problems and in the absence of other potentially causal medications. In this case, pregabalin appears to be the single causal etiology for delirium. We recommend clinicians to consider the causal role it may play in any patient who presents with delirium.

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With the progressive aging of the population surgical candidates have more comorbidities resulting in a higher risk to develop postoperative complications. One of the most frequent postoperative complications in the elderly is acute confusional state or delirium, which may have devastating consequences: higher mortality, and risk of medical complications during admission and, a higher risk of functional decline, institutionalization, and cognitive impairment at discharge. For all these reasons and with the aim of optimising surgical procedures, it is essential to identify patients at risk of delirium in order to take appropriate preventive action and provide early treatment. In the present article we review the current evidence on the management of postoperative delirium in the elderly.

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The aim of this study was to combine knowledge about how clinicians learn with a review of educational interventions to prevent delirium in hospitalised patients. The primary aim was to evaluate the effectiveness of approaches to delirium education. A detailed search of educational and medical databases was undertaken. The type of intervention used was classified according to the PRECEDE model of Green and colleagues, using factors relevant to behaviour change in health promotion. The effectiveness of the intervention was determined by assessing changes in staff performance and patient outcomes. Nineteen studies of variable design and quality were identified. Studies using predisposing, enabling and reinforcing strategies together were more often effective in producing changes in staff behaviour and patient outcomes. Education and guidelines used together or in combination have little effect. When strategies to enable and reinforce changes in clinical practice are used together with education sessions, outcomes for patients are more positive.


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Aim: Psychiatric disorders are easily underestimated and under-recognized by physicians. The aim of the present study was to investigate the change in accuracy of recognizing psychiatric symptoms.

Methods: Consecutive 5-year consultation-liaison data were collected and patients with one of the five common psychiatric diagnoses, including depressive disorders, substance use disorders, delirium, anxiety disorders and psychotic disorders, were chosen for analysis. The primary care physician's initial impression of a psychiatric diagnosis was recorded based on their reason for referral on the referral sheets. Accurate recognition was defined as matching of the physician's initial impression with the psychiatrist's final diagnosis. Mentioning the core symptoms of psychiatric diagnostic criteria or common synonyms would be considered as correct recognition.

Results: The overall accuracy of recognition was 41.5% and there was no significant change during this 5-year period. Substance use disorders were the one diagnosis with the highest agreement, followed by delirium, depressive disorders, anxiety disorders, and psychotic disorders. As for the factors associated with accurate recognition, male patients or those with multiple physical illnesses were more likely to have their psychiatric symptoms recognized correctly.

Conclusions: Without comprehensive postgraduate psychiatric education, the accuracy of recognizing psychiatric symptoms does not improve year by year. Education should focus on common psychiatric problems among medical inpatients, especially those easily misdiagnosed, such as depression and delirium.
Objective: To describe the clinical features and management of thallium poisoning in patients with delayed hospital admission.

Methods: Fourteen patients (median age 36 years) were admitted 9-19 days after ingesting food poisoned with thallium. Clinical and laboratory data, including blood and urine thallium concentrations, were collected. Patients were treated with oral Prussian blue, a chelating agent sodium dimercaptosulfonate, and hemodialysis.

Results: All patients experienced a triad of symptoms of acute gastrointestinal upset, painful combined polyneuropathy, and hair loss after consuming poisoned food. Fatigue and skin pigmentation were observed in all patients. Abnormal liver function tests were found in 6 (42.9%) and delirium and coma were identified in 4 (28.6%). Two weeks after the poisoning, the blood and urine thallium concentration ranged from 219.0 to 1414.4 μg/L (median: 535.3) and 956.5 to 11285.0 μg/L (median: 7460.0), respectively. One patient (7.1%) with a previous history of pulmonary fibrosis died of respiratory failure in hospital. Symptoms were improved and blood or urine thallium levels were normalized in the remaining 13 patients before discharge. After a 6.5 ± 1-month follow-up, 1 patient (7.1%) developed deep venous thrombosis in the left lower limb. In another patient (7.1%), numbness in the lower limbs remained.

Conclusion: Acute thallium poisoning is commonly manifested by gastrointestinal upset, painful polyneuropathy, and significant hair loss. Treatment strategies included Prussian blue and hemodialysis, which were associated with a good outcome in this case series.

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There is limited evidence about the usefulness of antipsychotics and choline esterase inhibitors in delirium. There are very few placebo controlled trials. There is a need to conduct well designed trials to evaluate the efficacy of antipsychotics and choline esterase inhibitors in delirium.

Department of Liaison Psychiatry

Although the information from Gover et al (2011) is comprehensive it does not include vital information for management of delirium from key studies in this area of research. This paper has summarised information as lists and tables without systematic critical appraisal. Therefore, in the absence of a robust methodology for literature search and critical appraisal of past and current literature, it has limited implications to help future management or research in the field of delirium.

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OBJECTIVES: Because delirium is a common yet frequently unrecognized condition, this study sought to design a brief screening tool for a core feature of mental status and to validate the instrument as a serial assessment for delirium.

DESIGN: Prospective cohort study.

SETTING: Tertiary VA Hospital in New England.

PARTICIPANTS: A total of 95 veterans admitted to the medical service.

METHODS: A consensus panel developed a modified version of the Richmond Agitation and Sedation Scale (RASS) to capture alterations in consciousness. Upon admission, and daily thereafter, patients were screened with a modified RASS (mRASS) and independently underwent a comprehensive mental status interview by a geriatric expert, who determined whether the criteria for delirium were met. The sensitivity, specificity, and positive likelihood ratio (LR) of the mRASS for delirium are reported. RESULTS: As a single assessment, the mRASS had a sensitivity of 64% and a specificity of 93% for delirium (LR, 9.4). When used to detect change, serial mRASS assessments had a sensitivity of 74% and a specificity of 92% (LR, 8.9) in both prevalent and incident delirium. When prevalent cases were excluded, any change in the mRASS had a sensitivity of 85% and a specificity of 92% for incident delirium (LR, 10.2).

CONCLUSION: When administered daily, the mRASS has good sensitivity and specificity for incident delirium. Given the brevity of the instrument (<30 seconds), consideration should be given to incorporating the modified RASS as a daily screening measure for consciousness and delirium.


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Objective: To investigate the relationship between contact precautions and delirium among inpatients, adjusting for other factors.
Design: Retrospective cohort study.
Setting: A 662-bed tertiary care center.
Patients: All non-psychiatric adult patients admitted to a tertiary care center from 2007 through 2009.
Methods: Generalized estimating equations were used to estimate the association between contact precautions and delirium in a retrospective cohort of 2 years of admissions to a tertiary care center.
Results: During the 2-year period, 60,151 admissions occurred in 45,266 unique non-psychiatric patients. After adjusting for comorbid conditions, age, sex, intensive care unit status, and length of hospitalization, contact precautions were significantly associated with delirium (as defined by International Classification of Diseases, Ninth Revision), medication, or restraint exposure (adjusted odds ratio [OR], 1.40 [95% confidence interval {CI}, 1.24-1.51]). The association between contact precautions and delirium was seen only in patients who were newly placed under contact precautions during the course of their stay (adjusted OR, 1.75 [95% CI, 1.60-1.92]; [Formula: see text]) and was not seen in patients who were already under contact precautions at admission (adjusted OR, 0.97 [95% CI, 0.86-1.09]; [Formula: see text]).
Conclusions: Although delirium was more common in patients who were newly placed under contact precautions during the course of their hospital admission, delirium was not associated with contact precautions started at hospital admission. Patients newly placed under contact precautions after admission but during hospitalization appear to be at a higher risk and may benefit from proven delirium-prevention strategies.

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The purpose of this study was to identify the post-cardiac surgery delirium risk factors and to evaluate clinical outcomes. Data on 90 patients with postoperative delirium after cardiac surgery on cardiopulmonary bypass (CPB) were analyzed retrospectively. The patients were divided into two groups by evaluating the severity of the delirium: light and moderate delirium group (n=74) and severe delirium group (n=16). We found that the rate of early post-cardiac surgery delirium was low (4.17%). We have determined that post-cardiac surgery delirium prolonged the length of stay in the Intensive Care Unit (ICU) by (8.4 (8.6)) and the hospital stay by (23.6 (13.0)) days. The patients had higher preoperative risk scores, their age was 71.5 (8.9) years, the body mass
index was 28.8 (4.4) kg/m(2), the majority were male (72.2%), and the left ventricular ejection fraction was 46.1(11.9) %. Statistical analysis by multivariable logistic regression has indicated that increasing the dose of fentanyl administered during surgery over 1.4 mg also increased the possibility of developing a severe delirium (OR=29.4, CI 4.1-210.3) and longer aortic clamping time could be independently associated with severe postoperative delirium (OR=8.0, CI 1.7-37.2). After surgery, new atrial fibrillation (AF) episodes amounted to 53.3% and, after distinguishing the delirium severity groups, AF developed in the patients belonging to the severe delirium groups statistically significantly more frequently, 81.8 vs. 47.3, where p=0.01. Our data suggest that early post-cardiac surgery delirium is not a common complication, but it prolonged the length of stay at the ICU and in the hospital. The delirium risk factors, such as longer aortic clamping time, the dose of fentanyl and new atrial fibrillation episodes occurring after cardiac surgery, are associated statistically significantly with the development of severe post-cardiac surgery delirium.

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Delirium is an acute state of confusion that is often seen in older patients after major orthopedic surgical procedures. It is associated with increased costs of care, morbidity, delayed functional recovery, and prolonged hospital stay. Identification of predictive risk factors, early diagnosis and treatment, and implementation of environmental controls can minimize the impact of postoperative delirium. This project measured pre- and post-intervention compliance with best practice in the prevention and management of postoperative delirium.

PMID: 22166973 [PubMed - as supplied by publisher]


A record-breaking number of drug shortages is impacting all areas of health care, but ED and EMS operations are under added pressure to work around such shortages quickly to meet critical patient needs. Experts say the most successful organizations have established strong communication channels between hospital pharmacists and providers so that when shortages arise, alternative approaches can be devised and communicated swiftly. By mid-September 2011, 213 drug shortages had been reported to the Drug Information Service at the University of Utah Hospitals and Clinics in Salt Lake City. This is more than the total number of shortages reported in 2010. In recent months, there have been reported shortages of drugs that are used routinely in emergency situations for such issues as pain, cardiac arrest, diabetic coma, seizures, excited delirium, and eclampsia of pregnancy. Experts say early recognition of drug shortages is essential so that providers and pharmacists can prioritize resources to optimize patient care.
There is broad support for legislation under consideration in Congress that would require drug manufacturers to notify the FDA of anticipated drug shortages. Experts believe such action would enable the FDA to take steps to prevent many shortages from occurring.

PMID: 22164566  [PubMed - in process]

18. Ghandour A, Saab R, Mehr DR. Detecting and treating delirium--key interventions you may be missing. *J Fam Pract*. 2011 Dec;60(12):726-34.

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Early identification of risk factors for delirium and routine use of screening are often overlooked—with dire effects. Here's what to look for and how to respond.

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PMID: 22160276  [PubMed - as supplied by publisher]


PMID: 22158403  [PubMed - as supplied by publisher]


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BACKGROUND: During the disease course of high-grade glioma (HGG) patients, the goal of therapy eventually shifts from primarily life-prolongation to primarily sustaining the quality of life as good as possible. End-of-life care is aimed at prolongation of life with good quality, but inevitably also may require medical decisions for prevention and relief of suffering with a potential life shortening effect. Few data are available on this end-of-life decision (ELD) making process in HGG patients, with decreased consciousness, confusion or cognitive deficits preventing them to participate. In this study the ELD-making process in HGG patients is described.

METHODS: Physicians and relatives of a cohort of 155 deceased HGG patients were identified to fill in a questionnaire regarding the end-of-life conditions (patients' ELD preferences, patients'
competence) and ELD-making (forgoing treatment and the administration of drugs with a potential life-shortening effect) for their patient or relative. Data were analysed with descriptive statistics.

FINDINGS: Of 101 patients, physicians completed surveys including questions about ELDs (62% response rate). More than half of the patients relatively early became incompetent to make decisions due to delirium, cognitive deficits and/or decreasing consciousness. In 40% of patients the physician did not discuss ELD preferences with his/her patient. At least one ELD was made in 72% of patients, most often this comprised the withdrawal of dexamethasone. Palliative sedation was performed in 30% of patients and physician assisted death in 7%.

INTERPRETATION: ELDs are common practises amongst HGG patients, although their preferences towards ELDs are frequently unknown to the physician. Because the majority of patients become incompetent towards death, participation in ELD-making is only possible with advanced care planning. Hence, timely discussion of ELD preferences is encouraged.

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Background: It is well known that blood transfusion is life-saving, but also that it carries a serious risk of transmitting viral infections. Introduction of new methods of testing for transmissible diseases, blood banking and dispatch regulations has considerably increased the cost of blood products. However, the clinical benefits and cost-effectiveness of allogeneic red-blood-cell (ARBC) transfusion remain assumed yet undetermined. We assessed the clinical benefits and cost-effectiveness of ARBC transfusion in severe anaemia.

Methods: This was a multicenter observational study comparing Jehovah's Witness (JW) patients with matched ARBC-transfused patients. Inclusion criteria were age ≥15 years and severe anaemia (haemoglobin ≤ 80 g/l). Two JW patients with palliative care cancer and five JW patients with haemoglobin (Hb) concentration between 70·1 and 80 g/l, mild symptoms of anaemia and Auckland Anaemia Mortality Risk Score of 0-3 were excluded.

Results: The entry criteria were met by 103 JW patients and the same number of patients treated with ARBC transfusion. ARBC transfusion reduced mortality by 94%, shock by 88%, gastrointestinal bleeding by 81%, infective complications by 81%, cardiac arrhythmia by 96%, angina by 86%, ischaemic myocardial injury by 81%, acute/acute on chronic renal failure by 66%, neurologic complications by 92%, delirium by 76%, depression by 91% and syncopal episodes by 95%. The incremental cost-effectiveness ratio of ARBC transfusion was 2011 US $22,515 for death prevented.

Conclusion: ARBC transfusion in anaemic patients is clinically beneficial and cost-effective.

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As ICU survival continues to improve, clinicians are faced with short- and long-term consequences of critical illness. Deconditioning and weakness have become common problems in survivors of critical illness requiring mechanical ventilation. Recent literature, mostly from a medical population of patients in the ICU, has challenged the patient care model of prolonged bed rest. Instead, the feasibility, safety, and benefits of early mobilization of mechanically ventilated ICU patients have been reported in recent publications. The benefits of early mobilization include reductions in length of stay in the ICU and hospital as well as improvements in strength and functional status. Such benefits can be accomplished with a remarkably acceptable patient safety profile. The importance of interactions between mind and body are highlighted by these studies, with improvements in patient awareness and reductions in ICU delirium being noted. Future research to address the benefits of early mobilization in other patient populations is needed. In addition, the potential for early mobilization to impact long-term outcomes in ICU survivors requires further study.

PMID: 22147819 [PubMed - in process]


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ABSTRACT: In 2010 Critical Care published a large number of articles on critical care aspects of neurologic and neurosurgical conditions. These aspects included investigation of diagnostic criteria for bacterial meningitis, critical illness myopathy and their relationship to systemic inflammation. A number of studies investigated the biology of sepsis-related delirium, its biomarkers, its relationship to inflammation and its impact on outcome. Other teams reported on the use of magnetic resonance imaging, biomarkers and electroencephalogram to predict outcome in patients who were comatose following cardiac arrest. Our understanding of the pathophysiology as well as management of subarachnoid hemorrhage was addressed in several papers. Topics included the effect of hemodynamic treatment of delayed cerebral ischemia, pulmonary edema and the impact of subarachnoid hemorrhage on endocrine function. Finally, outcome from neurocritical care and patients' retrospective willingness to consent to the treatment they received were reported.

PMID: 22146675 [PubMed - as supplied by publisher]
Methylphenidate is a psychostimulant originally used for the treatment of attention-deficit disorder. Methylphenidate inhibits neuronal neurotransmitter transporters involved in the uptake of dopamine and norepinephrine at the level of the synapse. Inhibition of these transmitter transporters leads to increased concentrations of dopamine and norepinephrine in the synapse, which results in increasing alertness. The stimulant effect of methylphenidate has been used for the treatment of major depression, post stroke depression, cognitive enhancement in patients with brain tumors, neurodegenerative disorders, HIV disease, fatigue, and as a treatment for delirium and sedation associated with opioid use. Other areas where methylphenidate has been evaluated include gait disorders in the elderly individuals and the treatment of apathy in dementia. Analgesic effects have been demonstrated in preclinical models but true analgesic effects remain to be proven in humans. This article reviews the current use of methylphenidate for symptom management with a critical look at the evidence base for its efficacy in the conditions described.

PMID: 22144657 [PubMed - as supplied by publisher]

Objective: To determine the effectiveness and safety of a new detoxification procedure in γ-hydroxybutyrate (GHB)-dependent patients. GHB is an endogenous inhibitory neurotransmitter and anesthetic agent that is being abused as a club drug. In many GHB-dependent patients a severe withdrawal syndrome develops that does not respond to treatment with high dosages of benzodiazepines and often requires an admission to an intensive care unit.

Methods: Based on the knowledge of detoxification procedures in opioid and benzodiazepine dependence, we developed a titration and tapering procedure. A consecutive series of 23 GHB-dependent inpatients were transferred from illegal GHB (mostly self-produced) in various concentrations to pharmaceutical GHB. They were given initial doses that resulted in a balance between sedation and withdrawal symptoms. After this titration period, patients were placed on a 1-week taper.

Results: We have found that after titration the patients experienced a low level of withdrawal symptoms. During tapering these symptoms decreased significantly and no patient developed a delirium or a psychosis. None of the patients had to be transferred to a medium or intensive care unit.

Conclusions: This detoxification procedure proved to be safe and convenient in patients with moderate to severe GHB dependence.

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Dexmedetomidine controls twitch-convulsive syndrome in the course of uremic encephalopathy.

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An 85 year old man with a history of chronic renal insufficiency was admitted to the cardiothoracic intensive care unit after aortic valve replacement. His postoperative course was marked by acute oliguric renal failure for high blood urea nitrogen (BUN) and acute hyperactive delirium. At this time he also developed tremors with muscle twitching; he received no other form of sedatives. A neurology consult made the diagnosis of twitch-convulsive syndrome associated with uremic encephalopathy. While the patient was receiving the dexmedetomidine infusion, the signs of the twitch-convulsive syndrome, particularly the twitching and tremors, disappeared. Within 30 minutes of the end of the dexmedetomidine infusion, symptoms of the twitch-convulsive syndrome returned, manifesting as acute tremulousness. After several dialysis treatments, his BUN decreased and the dexmedetomidine was weaned, without return of the symptoms of twitch-convulsive syndrome.

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Routine use of the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) by bedside nurses may underdiagnose delirium.


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BACKGROUND: The Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) is emerging as the most frequently used tool for identifying delirium among critically ill patients. OBJECTIVE: To determine whether the number of patients and nursing shifts in which delirium was diagnosed would increase after the introduction of the CAM-ICU in our unit. DESIGN: Before-and-after study. In a 30-day Phase 1, we asked bedside nurses to assess their ICU patients for delirium each shift. We then conducted intensive education on the CAM-ICU for 30 days, including lectures, bedside tutorials, and supervised practice. In Phase 2, for 30 days we asked bedside nurses to record the results of their CAM-ICU assessments. SETTING: 20-bed mixed medical and surgical ICU at the Austin Hospital, Melbourne. PARTICIPANTS: All patients admitted to the ICU during each phase. MAIN OUTCOME MEASURES: Diagnosis of delirium by bedside nurses using either the CAM-ICU or an unstructured clinical assessment, by patient and nursing shift.
RESULTS: Compared with unstructured assessments, the CAM-ICU identified a significantly lower proportion of patients (36.7% v 21.3%; P = 0.004) and a significantly lower proportion of shifts (14.7% v 6.4% of shifts, P = 0.002) with delirium. When adjusted for differences in age, sex, Acute Physiology and Chronic Health Evaluation III risk of death and total length of stay between the two periods, assessment type remained a significant predictor of the diagnosis of delirium.

CONCLUSIONS: In our hospital, the CAM-ICU detected delirium less often than unstructured delirium assessments made by qualified intensive care nurses.

PMID: 22129282 [PubMed - in process]


The search for the holy grail: diagnosing delirium in the intensive care unit.

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PMID: 22129280 [PubMed - in process]


The Overlap of Delirium With Neuropsychiatric Symptoms Among Patients With Dementia.

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From the Unit of General Practice, Helsinki University Central Hospital and University of Helsinki, (EH, MLL, KHP); Laakso Hospital, Health Centre, City of Helsinki, Finland (MLL); Helsinki University Central Hospital, Clinics of Internal Medicine and Geriatrics (JVL, RT); Institute of Health Sciences/Geriatrics, University of Oulu, and Unit of General Practice, Oulu University Hospital, Oulu, Finland (TES); and ORTON Orthopaedic Hospital, Orton Foundation, Helsinki, and Unit of Family Practice, Central Finland Central Hospital, Jyväskylä, Finland (HK).

OBJECTIVES: To study the frequency of overlapping of delirium with neuropsychiatric symptoms (NPS) among patients with dementia, and to investigate the prognostic value of delirium, multiple NPS without delirium, or neither during a 2-year follow-up.

METHODS: We assessed 425 consecutive patients in acute geriatric wards and in seven nursing homes in Helsinki. Those 255 suffering from dementia were examined for NPS of dementia described in the Neuropsychiatric Inventory (delusions, hallucinations, agitation/aggression, depression/low mood, anxiety, euphoria/elation, apathy, disinhibition, irritability/mood changes, and aberrant motor behavior) and for delirium criteria according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). Patients were categorized into three groups: delirium with or without multiple NPS (delirium group), multiple NPS without delirium
RESULTS: A total of 66 patients suffered from delirium according to the DSM-IV, 127 had multiple NPS without delirium, and 62 had neither multiple NPS nor delirium. In the delirium group 61 individuals (92.4%) were deceased or residing in permanent institutional care at the end of the 2-year follow up period, compared to 100 individuals (78.7%) in the multiple NPS group and 48 (77.4%) in the zero or one NPS group (Pearson X = 6.64, df 2, p = 0.036). In logistic regression analysis adjusted for age, sex, and comorbidities, delirium was an independent predictor of this composite outcome (OR: 4.3, 95% CI: 1.4-13.6).

CONCLUSIONS: Patient groups with symptoms of delirium and multiple NPS are highly overlapping. The presence of delirium indicates poor prognosis.

PMID: 22123275  [PubMed - as supplied by publisher]


A longitudinal study of motor subtypes in delirium: Relationship with other phenomenology, etiology, medication exposure and prognosis.

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OBJECTIVE: Motor subtypes have promise as a means of identifying clinically relevant delirium subgroups. Little is known about their relationship to etiologies, medication exposure, and outcomes.

METHODS: Consecutive cases of DSM-IV delirium in palliative care patients were assessed twice-weekly throughout their delirium episodes using the Delirium Motor Subtype Scale (DMSS), Delirium Etiology Checklist (DEC) and Delirium Rating Scale Revised-98 (DRS-R98).

RESULTS: 100 patients [mean age 70.2±10.5] were assessed on 303 visits [range 2-9]. Over the entire episode, mean DRS-R98 Severity scores were 16.2±5.7. The mean number of etiologies per case was 3.4±1.2. Motor subtypes were no subtype throughout (6%), hypoactive subtype throughout (28%), mixed subtype throughout (18%), hyperactive subtype throughout (10%) and variable subtype (38%). DRS-R98 Total and Severity scales differed significantly across categories (highest in mixed) but only motor, sleep-wake cycle, perceptual and language disturbance items differed. The Generalized Estimating Equations (GEE) approach was used to explore the relationship between subtype profile and symptoms, medication exposure and etiology. This showed that apart from motor items, only delusions, affective lability, metabolic disturbance and CVA related to any subtype. Cross-sectional assessments indicated greater use of benzodiazepine and antipsychotics in hyperactive patients but GEE analyses did not identify major associations between motor subtype and medication exposure. Patients with sustained hypoactive subtype were significantly more likely to die within one month of study entry.

CONCLUSIONS: Motor profile in delirium is relatively consistent over episode course and relates more closely to delirium phenomenology than to etiology or medication exposure. Motor subtypes have comparable disturbance of key diagnostic features such as cognitive and thought...
process abnormalities. Although mixed subtype is the most phenomenologically intense, hypoactives have the poorest prognosis.

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PMID: 22118382  [PubMed - in process]


Two Patients With an Anti-N-Methyl-d-Aspartate Receptor Antibody Syndrome-Like Presentation and Negative Results of Testing for Autoantibodies.

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We describe two boys whose distinct and remarkable clinical pictures suggested the possibility of anti-N-methyl-d-aspartate receptor antibody encephalitis. Both patients responded to immunotherapy, but neither manifested that antibody. Patient 1 exhibited florid encephalopathy with psychotic manifestations including inappropriate affect, intermittent delirium, visual hallucinations, severe anorexia, agitation, paranoid ideation, and abnormal electroencephalogram results. He responded to intravenous immunoglobulin, with steady improvement over 3 months to almost complete remission for 1 year, followed by a relapse that again responded, more quickly, to intravenous immunoglobulin. A second relapse occurred 1 month later, and again responded to intravenous immunoglobulin. Patient 2 exhibited progressive, severely debilitating limb dystonia that worsened over 1.5 years, with milder psychiatric symptoms including mood instability, aggressiveness, impulsivity, and depression. When he developed thymic hyperplasia 1.5 years into his illness, he underwent a thymectomy, and improved significantly on a regimen of plasmapheresis and intravenous immunoglobulin. Patients presenting with symptoms suggestive of autoimmune encephalitis, but without antibodies, may still respond to immunotherapy.

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PMID: 22115008  [PubMed - in process]


An open trial of aripiprazole for the treatment of delirium in hospitalized cancer patients.

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Objective: The purpose of this study was to examine the efficacy and safety of aripiprazole in the treatment of delirium in hospitalized cancer patients, and to examine differential responses based on delirium subtypes. Method: We conducted an analysis of 21 hospitalized cancer patients at Memorial Sloan-Kettering Cancer Center (MSKCC) who had been evaluated and treated for delirium with aripiprazole, using an MSKCC Institutional Review Board (IRB) approved Clinical Delirium Database. Measures used were the Memorial Delirium Assessment Scale (MDAS), the Karnofsky Scale of Performance Status (KPS), and side effect rating at baseline (T1), 2-3 days (T2), and 4-7 days (T3). All measurements were integrated into the routine clinical care of patients. Doses of aripiprazole were adjusted based on clinical response.

Results: Patients treated for delirium with aripiprazole experienced significant improvement and resolution of delirium, with MDAS scores declining from a mean of 18.0 at baseline (T1) to mean of 10.8 at T2 and a mean of 8.3 at T3. KPS scores improved from 28.1 at baseline (T1) to 35.2 at T2 and 41 at T3. Delirium resolved (based on MDAS < 10) in 52.4% of cases at T2 and in 76.2% at T3. The mean dosage of aripiprazole required was 18.3 mg (range of 5-30) daily at T3. In our cohort of patients with hypoactive delirium, we observed a delirium resolution rate of 100% compared to the cohort of patients with hyperactive delirium (58.3% rate of delirium resolution). MDAS scores improved from 15.6 at T1 to 5.7 at T3 in hypoactive delirium and from 19.9 at T1 to 10.2 at T3 in hyperactive delirium. In patients with pre-morbid cognitive deficits and the hyperactive subtype of delirium, we observed a more limited treatment response to aripiprazole treatment for delirium. There were no clinically significant side effects noted.

Significance of results: Aripiprazole is effective and safe in the treatment of delirium in hospitalized cancer patients. These preliminary finding suggest that aripiprazole may be most effective in resolving delirium of the hypoactive subtype.

PMID: 22104410  [PubMed - in process]


Postoperative opioid consumption and its relationship to cognitive function in older adults with hip fracture.

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OBJECTIVES: To determine the relationship between opioid consumption and cognitive impairment after hip fracture repair.
DESIGN: Prospective study of consecutive patients.
SETTING: Johns Hopkins Bayview Medical Center, Baltimore, Maryland.
PARTICIPANTS: Two hundred thirty-six participants aged 65 and older undergoing hip fracture repair.
MEASUREMENTS: Older adults without preoperative delirium who underwent hip fracture repair between April 2005 and July 2009 were followed for pain, opioid consumption, and postoperative delirium. Participants were tested for delirium using the Confusion Assessment Method preoperatively and midmorning on Postoperative Day 2. The nursing staff
assessed pain on a numeric oral scale (range 0-10). Opioid analgesia was provided in response to pain at rest to achieve scores of 3 or less. Opioid consumption was analyzed with respect to the occurrence of incident postoperative delirium, presence of dementia, and other demographic variables.

RESULTS: Of the 236 participants, 66 (28%) had dementia, and 213 (90%) received opioids postoperatively, including 55 (83%) with dementia and 158 (93%) without. There was no association between the use of any postoperative opioid and incident delirium (P = .61) in participants with (P = .33) and without (P = .40) dementia. Dementia, but not postoperative delirium, was associated with less opioid use (P < .001 for dementia; P = .12 for delirium; P = .04, for their interaction; Wald chi-square = 142.8, df = 7). Opioid dose (P \geq .59) on Postoperative Days 1 and 2 was not predictive of incident delirium. Dementia (P < .001) and intensive care unit admission (P = .006), not opioid consumption, were the most important predictors of incident postoperative delirium.

CONCLUSION: Concern for postoperative delirium should not prevent the use of opioid analgesic therapy sufficient to achieve a generally accepted level of comfort in individuals with or without preexisting cognitive impairment.

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PMID: 22092232 [PubMed - in process]


A critical pathway for the frail elderly cardiac patient.

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BACKGROUND: The medical community needs to better respond to the predictable complexities associated with admission of frail and elderly cardiac patients who may need specific attention and care programs. The nurse practitioner can play an important role to continue and coordinate nursing and medical care. We propose a new critical pathway designed to improve cardiac and nursing care for frail elderly cardiac patients admitted with heart failure or atrial fibrillation.

METHOD: The critical pathway is developed by the nurse practitioner who will act as a pathway coordinator and take care of the medical care of these patients in a teaching hospital setting. This critical pathway is applied to all patients aged >75 years who are admitted for heart failure or atrial fibrillation.

RESULTS: The pathway implementation identified 5 important socio-medical parameters that may account for a delayed length of stay, even in patients without a complicated medical situation: delirium and fall prevention, nutritional awareness, fluid restriction efforts, and information optimization of patients and spouses.
CONCLUSIONS: We developed a critical care pathway for the frail elderly patients who are admitted for heart failure or atrial fibrillation. In doing so, we have been able to change the medical and social management of these patients at a general cardiology ward in a teaching hospital.

PMID: 22089270  [PubMed - in process]


Transitions experienced by older survivors of critical care.


The transition from hospital to home is complicated for older adults who experience a serious or life-threatening illness. The specific aims of this prospective, observational cohort study were to determine the number of older adults who experience a change in their functional ability and residence after an intensive care unit (ICU) stay and to explore risk factors for functional decline and new institutionalization at hospital discharge. We found high rates of unrecognized preexisting cognitive impairment, delirium, complications, functional decline, and new institutionalization in this sample (N = 43). A number of variables were associated with functional decline or new institutionalization, including narcotic agent use (p = 0.03), ICU complications (p = 0.05), comorbidities (p = 0.01), depression (p = 0.05), and severity of illness (p = 0.05). We identified device self-removal, admission type, and ICU delirium as also potentially associated with these outcomes (p ≤ 0.25). There are a number of important and potentially modifiable factors that influence an older adult's ability to recover after a critical illness.

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Delirium: an emerging frontier in the management of critically ill children.

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Delirium is a syndrome of acute brain dysfunction that commonly occurs in critically ill adults and most certainly is prevalent in critically ill children all over the world. The dearth of information about the incidence, prevalence, and severity of pediatric delirium stems from the simple fact that there have not been well-validated instruments for routine delirium diagnosis at
the bedside. This article reviewed the emerging solutions to this problem, including description of a new pediatric tool called the pCAM-ICU. In adults, delirium is responsible for significant increases in both morbidity and mortality in critically ill patients. The advent of new tools for use in critically ill children will allow the epidemiology of this form of acute brain dysfunction to be studied adequately, will allow clinical management algorithms to be developed and implemented following testing, and will present the necessary incorporation of delirium as an outcome measure for future clinical trials in pediatric critical care medicine.

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PMID: 22078920 [PubMed]


Delirium prevention and treatment.

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Little is known of nonpharmacologic and pharmacologic delirium prevention and treatment in the critical care setting. Trials emphasizing early mobilization suggest that this nonpharmacologic approach is associated with an improvement in delirium incidence. Titration and reduction of opiate analgesics and sedatives may improve subsyndromal delirium rates. All critical care caregivers should rigorously screen for alcohol abuse, apply alcohol withdrawal scales in alcoholic patients, and titrate sedative drugs accordingly. No nonpharmacologic approach or drug has been shown to be beneficial once delirium is established. Considering the importance and the consequences of delirium in the critical care setting, studies to further address prevention and rigorous trials addressing pharmacologic intervention are urgently needed.

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PMID: 22078919 [PubMed]


Altering intensive care sedation paradigms to improve patient outcomes.

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Providing sedation and comfort for intensive care patients has evolved in the last 30 years but remains difficult for clinicians. As research has focused on this challenging area, the authors have identified ways to improve practice, including providing analgesia before sedation, strategies to help recognize dangerous adverse effects associated with the medications that are used, and better ways to monitor pain and delirium in patients. Dexmedetomidine and propofol have become the preferred sedatives for many ICU situations, and creative ways to administer them, such as linking awakening and breathing trials, are emerging. Finally, screening survivors for cognitive impairments may allow clinicians to refer them for the focused rehabilitation they require.

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PMID: 22078915  [PubMed]

Re: Preoperative risk factors for postoperative delirium (POD) after urological surgery in the elderly.
Griebling TL.
PMID: 22078604  [PubMed - in process]

Difficulties in identifying Wernicke-delirium.
Wijnia JW, Nieuwenhuis KG.
PMID: 22075312  [PubMed - in process]

A discursive exploration of the practices that shape and discipline nurses' responses to postoperative delirium.
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A discursive exploration of the practices that shape and discipline nurses'
responses to postoperative delirium Although delirium is classified as a medical emergency, it is often not treated as such by health care providers. The aim of this study was to critically examine, through a poststructural, Foucauldian concept of discourse, the language practices and discourses that shape and discipline nurses' care of older adults with postoperative delirium (POD) with a purpose to question accepted nursing practice. The study was based on data collected from face-to-face, in-depth, personal interviews with six nurses who work on an acute postoperative patient care unit. Five analytic readings of the data identified two prominent discourses at work in nursing practice which influenced the care of patients with POD. These were identified as discourses of legitimacy/illegitimacy and discourses of nursing work. Through the process of poststructural analysis it became evident that one overriding discourse - the biomedical/scientific discourse - served to direct, legitimize and govern all other discourses. The findings of this study have implications for nursing knowledge and practice, length of hospital stay and improved patient outcomes. This study builds on previous work and is the first study to conduct a discourse analysis illuminating nurses' responses to POD through comparison with other acute medical emergencies from a poststructural perspective.

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Eating disorders in the twenty-first century.

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The first description of anorexia nervosa appeared in the literature over three hundred years ago. Since then, much has been learned about eating disorders, including the different presentations, medical complications, prognosis, and treatment strategies. In spite of this knowledge, the prevalence of eating disorders continues to grow. As well, eating disorders are seen in increasing frequency among males, children, and adults, and from all cultures and ethnicities. Of particular concern, is that patients with eating disorders often first present because of a complication such as amenorrhea, syncope, or abdominal pain, without disclosing the eating disorder. Therefore, all physicians should be aware of the various presentations of eating disorders, including the medical complications and risks, and be able to screen for a possible eating disorder. The major medical complications are due to the decreased caloric intake which leads to a hypometabolic state. While most complications are reversible with recovery, some, such as bone loss, may not be. Of particular concern during recovery is the possible development of a refeeding syndrome.
which occurs as the body goes from a catabolic to an anabolic state, causing hypophosphatemia, hypocalcemia and hypomagnesemia, which can lead to delirium, coma and death. Of further concern is that eating disorders have the highest mortality rate of all psychiatric disorders at 5.6% per decade. This article will review the changing demographics, medical complications, treatment options, and prognosis of eating disorders.

PMID: 22036757 [PubMed - in process]


Recurrent partial seizures with ictal yawning as atypical presentation of Hashimoto's encephalopathy (steroid-responsive encephalopathy associated with autoimmune thyroiditis).


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Hashimoto's encephalopathy (HE), also known as steroid-responsive encephalopathy associated with autoimmune thyroiditis (SREAT), is a rare condition whose pathogenesis is unknown, though autoimmune-mediated mechanisms are thought to be involved. The prevalent neurological manifestations of this disorder are epileptic seizures and psychocognitive disorders associated with EEG alterations. High anti-thyroid antibody titers (particularly in cerebrospinal fluid) and the effectiveness of steroid therapy are usually considered to be crucial elements in the diagnostic process. We describe a 19-year-old female patient who had been referred to the psychiatric unit because of behavioral disorders characterized predominantly by delirium with sexual content. She developed recurrent focal seizures characterized by atypical ictal semiology (repetitive forceful yawning) and a rare EEG pattern (recurrent seizures arising from the left temporal region without evident "encephalopathic" activity). The presence of anti-thyroperoxidase antibodies in her cerebrospinal fluid and a good response to steroids confirmed the diagnosis of HE. The atypical presentation in the case we describe appears to widen the electroclinical spectrum of HE and highlights its importance for differential diagnosis purposes in the neuropsychiatric setting.

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PMID: 22030535 [PubMed - in process]


How nurses decide to ambulate hospitalized older adults: development of a conceptual model.
Adults over the age of 65 years account for 60% of all hospital admissions and experience consequential negative outcomes directly related to hospitalization. Negative outcomes include falls, delirium, and loss in ability to perform basic activities of daily living, and new walking dependence. New walking dependence, defined as the loss in ability to walk independently, occurs in 16%--59% of hospitalized older patients. Nurses are pivotal in promoting functional walking independence in hospitalized patients. However, little is known about how nurses make decisions about whether, when, and how to ambulate older patients. A qualitative study using grounded dimensional analysis was conducted to further explore how nurses make decisions about ambulating hospitalized older adults. Twenty-five registered nurses participated in in-depth interviews lasting 30--60 min. Open, axial, and selective coding was used during the analysis. A conceptual model, which is grounded in how nurses experience ambulating patients, was developed. Multiple categories and dimensions interact and produce an action by the nurse to either restrict mobilization to the level of the bed or progress the patient to ambulation in the hallway. Factors that seemed to have a greater impact on nurses' decisions on whether, when, and how to ambulate were the risk/opportunity assessment, preventing complications, and the presence of a unit expectation to ambulate patients.

PMID: 22024979 [PubMed - in process]


Heart failure comorbidities at the end of life.

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PURPOSE OF REVIEW: To review the impact of comorbidity in heart failure patients who are approaching the end of life and consider current treatment options in alleviating symptom burden.

RECENT FINDINGS: Renal failure, respiratory disease, anaemia, cognitive impairment, falls and urinary incontinence are common comorbidities in heart failure patients approaching the end of life. This review describes the impact of these comorbidities and gives practical advice to aid clinicians in their management.

SUMMARY: Limited evidence exists for how best to manage the majority of comorbidities in heart failure patients at the end of life. As a result a comprehensive assessment and a patient-centred approach should be sought. Prevention of many complications such as falls or delirium is likely to be possible with this approach and hence reduce the burden of these problems at the end of life.

PMID: 21986912 [PubMed - in process]

Burn management.

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PURPOSE OF REVIEW: To update critical care practitioners on the recent advancements in burn care.

RECENT FINDINGS: Particular topics discussed include airway management, acute resuscitation, issues within the intensive care unit, nutrition, and wound management.

SUMMARY: This is a concise review of the recent burn literature tailored to the critical care practitioner. Criteria for extubation of burn patients are examined, as is the need for cuffed endotracheal tubes in pediatric burn patients. Strategies to avoid over-resuscitation are discussed, including use of colloid, as well as nurse-driven and computer-guided resuscitation protocols. New data regarding common ICU issues such as insulin therapy, delirium, and preferred intravenous access are reviewed. The importance of nutrition in the burn patient is emphasized, particularly early initiation of enteral nutrition, continuation of nutrition during surgical procedures, and use of adjuncts such as immunonutrition and beta blockade. Finally, both short-term and long-term wound issues are addressed via sections on laser Doppler assessment of burns and pressure garment therapy to prevent long-term scarring.

PMID: 21986459  [PubMed - in process]


Neuroinflammation in delirium: a postmortem case-control study.

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Abstract Background: Delirium can be hypothesized to be an extreme manifestation of sickness behavior in elderly persons with neurodegenerative disease. The purpose of this study was to investigate whether increased cerebral inflammation with microglial, astrocyte, and cytokine activation exists in patients with delirium compared to nondelirious patients.

Methods: Postmortem brain tissue from 9 cases with delirium was compared to 6 age-matched controls without delirium. Human leukocyte antigen-DR (HLA-DR) and CD68 cell count and glial fibrillary acidic protein (GFAP), interleukin-1β (IL-1β), IL-6,β-amyloid, and tau protein immunoreactivity were determined in hippocampus, frontal cortex, and white matter.

Results: There were no significant differences in the patients with delirium compared to the controls with respect to age 73 versus 70.5 years (p=0.72) or dementia (22% versus 0%, p=0.22). Both markers for microglial activity showed significantly higher scores in delirium brain specimens than controls in the total brain score (HLA-DR 129 vs. 20 and CD68 30 vs. 8.5) as
well as in the various brain areas separately. The immunoreactivity of astrocyte activity (GFAP) was higher in the total brain score in patients with delirium (5.2 vs. 4.0, p=0.05), but in the various brain areas this was only significant in the dentate gyrus. IL-6 immunoreactivity was higher in patients with delirium in all brain areas and IL-1β was not detectable. Coexisting infectious disease or dementia did not influence the overall results.

Conclusions: These preliminary study results show an association between human brain activity of microglia, astrocytes, and IL-6 and delirium in elderly patients and add to the accumulating evidence that inflammatory mechanisms are involved in delirium.

PMID: 21978081 [PubMed - in process]


Delirium in the postanaesthesia period.

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PURPOSE OF REVIEW: Delirium is an acute, potentially life-threatening organ dysfunction with an incidence reported to range from 10-70% after surgery. Postoperative delirium was found to be associated with persisting cognitive deficits, increased physical dependence and institutionalization, and increased mortality. It is a condition particularly relevant to patients with increasing age.

RECENT FINDINGS: This study summarizes recent works of the past 2 years, giving a brief overview as well as background information with regard to risk factors, impact on outcome parameters, mechanisms of pathophysiology, current use of hospital medication, and prevention and treatment strategies of postoperative delirium.

SUMMARY: Delirium may have an impact on patients' outcomes beyond their stay in hospital, depending on preoperative comorbidities. Delirium can be devastating for activity of daily living, cognitive performance and survival. Predisposing factors should be recognized preoperatively; precipitating factors such as preoperative fasting, deep sedation and choice of psychotropic drugs, including sedatives, should be reconsidered. Regular structured delirium screening is the precondition for early detection and treatment. Treatment options include cognitive training programmes, anti-inflammatory measures and antipsychotic drugs.

PMID: 21971396 [PubMed - in process]


The burden of postoperative delirium after vascular surgery.

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Orientation strategies during delirium: are they helpful?

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AIM: This paper critiques literature that reports older person experiences of orientation strategies in relation to current recommendations for the management of older person delirium and makes recommendations for future research.

BACKGROUND: Delirium is a common syndrome in hospitalised older people and a difficult syndrome for health care staff to manage. During delirium, older people describe experiencing altered states of reality and use of orientation strategies as part of their care. Orientation, a non-pharmacological approach to the management of delirium, is recommended as a care strategy in evidence-based guidelines and protocols.

METHOD: Discursive paper.

DISCUSSION: This paper considers published research into the experiences of hospitalised older people during an episode of delirium and questions the appropriateness of orientation strategies. How care strategies are experienced by older people is emphasised. An approach to care which is a flexible balance of reality orientation and validation therapy, synchronised with the changing reality and reactions of the older person, is identified as a care recommendation from research.

CONCLUSION: When delirium is experienced during hospitalisation, health care staff have a responsibility to provide care that is person-centred and sensitive to the older person's needs. It has been assumed that no harm comes from the use of orientation approaches, and delirium management guidelines have recommended this approach. However, orientation strategies can lead to mistrust of, and distancing from, health care staff and family, so impeding their relationships with carers. Care practices that consider the older person to be unique and that synchronise with the older person's changing experiences of reality are suggested for further research.

RELEVANCE TO CLINICAL PRACTICE: Caring for an older person in delirium is challenging for health care staff. Reconsideration of, and research into, care strategies during delirium has the potential to improve the quality of care for hospitalised older people.

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Dexmedetomidine: applications for the pediatric patient with congenital heart disease.

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This study aimed to provide a general description of the cardiovascular and hemodynamic effects of dexmedetomidine and an evidence-based review of the literature regarding its use in infants and children with congenital heart disease (CHD). A computerized bibliographic search of the literature on dexmedetomidine use in infants and children with CHD was performed. The cardiovascular effects of dexmedetomidine have been well studied in animal and adult human models. Adverse cardiovascular effects include occasional episodes of bradycardia, with rare reports of sinus pause or cardiac arrest. Both hypotension and hypertension also have been reported. The latter is related to peripheral α(2B) agonism leading to vasoconstriction. No adverse effects on the pulmonary vasculature have been noted even in patients with preexisting pulmonary hypertension. Although there are no direct effects on myocardial function, decreased cardiac output may result from changes in heart rate or increases in afterload. Although not currently Food and Drug Administration (FDA)-approved for the pediatric population, findings have shown dexmedetomidine to be effective in various clinical scenarios of patients with CHD including sedation during mechanical ventilation, prevention of procedure-related anxiety, prevention of emergence delirium and shivering after anesthesia, and treatment of withdrawal.

Although dexmedetomidine may have limited utility for painful or invasive procedures, preliminary data suggest that the addition of ketamine to the regimen may offer benefits. When used during the perioperative period, additional benefits include blunting of the sympathetic stress response with a reduction of endogenous catecholamine release, a decrease in intraoperative anesthetic requirements, and a limitation of postoperative opioid requirements.

PMID: 21909772  [PubMed - in process]


[Clinical neurological diagnosis of sepsis-associated delirium].

[Article in German]

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Sepsis is a frequent emergency and an acute disease which is still highly lethal. Due to an early involvement of the brain in terms of a sepsis-associated delirium the neurologist plays an important role in the early diagnosis of the interdisciplinary disease. The following review details the main diagnostic aspects of a sepsis-associated delirium.

PMID: 21853375  [PubMed - in process]

Standardised frailty indicator as predictor for postoperative delirium after vascular surgery: a prospective cohort study.

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OBJECTIVES: To determine whether the Groningen Frailty Indicator (GFI) has a positive predictive value for postoperative delirium (POD) after vascular surgery.

METHODS: Between March and August 2010, 142 consecutive vascular surgery patients were prospectively evaluated. Preoperatively, the GFI was obtained and postoperatively patients were screened with the Delirium Observation Scale (DOS). Patients with a DOS-score ≥3 points were assessed by a geriatrician. Delirium was defined by the DSM-IV-TR criteria. Primary outcome variable was the incidence of POD. Secondary outcome variables were any surgical complication and hospital length of stay (HLOS) (>7 days).

RESULTS: Ten patients (7%) developed POD. The highest incidence of POD was found after aortic surgery (17%) and amputation procedures (40%). Increased comorbidities (p = 0.006), GFI score (p = 0.03), renal insufficiency (p = 0.04), elevated C-reactive protein (p = 0.008), high American Society of Anaesthesiologists score (p = 0.05), a DOS-score of ≥3 points (p = 0.001), post-operative intensive care unit admittance (p = 0.01) and HLOS ≥7 days (p = 0.005) were risk factors for POD. The GFI score was not associated with a prolonged HLOS. A mean number of 2 ± 1 (range 0-5) complications were registered. The receiver operator characteristics (ROC) area under the curve for the GFI was 0.70.

CONCLUSIONS: The GFI can be helpful in the early identification of POD after vascular surgery in a select group of high-risk patients.

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Hypoactive delirium after cardiac surgery as an independent risk factor for prolonged mechanical ventilation.


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OBJECTIVE: The authors' intention was to evaluate the incidence of the three subtypes of delirium, the risk factors of the subtypes in cardiac surgery, and the impact of the subtypes on clinical outcomes.
DESIGN: A prospective study.

SETTING: A university hospital.

PARTICIPANTS: A total population of 506 patients undergoing cardiac surgery was screened for delirium.

INTERVENTIONS: None.

MEASUREMENT AND MAIN RESULTS: Patients undergoing cardiac surgery were screened by using the Intensive Care Delirium Screening Checklist (ICDSC) and the Richmond Agitation and Sedation Scale (RASS). Patients with hypoactive delirium were compared with nondelirious patients. Outcomes measured were the duration of mechanical ventilation and the length of stay in the intensive care unit. The overall delirium incidence was 11.6%, whereas the incidence of the hypoactive subtype was 9%. Age (odds ratio [OR] 1.04; 95% confidence interval [CI], 1.01-1.09, p = 0.02), a history of depression (OR = 3.57; 95% CI, 1.04-10.74; p = 0.03), preoperative therapy with diuretics (OR = 2.85; 95% CI, 1.36-6.35; p < 0.01), aortic clamping times (OR = 1.01; 95% CI, 1.00-1.02; p < 0.01) and blood transfusions (OR = 1.18; 95% CI, 1.05-1.34; p < 0.01) were predictors for the development of hypoactive delirium. Preoperative therapy with β-blockers (OR = 0.32; 95% CI, 0.16-0.65; p < 0.01) and higher hemoglobin before surgery (OR = 0.73; 95% CI, 0.60-0.91; p < 0.01) were associated with a lower prevalence of hypoactive delirium. Hypoactive delirium is an independent predictor for prolonged mechanical ventilation time (OR = 1.56; 95% CI, 1.25-1.92; p < 0.01) and the length of stay in the ICU (OR = 1.42; 95% CI, 1.22-1.65, p < 0.01).

CONCLUSION: Hypoactive delirium itself is a strong predictor for a longer ICU stay and a prolonged period of mechanical ventilation. Some of the risk factors related to the intraoperative and postoperative setting are suitable for preventive action.

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The use of the Digit Span Test in screening for cognitive impairment in acute medical inpatients.

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BACKGROUND: There is no valid instrument currently in use at acute-care hospitals in Hong Kong to aid the detection of cognitive impairment. The objectives of this study were to (1) validate the Digit Span Test (DST) in the identification and differentiation of dementia and delirium; and (2) determine the prevalence of major cognitive impairment in elderly people in an acute medical unit.

METHODS: During the study period from January to February 2010, 144 patients aged 75 years or more who had had unplanned medical admissions were assessed by nurses, using the Digit
Span Forwards (DSF) and the Digit Span Backwards (DSB) tests. The DST scores were compared with the psychiatrists' DSM-IV-based diagnoses. Receiver Operating Characteristics curve (ROC) was used in conjunction with sensitivity and specificity measures to assess the performance of DST.

RESULTS: The prevalence rates of dementia alone, delirium alone and delirium superimposed on dementia were 21.5%, 9% and 9% respectively. The prior case-note documentation rate was 13.2% for dementia and 2.8% for delirium. Regarding the detection of major cognitive impairment, the ROC curve of DSB showed a sensitivity of 0.77 and specificity of 0.78 at the optimal cutoff of <3. A significant association between scores on the DST and the Cantonese version of the Mini-Mental State Examination (CMMSE) was found in this study (p < 0.05 for DSF, p = 0.00 for DSB).

CONCLUSIONS: Dementia and delirium were prevalent, yet under-recognized, in acute medical geriatric inpatients. The DSB is an effective tool in identifying patients with major cognitive impairment.

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Treatment characteristics of delirium superimposed on dementia.

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BACKGROUND: The course of delirium in patients with dementia who are undergoing management of delirium with antipsychotics has not previously been studied. In order to investigate the treatment characteristics of patients with delirium superimposed on dementia in contrast to delirium in the absence of dementia we performed a secondary analysis of our delirium database.

METHODS: We collected sociodemographic data and medical variables in addition to using the systematic rating scales of the Memorial Delirium Assessment Scale (MDAS) and Karnofsky Scale of Performance Status (KPS). These data were recorded in the delirium database. For this analysis we extracted all data pertaining to patients with delirium and dementia (DD) and compared them to those with delirium without dementia (i.e. non-demented with delirium; NDD).

RESULTS: Out of 111 cases with a diagnosis of delirium we acquired 22 cases with a diagnosis of DD and 89 cases with NDD. The mean age was significantly different with 77.1 years for DD and 62.7 years for NDD. The MDAS scores at baseline were significantly higher in DD (21.1) compared to NDD (17.6). Over the course of treatment, MDAS scores were significantly higher in DD with 11.7 at T3 compared with 7.0 in NDD. After three days of management, delirium resolution rates were significantly lower in DD with 18.2% compared to 53.9% in NDD, and at seven days delirium resolution rates were 50% and 83% respectively. At the endpoint of the observation period, DD had a significantly more pronounced disturbance of consciousness and
impairment in the cognitive domain. KPS scores were not significantly different between DD and NDD.

CONCLUSION: In our sample of patients with delirium superimposed on dementia the delirium resolution rates were lower than in patients without dementia at one week of treatment. The data suggest that when delirium is superimposed on dementia the delirium may resolve at a slower rate.

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Delirium superimposed on dementia: defining disease states and course from longitudinal measurements of a multivariate index using latent class analysis and hidden Markov chains.

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BACKGROUND: The study of mental disorders in the elderly presents substantial challenges due to population heterogeneity, coexistence of different mental disorders, and diagnostic uncertainty. While reliable tools have been developed to collect relevant data, new approaches to study design and analysis are needed. We focus on a new analytic approach.

METHODS: Our framework is based on latent class analysis and hidden Markov chains. From repeated measurements of a multivariate disease index, we extract the notion of underlying state of a patient at a time point. The course of the disorder is then a sequence of transitions among states. States and transitions are not observable; however, the probability of being in a state at a time point, and the transition probabilities from one state to another over time can be estimated.

RESULTS: Data from 444 patients with and without diagnosis of delirium and dementia were available from a previous study. The Delirium Index was measured at diagnosis, and at 2 and 6 months from diagnosis. Four latent classes were identified: fairly healthy, moderately ill, clearly sick, and very sick. Dementia and delirium could not be separated on the basis of these data alone. Indeed, as the probability of delirium increased, so did the probability of decline of mental functions. Eight most probable courses were identified, including good and poor stable courses, and courses exhibiting various patterns of improvement.

CONCLUSION: Latent class analysis and hidden Markov chains offer a promising tool for studying mental disorders in the elderly. Its use may show its full potential as new data become available.

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Confluent muscle pallor: a macroscopic marker of cocaine-induced rhabdomyolysis.

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A 39-year-old man presenting with acute delirium is reported who suffered an unexpected cardiac arrest shortly after being sedated. Death followed 2 days later from hypoxic-ischemic encephalopathy. At autopsy, marked pallor and edema of his left sternomastoid muscle was observed which was shown on microscopy to be due to confluent coagulative necrosis. Myoglobin casts in his renal tubules corresponded to an antemortem creatine phosphokinase level of 31,940 U/l. Death was due to rhabdomyolysis and excited delirium complicating cocaine toxicity with hypoxic-ischemic encephalopathy, against a background of atherosclerotic coronary artery disease. Extensive confluent pallor in a single muscle may be a useful marker of chronic cocaine exposure associated with hyperthermia and muscle necrosis. Confirmatory toxicology is required.

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Risk factors for postoperative delirium after colorectal surgery for carcinoma.


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BACKGROUND AND AIM: Data regarding the incidence and risk factors for postoperative delirium (PD) after gastrointestinal surgery are heterogeneous because they include both benign and malignant disease. The aim of this study was to investigate the incidence and risk factors for PD in 100 consecutive patients over 65 years who underwent colorectal surgery for carcinoma.

METHODS: Pre-operative cognitive function was assessed using the Mini Mental State Examination. The onset of PD was diagnosed by the Confusion Assessment Methods administered to the patients every 12 h starting from the first postoperative day to discharge. The severity of PD was also evaluated with the Delirium Rating Scale. Different parameters: pre-, intra- and postoperative, were analyzed. Univariate and multivariate analyses were performed.

RESULTS: PD developed in 18% of patients. Univariate analysis revealed that advanced age, a history of PD, alcohol abuse, lower blood albumin concentration, intra-operative hypotension, elevated infusion volume and excessive blood loss were significantly related to the development of PD. On multivariate analysis, only lower levels of albumin, alcohol abuse, and hypotension were independent risk factors for PD.

CONCLUSIONS: These findings suggest that PD is a frequent complication after colorectal surgery for carcinoma. A model based on pre, intra and postoperative risk factors allows prediction of the patient's risk for developing PD in order to implement preventive measures for this complication.

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Risk factors of delirium after cardiac surgery: a systematic review.

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BACKGROUND: Delirium or acute confusion is a temporary mental disorder that occurs frequently among hospitalized elderly patients, but also in younger patients a delirium can develop. Patients who undergo cardiac surgery have an increased risk of developing delirium that is associated with many negative consequences. Therefore, prevention of delirium is essential. Despite the high incidence of delirium, a paucity of data on risk factors for delirium exists.

AIM: The aim of this study was to summarize the available information concerning these risk factors.

METHODS: A literature research was performed using the PubMed, Cinahl, and Cochrane Library databases and was limited to the last 10 years.

RESULTS: Our review revealed 27 risk factors; 12 predisposing and 15 precipitating factors for delirium after cardiac surgery. The most established predisposing risk factors were atrial fibrillation, cognitive impairment, depression, history of stroke, older age, and peripheral vascular disease. The most established precipitating risk factor was a red blood cell transfusion. An abnormal albumin level was reported as the most established precipitating risk factor among blood values tested. A low cardiac output and the use of an Intra Aortic Balloon Pump or inotropic medication seem to be the most relevant risk factors associated with a postoperative delirium.

CONCLUSION: A multifactorial risk model should be applied to identify patients at an increased risk of developing delirium following elective cardiac surgery. In these patients, if possible, preventative interventions can be taken and early recognition of delirium can be realized. This could potentially decrease the incidence of delirium and negative consequences caused by a postoperative delirium.

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Detecting deficits of sustained visual attention in delirium.

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BACKGROUND: Inattention is a core clinical feature of delirium and yet the particular aspects of attentional impairment associated with this feature are poorly understood. Objective methods for assessing inattention are also lacking. A new set of computerised tests of attentional deficits designed for use in patients with delirium have been developed. Test performances in patients with delirium, dementia and cognitively normal controls are compared.

METHODS: Eight novel tasks measuring sustained visual attention were administered to 20 older patients with delirium using the Edinburgh Delirium Test Box, a purpose built, computerised neuropsychological testing device. Comparison groups of 18 patients with Alzheimer's dementia and 20 cognitively normal patients of similar age were also assessed. Delirium was diagnosed using the Confusion Assessment Method. General cognitive impairment was measured using the Mini-Mental State Examination.

RESULTS: Patients with delirium had significantly lower scores than both comparison groups on all sustained attention tasks (p values from 0.003 to <0.001). Performance of the dementia patients generally did not differ from the cognitively normal group. Receiver operating characteristic analyses indicated that all tasks showed good or excellent accuracy for discriminating between delirium and dementia (AUC values 0.80-0.94), and between delirium and cognitively normal (AUC values 0.89-0.99) patients.

CONCLUSIONS: Patients with delirium showed marked deficits in sustained visual attention, as measured by objective neuropsychological testing. These attentional deficits were mainly mild or absent in patients with dementia and in cognitively normal controls. Objective testing of sustained visual attention has promising utility in detecting delirium, and in discriminating delirium from dementia.

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