Legal Nurse Consulting

Volume 21 ▲ Number 4 ▲ Fall 2010

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- To Intend or Not to Intend: That is the Question
- Volunteerism and Legal Considerations
- Repetitive Strain Injury
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The Journal of

LEGAL NURSE CONSULTING

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M. Thomas Quail, MS Ed R.N. LNC EMT-B

Fraud occurs when a contractor has knowingly presented a false claim to receive payment for goods purchased or services rendered. An estimated "23.7 billion dollars in improper Medicare and Medicaid insurance claim payments were made for the year 2007." This article will review three investigations which resulted in actual or potential fraud involving the lack of appropriate training.

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Few areas of legal practice balance on such a precarious edge as the allegations of rape. To traumatize the victim repeatedly as they pass through a crucible of trial proceedings and the uncertainty of judicial disposition is arguably almost sadistic in its approach. Conversely, the mental torment, alienation by society and likelihood of imprisonment for the falsely accused is just as egregious. A third, equally disturbing and frightening scenario unfolds when the guilty go free. In the following article, we explain from the medical perspective the essential elements of memory, consent, intent, and pharmacologically-altered mental capacity.

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Beverly Pruitt, RN LNCC

Unemployment is high and millions of Americans are without health insurance. Given the need for often unaffordable basic health care, more doctors, nurses, dentists, and visual specialists are needed to provide volunteer services but may be concerned about potential legal pitfalls. Good Samaritan Laws have been enacted by every state and the District of Columbia to encourage volunteer assistance. The Federal Volunteer Protection Act was passed by Congress in 1997 to limit liability. The reality is few organizations and volunteers get sued.

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These articles have been selected for inclusion in the 2010 JLNC Nursing Contact Hour Program. Participants of the program will be able to earn nursing contact hours for completion of an online post-test about this article. See detailed instructions at the conclusion of the article.

To Intend or Not to Intend: That is the Question

Robert M. Julien, MD PhD and Kara DiCecco, MSN RN LNCC

KEY WORDS
Sedatives, Behavior, Amnesia, and Intent

Few areas of legal practice balance on such a precarious edge as the allegations of rape. To traumatize the victim repeatedly as they pass through a crucible of trial proceedings and the uncertainty of judicial disposition is arguably almost sadistic in its approach. Conversely, the mental torment, alienation by society, and likelihood of imprisonment for the falsely accused is just as egregious. A third, equally disturbing and frightening scenario unfolds when the guilty go free. If the core legal issue is one of consent, jurors are understandably confused by the lawmaker's language in defining meaningful consent. The various statutory interpretations between geographic boundaries leave even the most seasoned legal professional struggling to adequately explain the standard. It is this standard however, where medicine has an even greater responsibility in assisting the triers-of-fact to distribute justice. In the following article, we explain from the medical perspective the essential elements of memory, consent, intent, and pharmacologically-altered mental capacity.

Central nervous system (CNS) depressants represent one of the largest categories of drugs involved in alleged criminal activities ranging from driving under the influence (DUI) to date-rape cases to homicides. More specifically, the ability of sedative drugs and alcohol to blunt memory and "executive functioning" leads to the vital question of whether or not they may reduce one's ability to act intentionally, with intent, or with "conscious awareness." For example, an alleged victim of a date rape believes (because of the amnestic quality of these drugs) that he/she was unconscious or an unwilling participant which could lead to allegations of rape. In reality, the alleged victim might indeed have been awake and consenting, even while amnestic. This necessitates discussion of the psychopharmacology of memory, specific intent, and mental capacity when under the influence of these drugs and/or alcohol.

In a career span of 30 years, an anesthesiologist will render around 30-40,000 patients incapable of forming memory during surgical or diagnostic procedures. Additionally, an anesthesiologist or psychopharmacologist should be familiar with the mechanisms of memory formation and consolidation (the embedding of these memories) and delineate how sedative-hypnotic drugs affect memory processes. If testifying in court, this medical expert will be called upon to explain how the inability to form memory correlates with brain dysfunction, inducing a temporary state of drug-induced dementia.

Memory Formation

The fundamental starting point for this analysis is to ask three questions: a) what is memory? b) what is dementia? and, c) how are the two related? Current views of the process of memory formation hold that memory is actually a protein, transcribed from our DNA located within glutamate-releasing neurons within the brain (Alberini, 2007; Gold, 2007; Lu, Kimberly & Lu, 2007; and Costa-Mattioli, Sossin, Klann & Sonenberg, 2009). At this writing, the *cofactors* that regulate the production of memory proteins from DNA are as yet undetermined. Regardless, when we "learn" something, a protein is formed from the DNA via the RNA, and that protein is released into the cytoplasm of the neuron which eventually embeds itself within the dendrite of the neuron. This embedding of the protein within the wall of a dendrite is called "consolidation." However, some substances can affect the consolidation process. For example, factors associated with high blood alcohol concentrations in an individual prevent this consolidation of encoded stimuli and thereby create the mechanism for absence of memory (Hartzler & Fromme, 2003, Lee, Roh & Kim, 2009).

Unfortunately, even under normal functioning, these proteins may only last 12 months and may be the major reason why old memories "fade" over time. Therefore, memories must continually be reformed and it is now felt that a major purpose of dreaming is to "re-live" memories and form new memory proteins.

A Question of Competency

In organic dementia (e.g., Alzheimer's disease), the patient is unable to form new proteins from DNA and is thus unable to form short-term memories. For example, you visit a relative diagnosed with Alzheimer's (dementia), leave briefly, and return to find he or she has no memory of your earlier visit. The old memories remain intact however, because the protein formation for older memories was already in place before the onset of the Alzheimer's.

This leads to the logical question, how "competent" then is a patient who cannot form new memories (e.g., a "demented" person)? While the answer to this question is dependent on the statutory interpretations in local jurisdictions, it can be reasonably argued that a demented person is not responsible for his or her actions and cannot form the necessary specific "intent" required by law. For example, let's say you have a

parent with Alzheimer's disease living with you and while you are gone briefly, the parent signs a contract for an expensive roof remodel you do not need. The legality of the binding contract can be readily challenged. Here, the issue is because one is demented (owing to the inability to form new memory proteins), that person is incompetent, lacking in "executive functioning," and is incapable of providing a legally-binding state of intentional behaviors and actions.

Now the same argument holds true when one is demented not because of an organic cause, but from ingestion of a sedative drug to the point where memory protein formation is blocked and one is in a state of drug-induced "blackout" or dementia (Hartzler & Fromme, 2003; White, Signer, Kraus & Swartzwelder, 2004; and Perry, Argo, Barnett, Liesveld, Liskow, Hernan, et. Al, 2006). Sedative drugs include ethyl alcohol, benzodiazepines, barbiturates, inhalants, gamma-hydroxy-butyrate (GHB), and various "date rape" drugs. Of these, alcohol is by far the most common intoxicant used to the point of inducing the loss of ability to form memory proteins ("blackout"). Ingesting alcohol-containing beverages to a blood alcohol content (BAC) of about 0.25-0.30 grams% (grams% is the number of grams of ethanol that are contained in 100 milliliters of blood) provide enough alcohol within brain neurons to suppress the formation of memory proteins from the intoxicated person's DNA and RNA. In this situation, using self-reported amnesia as the only indicator of brain dysfunction, one is mentally compromised, executive (cortical) functioning is lost, and behaviors are not "intentional" but reflexive (expressed emotionally at a brain-stem level) or from prior experience. Table 1 summarizes effects of dementing drugs.

Review the following situations as they relate to legal consent and intention:

- A person sustains a gunshot wound while intoxicated and comes to the operating room for emergency surgery. The victim had no memory of being shot due to intoxication. Surgery must be performed but the person is intoxicated and therefore incapable of signing a legal consent. Medical personnel sign an emergency consent indicating the person is incompetent but surgery is emergently needed and cannot be delayed until the patient is sober. In this situation, medical personnel recognize that the patient cannot comprehend the consent form, will not remember signing any form, and could not process necessary information (risks, benefits, and other required disclosures) to make an informed decision to proceed or not to proceed with surgery. The patient cannot "intend."
- A person is accidentally pre-medicated before getting to the operating room for elective surgery. The surgery is cancelled because a legal consent cannot be obtained.
- A person ingests an Ambien before going to bed. The person awakens, drives a car and crashes; all performed in an Ambien-induced blackout. The warning on the Ambien's package insert recognizes sleep-related driving as an Ambien induced activity. In this state, did the person "intend" to drive the car? Was the person operating with intact executive functioning?
- A patient is administered Versed (midazolam) for a colonoscopy. The patient is so wide awake afterwards that he or she is allowed to drive home. The person arrives home, but has no memory of leaving the hospital, driving, or getting home. Again the question is whether or not the patient was capable of intent while in the amnesic state.

Awareness of Actions

The next logical inquiry of the person's capacity is, if one is amnestic, can a person be awake and yet be in a state of blackout? Wouldn't amnesia for events imply that one was either unconscious, anesthetized, or at the very least incapable of being behaviorally cognizant? If one is amnestic, wouldn't everyone around know from the person's behavior that they were essentially demented? Not necessarily. The majority of date rape cases have this in common: the victim (plaintiff) states that she cannot remember the sex act and was therefore unconscious, unwilling, and did not consent because of physical helplessness or incapacity while the accused partner (defendant) states that she (the alleged victim) was awake, consented, and indeed was very physically active. Who is right?

Lee, Roh, and Kim (2009) define alcoholic blackout as the following, "An alcoholic blackout is amnesia for events of any part of a drinking episode without loss of consciousness. It is characterized by memory impairment during intoxication in the relative absence of other skill deficits. It is not to be confused with 'passing out.'" (pp. 2785).

The following scenario based on personal experience illustrates the reality of the amnesic effect. Several years ago, when Versed (midazolam) first became available clinically, I was scheduled to administer anesthesia to a 35-year-old female scheduled for an elective hysterectomy. Versed is a benzodiazepine of short half-life and available for use by injection. It is marketed as a sedative/amnestic drug. Although I was never sure why, this patient insisted on being awake for the procedure. I administered two milligrams of Versed as a premedication for sedation and anxiolysis while I placed an epidural catheter. She was awake for the procedure. I dosed the epidural and we proceeded to the operating room. She remained wide awake, chose all the music for the 2 1/2 hour procedure, and chatted continuously. She was wide awake in the recovery room and later on the unit. At 11 p.m. that night, I received a call from the unit nurse that this patient was very upset because I promised her she would be awake, and yet I had put her to sleep. I went to the hospital at midnight to explain to the patient that I had honored her request and that she had been wide awake during the procedure but was unable to form memory proteins because the Versed had blocked their formation. To this day, I'm not sure she ever accepted my explanation or forgave me for taking away any memory of the procedure. Memory is a process totally separate from behavior or state of alertness.

Recall, an elderly patient with Alzheimer's disease is awake, can dress, go to meals, and so on, but is totally incapable of forming memory; the definition of dementia.

Specific Intent

Another equally important legal consideration is intent. The testifying medical expert is often asked to comment on the effects of alcohol or a related sedative (benzodiazepines, barbiturates, etc.) on one's ability to act "intentionally" to resist, assault, flee, drive, etc. Regarding the ability to act "intentionally" in a drug-induced demented state, there are variations on the legal manifestation of intent, all of which can be affected by the mental aberrations produced by alcohol or sedative-hypnotic intoxication. Intent refers to a determination to perform a particular act or to act in a particular manner for a specific reason (The Free On-Line Dictionary, West's Encyclopedia of American Law).

- Inability to form memory is also associated with inability to form conscious intent as legally defined: Intent implies aimful and goal-directed behavior; purposeful behaviors, or acting with purpose. It involves planning and desire. It involves a determination or resolve to do a certain thing. Intent is the planning and desire to perform an act. Without intact executive functioning, one is incapable of meeting this definition (West's Encyclopedia of American Law).

Table 1. Summary of the Effects of Dementing Drugs

Can induce a "blackout" or "drug-induced antegrade amnesia"
Can cause a drug-induced "organic brain syndrome" that resembles the memory loss seen in the dementias such as Alzheimer's Disease
Can cause a loss of short-term memory formation for the duration of drug action (or blood alcohol persisting above about 0.25 grams%)
Can impair the "frontal lobe" which is the seat of executive functioning. Decreased or obstructed executive functioning leads to impaired thought, insight, intelligence, and judgment.

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- It is clear that intent cannot be formed when one is in a demented state of brain functioning, be that based on an organic basis (e.g., Alzheimer's disease) or effectively drug/alcohol induced. While a person may have acted recklessly, unlawfully, and with apparent intent, such actions did not result from intentional and directed actions or thoughts.

Author's note: It is important to note that intent as defined here refers to the plaintiff's intent. The state of mind of the defendant with regard to intended action (mens rea) is subject to specific legal definition concerning the criminal act and not discussed here.

The Alcohol Factor

Alcohol is readily available, permissible at the legal age and often enjoys social acceptance in college, at parties, during celebrations, on dates, and at a myriad of other functions. Unfortunately, alcohol's pervasive use is anything but benign. Alcohol use is also implicated in the majority of date rape claims.

At a BAC of about 0.25 grams% and higher, formation of memory protein stops, behavior is uninhibited by the alcohol, and a state o f antegrade amnesia follows and persists until the BAC, as a result of metabolism, falls below a critical level. In general, blackout occurs at BAC levels ranging from about 0.25-0.30 grams%. Alcohol "blackouts" are generally determined by self-report and by estimation of the blood alcohol concentration at the time of an act (Table 2).

Considering these potentially causative factors above, a woman who was out drinking heavily one evening may awaken the next morning to discover she has had sexual intercourse, becomes angry due to the fact she has no memory of the event, and assumes she must have therefore been "unconscious" and incapable of consent. Even though she cannot recall the event, at the time of the incident she may have appeared to be a very willing partner, even consenting by words and actions. The latter is wholly supported by the sexual partner who recalls that the woman *was* willing and contributing. Several hours later she visits the emergency room where a rape case workup is performed. Because the alcohol has been continually metabolizing during this several hour delay, the BAC is negative and since no other drugs were consumed a drug screen is likewise negative.

To determine the degree of impairment to address the legal question of ability to consent, the medical expert must go by the patient's report of the drinking history during the period in question and estimate through calculation a reasonable BAC at the time of the incident. Alternatively, if an amount of alcohol was identified on screening, retrograde extrapolation can be performed by adding an estimated amount of ethanol metabolized from the time of the event until the time the blood sample was drawn (Widmark calculation, see Garriott, 2008). This is often calculated at a fall rate of 0.015 grams% per hour. The important pharmacological point in this matter is whether or not one is capable of "acting," "performing," "responding," "participating," or "consenting" (by words or actions) in sexual activity during the period when memory is not formed (i.e., during a "blackout"). Here, the answer is most definitely yes. Similar to "conscious sedation" in medical procedures, the patient does not remember the performance of uncomfortable medical procedures (such as a colonoscopy under Versed sedation) but the person is alert, functioning, conversing, and responding to the procedure even though he/she has no memory of the actual event. Indeed, the patient can even appear to be fully awake. Medical providers who have administered sedation have witnessed this occurrence numerous times but the layperson has no similar knowledge or understanding. This situation requires careful presentation to judges and juries. Table 3 provides a list of some amnestic (date rape) drugs.

Table 2. Estimation of alcohol ingestion to achieve BAC of 0.25 grams %("blackout threshold") for women and men

Women	Men
100 lbs: 6 drink equivalents	120 lbs: 8 drink equivalents
120 lbs: 7 drink equivalents	140 lbs: 9 drink equivalents
140 lbs: 8 drink equivalents	160 lbs: 10 drink equivalents
160 lbs: 9 drink equivalents	180 lbs: 11 drink equivalents
180 lbs: 10 drink equivalents	200 lbs: 12 drink equivalents
200 lbs: 11 drink equivalents	220 lbs: 14 drink equivalents
	240 lbs: 16 drink equivalents

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In this table, a "drink-equivalent equals one ounce of 40% "hard" alcohol (expressed as "proof" at a concentration of 2:1- 80 proof = 40% alcohol), three ounces of 12% wine, or one 12-ounce (3.2%) beer. Virtually all beers today have higher alcohol concentrations; from 4.9-6.0%, higher if fortified. Additionally, few bars actually pour a 1-ounce "shot" or serve a 3-ounce pour of wine; it is generally greater. With this in mind, just two Long Island Iced Teas(with a recipe that includes 5 distinct liquors) can render a 120 pound female amnestic if ingested over a short period of time.

In the table above, subtract one drink equivalent for each hour that has elapsed since the start of drinking.

Table 3. Common "Date Rape" Drugs (not an all-inclusive listing)

Alcohol (Ethyl Alcohol, Ethanol). Stand alone, alcohol is the most common date-rape drug. Synergistic effect when added with other drugs.
Detection: Concentration/Proof varies by distillation method.
All the benzodiazepines. Xanax (Alprazolam) is commonly encountered in these cases.
Detection: Pill may be crushed to add to drink or food.
Rohypnol (Flunitrazepam). Not legally available in the United States.
Detection: Pill form that looks like aspirin. Detection highly unlikely as drug is odorless, tasteless, and colorless. Does not alter appearance of drink when added.
Gamma hydroxybutyrate (GHB) and its precursor Gamma Butyrolactone (GBL). Easily manufactured from industrial chemicals by street vendors which makes the exact concentration of the drug unknown.
Detection: Associated with a salty or soapy taste, this effect may be masked in flavored drinks or salty drinks. Orange juice is commonly used to mask the taste.
Phencyclidine (PCP). A psychoactive drug that causes dissociative effects. Ability to create relative immunity to painful stimuli and manifestations of psychotic behavior. PCP is Schedule II drug in the United States.
Detection: Comes in oral form, powder or liquid, may be smoke or inhaled. In pure liquid form it is yellow, but street manufacturing techniques may alter the color range tan to brown and change the consistency to range from a powder to a gummy paste.
Ketamine (Ketalar). Ketamine is a derivative of PCP, a drug dispensed in liquid form and either ingested or injected. Sometimes used in anesthesia and commonly used in veterinary clinics.
Detection: May be dried to a powder for smoking or inhaling.
Scopolamine (from Belladonna or datura stramonium). Small white pill.
Detection: Unlikely as drug is odorless, tasteless, and colorless. May be slipped into drinks or crushed and sprinkled onto food.

The terminology "date-rape" drug is used here for its familiarity in the media. Many names refer to these substances, such as "club" drugs or the recently proposed "sexual assault" drugs. It is also important to consider that any of these drugs may be in combination with other drugs to create a synergistic effect and enhancing their toxicity. The exact onset, peak effect and duration depend on numerous factors. For example, an empty stomach may affect the onset. These factors, along with route taken, must be taken into consideration for all drug evaluations. Helpful resource may be found at ***http://www.aafp.org/afp/w004/0601/p2619.html***

The Memory-Behavior Disconnect

Right or wrong- if the legal question were one of behavioral activity independent of executive functioning, jury deliberations would likely be brief. For example, in all cases of date rape drug use, one loses the ability to form memory (e.g., is amnestic), yet can be awake and fully participating and positively engaging in the sexual activity. Since the legal issue (depending on statutory language and jurisdiction) may center on the defendant's ability to have "reasonably known" the *degree* of the (now) plaintiff's impairment in judgment *despite* the seemingly cooperative behavioral activity, the straightforward finding is not obvious. Unfortunately, victims and police often do not understand this; it is presumed that the victim was incapacitated and unable to participate to the degree the accused should have reasonably known he or she was incapable of giving meaningful consent. Without careful presentation to the Court, the defendant may be convicted without evidence to the contrary. The following case illustrates the point.

A young female was drinking with friends at a bar. She claimed she had no memory of leaving the bar, meeting a male, and having sex in a pickup truck. She claimed she was administered a date-rape drug, *passed out* [emphasis added], was taken from the bar, and raped. Charges were filed and trial was scheduled. Shortly before trial, a video-tape of the parking lot behind the bar was located. It showed her leaving the bar of her own accord, laughing and skipping across the parking lot, standing on the running board of the pickup, getting into the truck, removing her blouse, and the truck leaving. She testified she had no memory of leaving the bar or any events thereafter. By the defendant's testimony, they had consensual sex. The case was dismissed.

Often times, in allegations of rape, evidence is unfortunately not preserved to either support the victim's story or exonerate the falsely accused. In the above example, memory loss was dissociated from behavioral activity and this was clearly obvious on surveillance tape. Inability to form memory proteins implies a state of amnesia or drug-induced dementia with loss of executive cortical functioning and this state is differentiated from the discredited behavioral ability witnessed on the tape.

Intent as a legal standard is elusive and defies a common understanding. In deliberations, both judges and juries struggle to dissect the thought processes of the parties where the core question of purposeful action is at issue. However, their duty to deliver justice is exponentially challenged when those cases involve the complexity of issues that arise with the use of substances which call into question the individual's ability to act with a deliberate will. Not surprisingly this area of law is subject to constant scrutiny, evolving case law, political activism, and triumphs and tragedies of justice for both plaintiffs and defendants. In order to adequately prepare the attorney-client's case for trial, a solid understanding of the effects and manifestations of date rape drug use is essential.

A working knowledge of the impact of the effects of amnestic drugs as they relate to the ability to engage in intentional activity is also needed. To do less fails ethical representation.

Textbook Resources for Learning More

Baselt, R.: "Disposition of Toxic Drugs and Chemicals in Man" (8th edition, 2008).
Garriott, J.C., editor: "Medical-Legal Aspects of Alcohol", (5th edition, 2008).
Julien, R.M. "A Primer of Drug Action", (11th ed., 2008).

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Dr. Robert Julien received his Ph.D. in Pharmacology from the University of Washington and his Medical Degree from the University of California at Irvine. Previously an Associate Professor of Pharmacology and Anesthesiology at the Oregon Health Sciences University, Dr. Julien practiced anesthesiology in Portland, Oregon until 2006. An acclaimed teacher and author, Dr. Julien recently published the 12th edition of his psychopharmacology textbook, *A Primer of Drug Action* (Worth Publishers, 2011). Now with 36 years of continuous publication, *A Primer of Drug Action* is regarded as the definitive textbook of psychopharmacology, covering both psychotherapeutic agents as well as substances of abuse.

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