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Hospitalist Update

Alcohol Dependence: The role of primary care providers and hospitalists

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Alcohol abuse continues to be one of the most serious public health hazards throughout the world. The economic burden of alcohol-related issues is substantial and represents a significant portion of the U.S. healthcare budget. As reported in the National Survey of Drug Use and Health report in 2009, 7.8 percent of persons aged 12 or over (an estimated 19.3 million individuals) required treatment for alcohol-related problems in the previous year. As per the report, of those persons who needed treatment, only 8.1% received therapy at a facility that specializes in substance abuse; 4.5% felt they needed treatment but did not receive it while 87.4% neither received therapy nor perceived that it was needed. The most common reasons for failing to receive therapy in those who felt they needed it were the conviction that they were not ready to stop using alcohol (42%) and cost barriers (34.5%) [1]. In 2007, the American Public Health Association reported that, for the year 2004, alcohol-related health expenditures totaled $216.2 million, representing 3% of all healthcare costs for that year [2}. Violence and alcohol use are major risk factors for the three leading causes of death among individuals age 12-20 years: suicide, homicide and unintentional injuries. [3]

In DSM-IV, alcohol dependence is defined as repeated alcohol-related difficulties in at least 3 of 7 areas of functioning that cluster together over a 12 month period. Two of these seven items, tolerance and withdrawal, may have special importance as they are both associated with a more severe clinical course.

Alcohol ingestion affects the neurologic system via a variety of mechanisms. It inhibits excitatory glutamate receptors and facilitates inhibitory gama-aminobutyric acid (GABA) receptors [1]. Initial symptoms of acute intoxication, including euphoria and disinhibition, progress to stupor and respiratory depression [2]. Continued use of alcohol leads to glutamate receptor up-regulation and GABA receptor down-regulation; as a result, abrupt abstinence after prolonged alcohol consumption can result in hallucinations (visual, auditory or tactile), tremors, seizures, delirium tremens and autonomic instability. Repeated binges and withdrawals can lead to permanent neuronal damage which, over time, can progress to dementia [3-5]. Other indirect CNS effects of excess

(continued) alcohol consumption are cerebral trauma, hypoglycemia, hepatic encephalopathy, alcoholic keto-acidosis and the concomitant use of other drugs such as cocaine and heroin [6-10]. Marchiafava-Bignami disease is an entity described mostly in alcoholics, manifest by mania, depression, paranoia, dementia, seizures, paresis and ataxia, progressing to coma and death within a few months; advancements in neurologic imaging (MRI) have led to an increased incidence of this condition, as reported in the medical literature [11]. A number of nutritional disorders, including thiamine, nicotinic acid and other B vitamin deficiencies and Wernicke-Korsakoff syndrome are commonly encountered in alcoholics [12].

Even though alcohol dependence improves with specialized treatment [13,14], most individuals fail to receive any therapy. Barriers to the treatment of alcoholism, as mentioned above, have led to an increased need for management of alcohol dependence in non-specialized addiction centers [15,16]. Although very few inpatients with alcohol dependence receive specialized treatment during their admission, many will be scheduled to see their primary physician post discharge, providing an opportunity to engage these patients in discussions about their drinking habits. Repeated outcome interventions by physicians have been shown to decrease alcohol intake in patients with alcohol dependence [17,18]. In the COMBINE trial of medications for alcohol dependence, published in 2006, placebo combined with frequent medical visits was comparable to specialized alcohol treatment when outcomes were assessed [19]; when access to specialty programs is limited, repeated discussions about a patient's alcohol use may thus be a good alternative. Four medications: naltrexone, acomprosate, topiramate and disulfiram have proven to be efficacious in the treatment of alcohol dependence [20]; of these topiramate has been approved by the FDA for this use in the U.S. Naltrexone has been shown to reduce relapses in heavy drinkers, especially during the first 3 weeks. [21] Acamprosate acts on the GABA and glutamane receptors and reduces the symptoms of protracted abstinence such as insomnia, anxiety, restlessness and dysphoria [22]. Disulfiram inhibits intermediate alcohol metabolism, leading to accumulation of acetaldehyde, which causes flushing, sweating, nausea and palpitations if alcohol is consumed [23].

Primary care physicians can play a very important role in decreasing the burden of alcohol dependence in the community by performing brief interventions during office visits, utilizing screening instruments such as AUDIT (The Alcohol Use Disorders and Identification Test). More large scale, randomized, controlled studies are needed for the assessment of effective pharmacological interventions. It is also important that the effectiveness and availability of alcoholism screening tools be reinforced in our training programs. While increasing the number of clincs that specialize in the management of alcohol dependence would be ideal, the current economic environment appears to preclude that solution even though, in the end, it might be more cost effective to do so. The role of hospitalists in the approach to this major health problem is not just limited to the treatment of acute alcohol intoxication, alcohol withdrawal and the medical complications of alcohol; it is also important that we direct patients toward community resources and ensure close follow up with their primary care physician post discharge. Of course, our options with homeless and uninsured patients are often very limited.

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Do Electronic Medical Records (EMR) reduce health care cost and improve quality?

Bishnu Devkota MD, MA

INTRODUCTION: If you accept the hype of EMR vendors, their product is the solution to many of the healthcare problems that we face; of course, reality is different. Take obesity for example, the scourge of developed nations, responsible for a host of comorbidities: diabetes mellitus, hypertension, hyperlipidemia, osteoarthritis, etc.; the introduction of EMR will have little effect on such basic threats to the health of our population and the rising cost of healthcare delivery. While EMR is a great tool for the assessment of clinical problems, the collection of data, the analysis of outcomes and the utilization of resources for decision support, it has little value when it comes to changing the behavior that is at the root of our healthcare problems. As hospitalists, it is imperative that we use our opportunity to address lifestyle choices that adversely affect the health of our patients.

BACKGROUND: Innovation brings change to our society and we must decide whether the benefits of that change outweigh any negative effects that it may produce. While the EMR lobby predicted that it will lower health care costs, the benefits of such technologies pale in comparison to those garnered from the advent of anti-microbials, improved sanitation and the widespread use of vaccines. Time will tell if the projected value of this innovation , especially relative to improved health care quality and delivery, is truly accurate.

DISCUSSION: It is fair to say that innovations in communication technology have been instrumental in the globalization of human culture and have changed the landscape of business. Cost effectiveness has become the buzzword in the lay press as well as in business journals and medical literature and many developing economies have benefitted from outsourcing of labor, made possible by these technologies. How does the EMR fit into this scenario? Of paramount importance are the issues of privacy and personal security; we are all familiar with the misuse of private information and know from experience that online data is potentially subject to illegal access.

Do we have any real evidence that the EMR has reduced the cost and improved the quality of health care? Health information technology in general, and the EMR in particular, have been touted as cost effective, sustainable systems for improving the quality of medical care [1-3]. Walker Ray, MD, of the Physicians' Foundation for Health Systems Excellence, in Boston, claims that health information technology will enhance quality and outcomes while decreasing health care costs [1]. A recently published study by Cheriff et al. [4] showed that provider productivity, as measured by patient volume, charges and work relative value units (wRVU) modestly increased for a cohort of multi-specialty providers that adopted a commercially available ambulatory EMR; they reported that productivity gain became more pronounced after several months of system use. Two important studies, published in the Annals of Family Medicine [5] and Archives of Internal Medicine [6}, contradict this claim; neither study showed a positive correlation between EMR use and care outcomes and the researchers concluded that quality of care was unaffected.

Time will tell if the use of EMR will increase the quality of health care and reduce health care costs in the United States; of course, we are still in the infancy of this transition. Limited operability and a lack of funds for EMR implementation and maintenance are two significant barriers; hopefully, the funding deficit may be eased by the American Recovery and Reinvestment Act. Although physician resistance was initially anticipated, this concern has rapidly faded. Nevertheless, the pie chart of health care determinants shows that medical care accounts for only 10% while environment (20%), DNA (20%) and lifestyle (50%) play a larger role; which brings us back to the notion that convincing patients to adopt healthy lifestyles is the most effective tool that we possess [7].

CONCLUSION: Education is the key when it comes to triggering change in the individual and in society as a whole. The global effort to ensure quality healthcare must begin with the willingness of each person to (cont)

(continued) take charge of their own health. Social efforts to stem health care costs and improve quality will not succeed until individual patients begin to make healthy lifestyle choices. The introduction of EMR, while beneficial is some areas, will have little effect on healthcare cost and quality without a significant shift in the attitude of our patient population.

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CASE OF THE MONTH

ROCHELLE PARKER MD

Case 1: A 10 year old developed pain in her right arm and a rash on her trunk and extremities; one month later (on October 3), she began vomiting and had increased pain in the arm with associated numbness. Xrays of her arm and clavicle were normal. Several days later, dysarthria was noted and the patient had decreased appetitie, sore throat and neck pain; she developed a fever of 101 F and had become agitated and irritable. A rapid Group A strep test and heterophile antibody were negative. She was hospitalized on October 7 at a community hospital and was found to have difficulty swallowing her secretions. Her tongue was protruding and had a whitish coating; CBC and electrolytes were normal. She was treated with methylprednisolone for possible glossitis and fluconazole for presumed mucosal candidiasis.

By October 8, neurologic involvement was evident and she was transferred to a tertiary center. On arrival, she was noted to be irritable, intermittently alert and lethargic; she had slurred speech, had difficulty swallowing her secretions and complained of a drowning sensation. Intubation was performed to control secretions and improve her oxygenation; she was placed on a ventilator. An LP revealed 26 WBC/mm3, 1 RBC, protein 28 mg/dl and a glucose of 89 mg/dl. Vancomycin, cefotaxime and acyclovir were started for presumed meningoencephalitis. On the second day of admission, somnolence, generalized skin flushing and hypersalivation were noted.

On further questioning, the patient's mother reported that, in June, the patient had been awakened by a bat or bird that had flown into her room and bit or scratched her arm; the mother assumed that she had a nightmare and treated the scratch with an OTC product. Approximately 3 days later, her brother took a dead bat from their cat. After receiving this information, saliva, CSF and a skin biopsy from the nape of the neck were sent (cont)

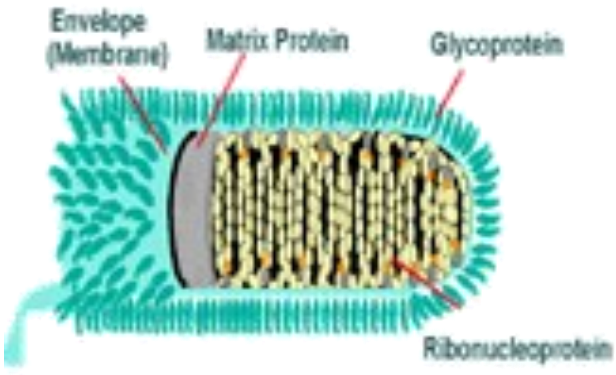
(continued) to the CDC, where genetic sequencing characterized the infecting agent as a rabies virus associated with the silver-haired bat. Post exposure prophylaxis (PEP) was administered to all persons who had contact with the patient's sputum from 7 days before the onset of her initial symptoms (a total of 66 persons, including family members, friends, health care workers and social contacts).

The patient was treated with antiexcitatory and antiviral therapies, including phenobarbital, midazolam, ketamine and amantadine, in addition to aggressive supportive care. On the sixth day of hospitalization, IV ribavirin was administered; coenzyme Q10, l-arginine tetrahydrobiopterin and vitamin C were administered in an attempt to replenish neurotransmitter substrates. Multiple complications occurred, including increased ICP, bouts of DI, SIADH, pancreatitis secondary to ribavirin, intracranial venous sinus thrombosis and cerebral and cerebellar herniation. The patient never regained consciousness, life support was withdrawn and she died on November 2, the 26th day of hospitalization.

Case 2: Two undergraduate university students presented to Student Health five days after they had rescued a kitten that had been left outside to die. In the process of caring for it, both students were bitten; since the kitten seemed to be ill, it was taken to a vet, were it was immunized and treated with antibiotics. The vet also noted that it had some sort of neurologic impairment and the kitten died three days later; its carcass was discarded in the trash. Concerned, the students sought medical attention and were advised to receive rabies immunoglobulin and a series of post exposure immunizations; they were well and asymptomatic 18 months later.

Case 3: A 10 year old Philippino boy presented with a severe sore throat, fever and insomnia, for which he was treated with Amoxicillin. Within 2 days, he became agitated, complained of chest tightness and developed dysphagia; he was admitted to the hospital where he demonstrated other signs of rabies infection: aerophobia, ydrophobia and profuse salivation and he was transferred to a tertiary care center. There, his siblings reported that the patient had been bitten by a dog two years earlier, when living in the Philippines (his parents were not informed of the incident and he did not receive PEP). Saliva samples were sent to the CDC and rabies virus RNA was detected by PCR. A detailed hospital course is presented in the MMWR reference [1]. Following multiple complications (autonomic instability, SIADH, renal failure, seizures, progressive heart block, cerebral edema), the patient died after support was withdrawn on the 27th hospital day. A postmortem brain biopsy revealed the presence of rabies virus antigen.

DISCUSSION: Rabies virus belongs to the order Mononegavirales, viruses with a nonsegmented negative-stranded RNA genome. It has a distinct bullet shape and is classified in the Rhabdoviridae family, which includes at least three genera of animal viruses. Genus Lyssavirus includes rabies virus found in bats.



Rabies causes an acute encephalitis in all warm-blooded hosts which is almost always fatal. All mammals are susceptible through only a few species are important reservoirs of the disease. In the U.S., distinct rabies virus variants have been found in raccoons, skunks, foxes, coyotes and in several species of insectivore bats. (cont)

(continued) Transmission usually begins when infected saliva of the host is passed to an unifected animal; this may be via contamination of mucous membranes, corneal transplantation or, most commonly, via a bite from the infected host. The incubation phase in humans is highly variable with symptoms occurring between 10 days and 1 year or more post inoculation. Initial symptoms usually resemble a flu-like illness, which soon progresses to anxiety, confusion, agitation, abnormal ideation (such as fear of water), profuse salivation, delirium and hallucinations. Once these symptoms develop, the disease is almost always fatal; treatment strategies, based on the Milwaukee Protocol which is credited with saving the life of a 15 year old rabies victim in 2004 [2], have not proved to be effective. CNS pathology includes perivascular infiltration of leukocytes and plasma cells and cytoplasmic eosinophilic inclusions (Negri bodies) in pyramidal cells of the hippocampus and Purkinje cells of the cerebellum; these inclusions have been identified as sites of active viral replication.

Post Exposure Prophylaxis (PEP): Rabies kills approximately 100,000 individuals worldwide, most of whom are children. However, it is preventable with: 1. proper wound care (washing for at least 5 minutes with soap and water), 2. the administration of human rabies immune globulin before symptoms develop and 3. five doses of rabies vaccine over a 28 day period. Every year, some 39,000 people receive PEP in the U.S. and, if given in time, it is 100% effective. Pre-exposure PEP does not eliminate the need for post exposure treatment but simplifies the course by negating the need for rabies immune globulin and by shortening the vaccination course. Rabies immune globulin provides rapid, passive immunity for a short time (its half-life is 21 days while the vaccine will induce active antibodies within 10 days that will persist for 2 years or more.

EPIDEMIOLOGY: Before 1960, most cases of rabies in the U.S. were secondary to the bite of domestic animals but is now usually due to wild animal bites. It has been documented in all States except Hawaii and, over the past Century, U.S. deaths from rabies have fallen from >100/year to an average of 1-2/year. The disease has been reported worldwide except for a few Caribbean islands, England, Ireland, Japan, Taiwan, Spain and Portugal. Rabies is a major problem in Asia, Africa, Central America and South America; exposure to rabid dogs accounts for over 90% of cases and 99% of deaths from this infection worldwide. Vaccination of dogs in the U.S. costs over $300 million per year, an expense that is beyond reach in developing countries. Most cases in the U.S. are now related to infection transfer from bats; those that are found to be active by day, are found in unusual locations or appear to be unable to fly are most likely to be rabid. In Missouri, a girl was bitten by a bat last July; it was caught and found to be rabid and she was treated with PEP and has done well; the last fatal case in Missouri occurred in November, 2008, when a 55 year old male died at MU (he had not sought medical attention following a bat bite and did not receive PEP).

Conclusion: These cases demonstrate the importance of prompt medical attention following the bite from a potentially rabid animal. The incubation period is highly variable and the initial presenting symptoms are often nonspecific and rather mild. Failure to receive PEP following a bite from a rabid animal will almost always prove to be a fatal decision.

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3. CDC.Gov Immunization Recommendations PEP for Rabies

FROM THE JOURNALS

WILLIAM STEINMANN MD

The following articles should be of interest to Hospitalists:

Post Discharge Hospital Utilization among Adult Medical Inpatients with Depressive Symptoms

Mitchell, SE et al., J Hosp Med 5(7):378-84

A positive screen for depression symptoms during hospitalization is associated with an increased rate of readmission within 30 days in an urban, academic, safety-net hospital population. While demonstrated to be useful in ambulatory medicine, the utility of screening acutely ill patients for depression has not been studied. Though it is uncertain if the higher readmission rates result from the depression itself or from its association with medical comorbidities, this study highlights the potential value of addressing this issue. Attention to the presence of depression should improve patient-centered care and this important topic warrants further study.

Oral Rivaroxaban for Symptomatic Venous Thromboembolism

The EINSTEIN Investigators, NEJM 363; 26:2499-2510

In a tandem study, investigators first evaluated the non-inferiority of oral rivaroxaban alone compared with subcutaneous enoxaparin in an open label study lasting 3, 6 or 12 months in patients with acute DVT. Subsequently, they compared rivaroxaban with placebo in a randomized controlled trial for continued therapy. Rivaroxaban had non-inferior efficacy and superior effect in reducing DVT/PE; the principle safety outcomes were similar in both groups. In the continued treatment study, rivaroxaban had superior efficacy in preventing recurrence; non-fatal bleeding was higher in the rivaroxaban group (0.7%) than in the placebo group (0%). Rivaroxaban offers a simple, single-drug approach to the short-term and continued treatment of venous thrombosis and may improve the benefit-risk profile for anticoagulation.

Metoprolol vs. Amiodorone in the Prevention of Atrial Fibrillation after Cardiac Bypass Surgery

Halonen, J et al., Ann Int Med 153(11): 703-709

Patients were randomized to receive a 48 hour infusion of metoprolol, 1-3 mg/hr (limited by heart rate) or amiodorone 15mg/kg/day (maximum dose 1000 mg), starting 15-24 hours after cardiac surgery. The occurrence of atrial fibrillation was similar in both groups. However, the study did not include patients who were at high risk for atrial fibrillation and the wide confidence interval of the results indicated that further study, with sufficient power, is indicated to conclude that the therapies are equally effective. The authors thus recommend adherence to current guidelines which advise use of beta blockers as the first line of atrial fib prophylaxis in patients who undergo cardiac bypass surgery.

Effect of B-Type Natriuretic Peptide Testing on Clinical Outcomes in Patients with Acute Dyspnea in Emergency Settings

Lam, L and P Cameron, Ann Int Med 153 (11): 728-735, A Meta-Analysis

The review examined five randomized trials that compared usual care +BNP testing with usual care to diagnose heart failure in adults presenting to emergency rooms with dyspnea. Overall, the use of BNP had only modest effect on patient management. However, this meta-analysis found that BNP testing 1. reduced admission rates and 2. reduces length of stay for those admitted by one day. Of note, BNP testing did not conclusively affect hospital mortality rates. The authors conclude that the use of BNP testing in such patients could reduce hospital utilization.

ID CORNER WILLIAM SALZER MD

TREATMENT OF MRSA INFECTIONS

The IDSA has just published a nice set of guidelines on the treatment of MRSA Infections:

Clinical Practice Guidelines by the Infectious Disease Society of American for the treatment of methicillin resistant Staphylococcus aureus infections in adults and children

Liu, C et al., Clin Infect Dis 2011; 52

http://cid.oxfordjournals.org/content/early/2011/01/04/cid.ciq146.full.pdf+html

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MISSOURI HOSPITALIST CALENDAR

Renal Complications in the ICU, Society of Critical Care Medicine, March 10-11, 2010, Atlanta, Georgia; for information and registration visit: http://www.sccm.org/Conferences

Update in Internal Medicine, St. Louis University, Department of Internal Medicine, Centennial CME Program, April 8-9, 2011, St. Louis University Allied Health Building, 3437 Caroline Mall, St. Louis; for information, call 314-977-7401 or send an email to cme@slu.edu **LOCAL**

Great Lakes Hospital Medicine Symposium, Practical Advances in the Care of the Hospitalized Patient, April 29, Sheraton Detroit Novi, Novi, Michigan, call 877-780-7787 or register online: www.cme.hsc.usf.edu (sponsored by University of South Florida)

2011 American Geriatrics Society, May 11-14, Washington, DC; register online via www.americangeriatricssociety.org/annual_meeting

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Please direct all comments, ideas and newsletter contributions to the Editor:

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Please forward this newsletter to Hospitalists that you might know!