

Substance Abuse among Anesthesia Providers

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Final Student Project (Capstone Project)

MSNA 690

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Substance Abuse among Anesthesia Providers

Abstract

Substance abuse among anesthesia providers is not a new phenomenon. It is a long established issue that has affected many anesthesia providers. Substance abuse is defined as an overindulgence in or dependence on an addictive substance, especially alcohol or drugs. Substance abuse is considered to be one of the most consequential professional risks to anesthesia providers. Anesthesia providers are exposed to enormous amounts of stress emerging from the rigors of didactic and clinical components of anesthesia training, and continuing throughout their careers with the daily demands of anesthesia care.. It is estimated that ten to fifteen percent of all anesthesia clinicians will misuse drugs or alcohol at some time during their careers.

Substance abuse is relevant to the anesthesia profession. Therefore, a thorough understanding of chemical dependency, including clear definitions, risk factors, and treatment, is advantageous in possibly reducing its prevalence.

Problem

Substance abuse among anesthesia providers is not a new phenomenon. It is a long established issue that has affected many anesthesia providers. Substance abuse is defined as an overindulgence in or dependence on an addictive substance, especially alcohol or drugs.

Substance abuse is considered to be one of the most consequential professional risks to anesthesia providers. Anesthesia providers are exposed to enormous amounts of stress emerging from the rigors of didactic and clinical components of anesthesia training. It is estimated that ten to fifteen percent of all anesthesia clinicians will misuse drugs or alcohol at some time during their careers. Substance abuse is relevant to the anesthesia profession. Therefore, a thorough understanding of chemical dependency, including clear definitions, risk factors, and treatment, is advantageous in possibly reducing its prevalence.

Vigilance is vital in the anesthesia profession. Vigilance is defined as the action or state of keeping careful watch for possible danger or difficulties. True vigilance helps the nurse anesthetist/anesthesiologist provide efficient care to the patient. Vigilance minimizes the risk for medical errors and subpar care. Administering anesthesia requires the provider to pay close attention to every detail of the patient during the surgical procedure. If the provider has an issue with substance abuse, it poses a threat to both the patient and the provider. Anesthesia providers who suffer from chemical dependency are more likely to have a lapse in quality of care. Substance abuse causes an impairment in decision-making. The inability to make appropriate decisions while providing anesthesia to a patient can be detrimental. The decline in the level of work performance by the anesthesia provider is often a gradual process. Thus, knowledge about the issue is advantageous for all anesthesia providers.

Review of Literature

There has been a great deal of research pertaining to substance abuse among anesthesia providers, to include both certified registered nurse anesthetists and anesthesiologists. Peer assistance groups have been developed across the United States, typically one for every state nurse anesthetist association, to help the nurse anesthesia community acknowledge, cope, and intervene when one is suffering from chemical dependence.

One article by Lien (2012), stressed the importance of developing programs, not just to prevent chemical dependency among anesthesia providers, but to help detect risk behaviors as well. Lien stated that the anesthesia profession has been effective at decreasing risks from medical mishaps and increasing early detection of those at risk of abusing controlled substances (Lien, 2012). Lien attributed this effectiveness to a combination of things including random urine drug screens, implementing systems and checklists to improve safety, and developing written policies for those suspected of drug use. “Lapses in the quality of clinical care provided may be the first sign indicating that a colleague is abusing controlled drugs” (Lien, 2012, p.608).

Deterioration in quality of clinical care may present with a certified registered nurse anesthetist or anesthesiologist falling asleep during preoperative evaluation or mishandling syringes in the operating room. Lien revealed that although the above behaviors may be easily recognized, behaviors such as diversion of medications from patients and falsification of records of care may not be as easy to detect (Lien, 2012).

Bell, McDonough, Ellison, & Fitzhugh (1999) sought to determine the prevalence of controlled drug misuse among actively practicing CRNAs. Bell and associates also sought to determine variance in controlled drug misuse by variables of age, sex, population and geographic area of residence, type of anesthesia position currently held, and number of years in anesthesia

practice. Of the 1,709 respondents, an established prevalence of controlled drug misuse in the target population was found to be 9.8% of the sample N=167 population (Bell, McDonough, Ellison, & Fitzhugh, 1999). The study revealed that a significant relationship existed between gender, number of years in clinical anesthesia practice and the likelihood for controlled drug misuse.

The largest group of respondents appeared to be CRNAs of female gender residing in urban-dwelling Midwestern areas who were between the ages of 36 and 40 with 11 to 15 years of clinical experience. However, the number of respondents who admitted to drug misuse were CRNAs of the male gender with six to 10 years of clinical anesthesia practice (Bell et al., 1999). These results were discovered by Bell and associates to be consistent with similar studies of similar populations. Based on the results of the study, Bell and associates concluded that the presented variables of gender and number of years in anesthesia practice are reliable predictors of controlled drug misuse by CRNAs (Bell et al., 1999).

Ho and Lee (2013) assessed gender differences in opioid analgesia and addiction and examined the interactions among opioid receptors and estrogen receptors. This particular study showed that women are at a higher risk of abusing opioids through initial prescription painkiller use (Lee & Ho, 2013). The influence of psychosocial and hormonal factors, such as psychiatric comorbidity puts women at a higher risk for drug abuse (Lee & Ho, 2013).

McDonough (1990) analyzed personality, addiction, and anesthesia. According to McDonough (1990) a profile of the typical drug-abusing nurse reveals an individual who graduated in the top one-third of his/her nursing class, holds an advanced degree, works in a high stress area, such as an emergency room, and is referred to as a “super nurse”. The study by McDonough in 1990 measured three facets of personality (impulsiveness, assertiveness, and

excitement seeking) and addictive tendencies in graduate students specializing in nurse anesthesia. The results of the study conducted by McDonough revealed that in terms of assertiveness, the mean scores for the non-anesthesia nursing students were significantly higher than those for the anesthesia students. However, there was a higher mean score for excitement seeking traits for the anesthesia study group as opposed to the non-anesthesia study group (McDonough, 1990).

According to McDonough (1990) the results of the study suggest that the graduate nursing students studied, specializing in anesthesia, are at significantly increased risk for the development of addictive disorders when compared to the non-anesthesia nursing students studied. McDonough concluded that the stress of anesthesia education could be reduced through the creation of structured support systems designed to help students find means other than drugs for dealing with role strain (McDonough, 1990). The need for drug awareness programs is further corroborated by a series of interviews with drug-abusing anesthetists who emphasized the importance of incorporating educational programs on addiction in the curricula of anesthesia programs (McDonough, 1990).

Bozimowski, Dosch, Groh, and Rouen (2014) assessed the prevalence, demographic factors, outcomes, and preventative measures for substance abuse among nurse anesthesia students over a five year period from 2008 to 2012. The results were compared to previous studies conducted by Bell and associates, as well as Ross and colleagues (Bozimowski, Groh, Rouen, & Dosch, 2014). In this particular study, surveys were sent to the program directors of 113 accredited nurse anesthesia programs in the United States. A total of 111 program directors participated in the study. The research revealed a five year prevalence of substance abuse among

student registered nurse anesthetists of 0.65%. This end result was previously reported as 0.487%.

Bozimowski et al. (2014) compared their research with Bell et al., (1999). Bell and associates reported that the majority of reported substance misuse occurred with CRNAs 30 years and older with 11-15 years of anesthesia practice. This raised the concern that students who were not identified as substance abusers may develop this behavior over time (Bozimowski et al., 2014). The results of the study conducted by Bozimowski and associates also revealed that the drugs most frequently abused were opioids, as opposed to the study by Bell et al., 1999 which reported benzodiazepines and nitrous oxide as being the most commonly abused (Bozimowski et al., 2014). A study by Earley and Finver (2013) revealed that the accounted for detection rate of Propofol abuse in health care professionals with anesthesia personnel accounting for the vast majority of the Propofol cases.

McGuinness et al. (2012), sought to compare substance abuse among anesthesiologists versus substance abuse among nurse anesthetists. A study conducted by Gallegos et al. (1999) examined the differences in drugs of abuse and the route of administration between anesthesiologists and other physician specialties and it revealed that anesthesiologists were more likely to abuse opioids intravenously. This particular study by Gallegos et al also revealed that anesthesiologists had the highest rate for abusing potent opioids, such as fentanyl, alfentanil, and sufentanil (Wright et al., 2012). In 2002, a study by Booth et al. reported about a 1% incidence of controlled-substance abuse among residents and a 1.6% incidence among faculty in academic anesthesiology programs (Wright et al., 2012).

Booth also revealed that in 18% of the anesthesia residents and faculty found to be abusing, death or near death due to an overdose was the initial indicator of abuse. According to

McGuiness et al., (2012) most drug-related deaths in anesthesiologists occurred within the first five years after graduation, substantiating early development of a pattern of abuse (McGuiness et al., 2012).

McGuiness et al. (2012) discussed the well-known research conducted by Bell et al. (1999) and McGuiness et al. also presented results from an unpublished replicated study performed by Bell and associates in 2006. With the replicated study by Bell and associates (2006), a subset of participants in the study admitted misusing substances during their first three to five years of anesthesia practice as opposed to six to 10 years in the previous study conducted by Bell et al., in 1999 (McGuiness et al., 2012). According to McGuiness et al. (2012), there was a significant contrast from the younger ages associated with anesthesiologists.

Garg, Gupta, and Gupta (2015) assessed addiction in anesthesiologists and its implications on anesthesia. According to Garg et al. (2015), the commonly abused drugs include opioids, Propofol, ketamine, sodium thiopental, lidocaine, nitrous oxide, and the potent volatile anesthetics. There is a high incidence of death among substance-abusing anesthesiologists due to the high potency and low therapeutic windows of drugs available for abuse to them like opioids, Propofol, and volatile anesthetics (Gupta, Garg, & Gupta, 2015). According to Garg et al. (2015), impaired anesthesiologists may be difficult to identify because they believe they are immune to developing a substance use disorder, are good at hiding signs and symptoms, and tend to self-diagnose and treat themselves without seeking professional help. An anesthesiologist working under the influence of drugs increases the professional liability for himself and his group in case of a lawsuit (Gupta et al., 2015). Garg et al. (2015) concluded that to reduce addiction among anesthesiologists, a comprehensive approach is required to improve their overall working conditions. This includes strict regulations to limit the number of work hours per

week/month, stress management workshops, and scheduled mental and physical health checkups every year to ensure their fitness and detect early signs of illness (Gupta et al., 2015).

Bryson (2009) assessed whether or not anesthesia residents with a history of substance abuse should be allowed to continue training in clinical anesthesia. According to Bryson (2009), for residents allowed to continue with anesthesia residency training, the relapse rate was 29%. There was a statistically significant difference between the period of time spent away from clinical practice and the rate of relapse (Bryson, 2009). Of the 99 residents who were allowed to return to their clinical training programs, 59 (59%) were ultimately successful in completing the residency. Of the 40 who were not successful, 29 relapsed (3 of whom died as a result of the relapse, a 10% risk for death when relapse occurs after reentry), and 11 were ultimately dismissed for other reasons such as poor clinical performance or they left voluntarily for another medical specialty (Bryson, 2009).

It is nearly impossible to remove the role strain from the practice of anesthesia. However, it may be possible to teach coping and adapting skills to nurse anesthesia students so they will be better able to deal with the inherent stressors of their profession. It is hoped that such a program would not only enable these students to be more resistant to addictive disorders, but would also help them develop the skills needed on a personal level to become more fulfilled and functional individuals.

Project Description

The objective of this project was to bring further awareness to nurse anesthesia students about substance abuse among anesthesia providers by presenting substantial information pertaining to anesthesia providers and their relationship to chemical dependency. A thorough literature review of the subject was performed. A discussion about the subject's prevalence, as well as risk factors and current research was conducted with the senior student nurse anesthetist students of the Adventist University of Health Sciences 2016 cohort on September 25, 2015.

The project included a learning module, pre-lecture questionnaire (Appendix B), and a subsequent and final questionnaire (Appendix C) following the presentation (Appendix E) of the learning module. Informed consent (Appendix A) was obtained from each participant prior to conducting the pre and post questionnaires. The responses remained anonymous throughout the project.

The project is important because this is an ongoing issue in the field of anesthesia. It is not something that nurse anesthesia providers and nurse anesthesia students should be nonchalant about because it does not affect them personally. All anesthesia providers, both anesthesiologists and certified registered nurse anesthetists, as well as student registered nurse anesthetists, should stay current with the topic.

This project was implemented by incorporating information pertaining to substance abuse and its association with anesthesia providers including: risks, physiologic and anatomic alterations in brain function/structure occurring during addiction, professional and physiological consequences of behaviors that occur during chemical dependency, strategies for intervention, and variables/limitations to recovery and reentry.

Evaluation

The measurable outcome of this project was an enhanced knowledge of SRNAs about substance abuse among anesthesia providers. The project's efficacy was assessed using the results of the pre and post questionnaire. The learning module was constructed to display the foundation of current literature regarding substance abuse among nurse anesthesia providers.

Conducting a pre-questionnaire helped to determine a baseline assessment of the anonymous responses of the SRNAs' basic knowledge of the presented problem/topic. The post questionnaire allowed an assessment of an enhancement in knowledge about the presented subject to be performed. Questionnaires were completed anonymously. The participants each received ten minutes to complete the pre questionnaire and an additional ten minutes to complete the post questionnaire following the presentation. Significance was measured by comparing the pretest and posttest scores. The SRNAs were each given the same questionnaire post-learning module with the sequence of the questions rearranged. Each participant received a pretest labeled with a number. The posttest contained the same number. This allowed the questionnaires to remain anonymous while simultaneously providing an accurate way to compare pretest and posttest scores.

The successful completion of this capstone project was determined by evidence of enhanced knowledge of the senior student registered nurse anesthetist of Adventist University of Health Sciences 2016 cohort. Evidence of an enhanced knowledge of the subject presented was provided by the results of the questionnaires. The results (See Appendix D) were reviewed by the chair of the Scientific Review Committee for Adventist University of Health Sciences.

Results and Conclusions

Surveys (see Appendix B) were administered to senior student nurse anesthetist students of the Adventist University of Health Sciences 2016 cohort. Twenty out of twenty responses were evaluated. The survey results demonstrated that the initial knowledge base of substance abuse among anesthesia providers was indeed limited. To increase student knowledge about substance abuse among anesthesia providers, an evidenced-based presentation was given to the 2016 cohort of ADU nurse anesthesia program.

The project proved to be important based on the comparison of the pre and post questionnaire results. This topic continues to be an issue in the field of anesthesia. It is not something that nurse anesthesia providers and nurse anesthesia students should be overlooked.

It is apparent that there was a lack of knowledge about substance abuse among anesthesia providers. Conducting a thorough literature review and providing an evidence-based education module increased the knowledge base of the participants. The t-test for paired samples was employed to analyze the data. The obtained t value is -11.315 with an associated p of <.05 which is statistically significant. It can be concluded that there is a significant difference between the Pre-Test and Post-test mean. The negative t value indicated that there was a significant increase in the mean scores.

The anticipated outcome of the project was achieved. This outcome was an increase in awareness of substance abuse among anesthesia providers. The final result of this capstone project is a basic education about substance abuse among anesthesia providers. Ultimately, this project can help to educate other students as well as licensed anesthesia providers. ADU nurse anesthesia senior students from the 2016 cohort benefitted from this capstone project evidenced by the results. However, continued education is required to continue to enhance the knowledge

and increase awareness about substance abuse among anesthesia providers. The completion of this project will include a poster presentation (Appendix F) amongst Adventist University of Health Sciences faculty and students.

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Appendix A

ADU NAP CAPSTONE PROJECT – INFORMED CONSENT

My name is Erica Jordan, and I am a MSNA student in the Nurse Anesthesia Program (NAP) at Adventist University of Health Sciences (ADU). I am doing a Capstone Project called *Substance Abuse among Anesthesia Providers*. This project is being supervised by Alescia L. DeVasher Bethea PhD. We would like to invite you to participate in this project. The main purpose of this form is to provide information about the project so you can make a decision about whether you want to participate.

WHAT IS THE PROJECT ABOUT?

The purpose of this project is to bring further awareness to nurse anesthesia students about substance abuse among anesthesia providers by presenting substantial information pertaining to anesthesia providers and their relationship to chemical dependency.

WHAT DOES PARTICIPATION IN THIS PROJECT INVOLVE?

If you decide to participate in this project, you will be asked to complete an anonymous pre-assessment, attend a classroom presentation, and then complete an anonymous post-assessment. The assessment will address substance abuse among anesthesia providers, as well as risk factors and current research pertaining to the subject. Your participation by attendance at the presentation and completion of the survey is anticipated to take approximately 2 hours.

WHY ARE YOU BEING ASKED TO PARTICIPATE?

You have been invited to participate as part of a convenience sample of students currently enrolled in the ADU NAP. Participation in this project is voluntary. If you choose not to participate or to withdraw from the project, you may do so at any time.

WHAT ARE THE RISKS INVOLVED IN THIS PROJECT?

Although no project is completely risk-free, we don't anticipate that you will be harmed or distressed by participating in this project.

ARE THERE ANY BENEFITS TO PARTICIPATION?

We don't expect any direct benefits to you from participation in this project. The possible indirect benefit of participation in the project is the opportunity to gain additional knowledge about substance abuse among anesthesia providers.

HOW WILL THE INVESTIGATORS PROTECT PARTICIPANTS' CONFIDENTIALITY?

The results of the project will be published, but your name or identity will not be revealed. To maintain confidentiality of assessments, the investigators will conduct this project in such a way to ensure that information is submitted without participants' identification. Each questionnaire will be labeled with a number in the right hand corner. The subsequent post questionnaire results with the designated number in the right hand corner will be matched with the participants' prequestionnaire results containing the same number. Thus, the investigators will not have access to any participants' identities.

WILL IT COST ANYTHING OR WILL I GET PAID TO PARTICIPATE IN THE PROJECT?

Your participation will cost approximately 2 hours of your time, but will require no monetary cost on your part. You will not be paid to participate.

VOLUNTARY CONSENT

By signing this form, you are saying that you have read this form, you understand the risks and benefits of this project, and you know what you are being asked to do. The investigators will be happy to answer any questions you have about the project. If you have any questions, please feel free to contact Alescia L. DeVasher Bethea, PhD, CRNA (Alescia.devasher@adu.edu) or Erica Jordan, SRNA (Erica.jordan@my.adu.edu). If you have concerns about the project process or the investigators, please contact the Nurse Anesthesia Program at (407) 303-9331.

Participant Signature

Date

Participant Name (PRINTED LEGIBLY)

Appendix B

Test # _____

Pre-Test: Substance Abuse among Nurse Anesthesia Providers

1. Women are at a higher risk of abusing opioids through initial _____.
 - a) opioid exposure at work
 - b) pain prescription painkiller use
 - c) opioid exposure during a caesarean section
 - d) opioid exposure intraop for orthopedic surgery
2. What is considered by many to be the most serious occupational risk for the anesthesia community?
 - a) Infection
 - b) Radiation exposure
 - c) Substance abuse
 - d) Bloodborne pathogen contamination
3. Which of the following groups has an increased risk for controlled drug misuse?
 - a) Male CRNAs with 6 -10 years anesthesia clinical experience
 - b) Female CRNAs with 2-4 years of anesthesia clinical experience
 - c) Female CRNAs with 5-8 years of anesthesia clinical experience
 - d) Male CRNAs with 3-5 years anesthesia clinical experience
4. The typical time frame for discovery of substance abuse among nurse anesthetists and anesthesiologists is:
 - a) 5 years
 - b) 15years
 - c) 1-1.5 years
 - d) 10 years
5. Signs and symptoms of diversion of substances from the workplace include:
 - a) Changes in personal appearance
 - b) Complaints of pain increase by patients in whom pain medication was documented but never administered
 - c) Lapses in the quality of clinical care
 - d) All of the above
6. Causes of chemical dependency are _____.
 - a) multifactorial
 - b) unifactorial
 - c) unknown
 - d) solely related to stress
7. The most commonly abused drug among nurse anesthesia students is:

- a) Benzodiazepine
 - b) Ketamine
 - c) Propofol
 - d) Opioids
8. It is suggested that _____ % of all clinicians will misuse drugs or alcohol at some time during their career.
- a) 3-5%
 - b) 21-25%
 - c) 10-15%
 - d) 43-61%
9. Impaired anesthesiologists may be difficult to identify because_____.
- a) They are good at hiding signs and symptoms.
 - b) They believe they are immune to developing a substance use disorder
 - c) They tend to self-diagnose and treat themselves without seeking professional help.
 - d) They tend to seek professional help in private
 - e) All of the above
 - f) A, B, C
10. Major factors influencing the development of substance abuse and dependency among anesthesiologists and nurse anesthetists include:
- a) Comorbid psychiatric disorders
 - b) Sensation- and/or excitement-seeking personality traits
 - c) Stress
 - d) Pharmacologic knowledge
 - e) Occupational exposure
 - f) Medication access
 - g) A,B,C
 - h) all of the above
 - i) A,B,D,F

Appendix C

Test # _____

Post-Test: Substance Abuse among Nurse Anesthesia Providers

1. What is considered by many to be the most serious occupational risk for the anesthesia community?
 - e) Infection
 - f) Radiation exposure
 - g) Substance abuse
 - h) Bloodborne pathogen contamination
2. The most commonly abused drug among nurse anesthesia students is:
 - e) Benzodiazepine
 - f) Ketamine
 - g) Propofol
 - h) Opioids
3. The typical time frame for discovery of substance abuse among nurse anesthetists and anesthesiologists is:
 - a) 5 years
 - b) 15years
 - c) 1-1.5 years
 - d) 10 years
4. Signs and symptoms of diversion of substances from the workplace include:
 - e) Changes in personal appearance
 - f) Complaints of pain increase by patients in whom pain medication was documented but never administered
 - g) Lapses in the quality of clinical care
 - h) All of the above
5. Which of the following groups has an increased risk for controlled drug misuse?
 - a) Male CRNAs with 6 -10 years anesthesia clinical experience
 - b) Female CRNAs with 2-4 years of anesthesia clinical experience
 - c) Female CRNAs with 5-8 years of anesthesia clinical experience
 - d) Male CRNAs with 3-5 years anesthesia clinical experience
6. It is suggested that _____% of all clinicians will misuse drugs or alcohol at some time during their career.
 - e) 3-5%
 - f) 21-25%
 - g) 10-15%
 - h) 43-61%

7. Impaired anesthesiologists may be difficult to identify because_____.
- a) They are good at hiding signs and symptoms.
 - b) They believe they are immune to developing a substance use disorder
 - c) They tend to self-diagnose and treat themselves without seeking professional help.
 - d) They tend to seek professional help in private
 - e) All of the above
 - f) A, B, C
8. Women are at a higher risk of abusing opioids through initial_____.
- e) opioid exposure at work
 - f) pain prescription painkiller use
 - g) opioid exposure during a caesarean section
 - h) opioid exposure intraop for orthopedic surgery
9. Major factors influencing the development of substance abuse and dependency among anesthesiologists and nurse anesthetists include:
- j) Comorbid psychiatric disorders
 - k) Sensation- and/or excitement-seeking personality traits
 - l) Stress
 - m) Pharmacologic knowledge
 - n) Occupational exposure
 - o) Medication access
 - p) A,B,C
 - q) all of the above
 - r) A,B,D,F
10. Causes of chemical dependency are_____.
- e) multifactorial
 - f) unifactorial
 - g) unknown
 - h) solely related to stress

Appendix D**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	4.9500	20	1.79106	.40049
	Post-Test	9.5500	20	.94451	.21120

The mean scores for Pre-Test and Post-Test are 4.95 and 9.55 respectively.

Appendix E



Substance Abuse

- Substance Abuse is defined as an overindulgence in or dependence on an addictive substance, especially alcohol or drugs.
- Chemical Dependency- Addiction to a mood or mind-altering drug, such as alcohol or cocaine.

Triad of Contributing Factors to Drug Misuse by CRNAs

Availability
Accessibility
Accountability

Major Factors Influencing the Development of Substance Abuse and Dependency Among Anesthesiologists and Nurse Anesthetists

- Biological- Neurobiological, Genetics** (It is thought that genetics account for about 50% of alcohol addiction)
- Psychological- Comorbid psychiatric disorders, Sensation- and/or excitement-seeking personality traits**
- Occupational- Stress, medication access, Pharmacologic knowledge, Occupational exposure**
- Causes of chemical dependency are multifactorial.**

Brain Reward System

The brain's reward system is a complex system that involves the release of dopamine in the nucleus accumbens. This system is responsible for the feelings of pleasure and reward. The brain's reward system is a complex system that involves the release of dopamine in the nucleus accumbens. This system is responsible for the feelings of pleasure and reward.

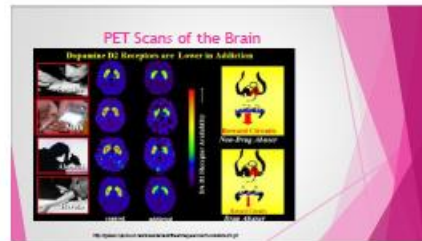
Brain Reward System

DRUGS OF ABUSE TARGET THE BRAIN'S PLEASURE CENTER

The brain's reward system is a complex system that involves the release of dopamine in the nucleus accumbens. This system is responsible for the feelings of pleasure and reward. The brain's reward system is a complex system that involves the release of dopamine in the nucleus accumbens. This system is responsible for the feelings of pleasure and reward.

Brain Reward: Understanding How the Brain Responds to Natural Rewards and Drugs of Abuse

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4711111/>



- ## Recognizing Substance Abuse
- Comes to work during scheduled time isolates and withdraws from peers
 - Expresses desire to take more care
 - Increasing or unexplained tardiness or absences
 - Gradual decline in work performance
 - Consistently signs out more narcotics than do peers
 - Has patterns of inappropriate drug choices and doses for patients
 - Changes in personal appearance
 - Complaints of pain increase in whom pain medication was documented but never administered
 - Lapses in the quality of clinical care
- (Copyright 2017 The Joint Fact. All Rights Reserved. Inc.)

Recognizing Substance Abuse

- » Becomes forgetful, unpredictable, and confused and lacks concentration
- » Has frequent illnesses or physical complaints
- » Is dishonest, often over trivial or unimportant matters
- » Makes elaborate excuses
- » Has chronic or "weekend-morning slaves"
- » Has signs of alcohol or drug use, such as odor of alcohol on breath, heavy perfume or mouthwash, wearing long sleeves
- » Seems intoxicated at social functions
- » Is found comatose or dead

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Recognizing Substance Abuse

Impaired anesthesiologists may be difficult to identify because:

- » They are good at hiding signs and symptoms.
- » They believe they are immune to developing a substance use disorder.
- » They tend to self-diagnose and treat themselves without seeking professional help.

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Treatment

- » Planned intervention:
- » Include a trained interventionist*, family, spouse, and colleagues.
- » Include as many people as you can and be sensitive to gender.
- » Bring all the evidence.
- » Get a properly collected drug screen.
- » Do not let the person out of your sight. Do not let them drive.
- » Have a bed in a **hospital** facility ready.
- » Do not let the addict decide their treatment. Remember, they are sick.
- » When all else fails, threaten to call the police. Often, this will cause the individual to admit that he/she has a serious problem.

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Treatment

- » Chemical dependency and psychological evaluation by licensed provider with experience treating substance abuse and dependency
- » 30 to 90 days' inpatient treatment in a facility designed for healthcare providers
- » Abstinence from the practice of anesthesiology for a minimum of 1 year
- » Initial return to practice with no narcotic privileges, followed by incremental return of privileges
- » Intensive outpatient treatment and follow-up
- » Abstinence from alcohol and use of nonprescribed mood-altering medications
- » Weekly appointments with addictionologist
- » Attendance at 12-step support groups from 1 to 3 times per week
- » Family involvement with program
- » Monitoring with random drug screens once every couple of weeks to once a month for a minimum of 5 years
- » Documented compliance with all aspects of program to complete the program

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Treatment Center

- » The treatment center chosen should at a minimum include:
 - » Comprehensive evaluation and treatment recommendations by an **American Society of Addiction Medicine (ASAM)** member certified by the American Board of Addiction Medicine (ABAM) committed to evaluating and treating anesthesiologists in substance based recovery models in accordance with other safety sensitive occupations such as aviation, department of defense and department of transportation.
 - » Evaluation by an **American Academy of Addiction Psychiatry (AAAP)** board-certified Addiction Psychiatrist where appropriate.
 - » Appropriate neuro-psychiatric and/or psychiatric testing where appropriate.
 - » When detoxification is medically indicated, inpatient medically supervised detoxification.
 - » Emphasis on a long-term 12 step model of substance based recovery.
 - » Evaluation of suitability for, and timing of, the **return to anesthesiology practice** as it relates to unique disabilities and risks that can threaten their ability to maintain sobriety.

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Post-Treatment Recommendations

- » Compliance with all treatment center recommendations for continuing care after discharge, such as:
 - » Relapse prevention techniques
 - » Recovering professionals meeting attendance
 - » Active participation in the 12 step recovery community
 - » Monitoring of random urine drug screens

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Health and Wellness Contacts

- Peer Assistance in Your State/Peer Assistance Advisors
Peer Assistance Helpline
(800) 454-3167
- American Foundation for Suicide Prevention Helpline
T (800) 273-TALK
- Anesthetists in Recovery (AIR)
- Health and Wellness Committee AANA Staff: Julie Rice, AANA
Manager Health, Wellness, and Peer Assistance Programs (847) 655-
1114 www.aana.org, or www.wellnessaana.com

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FANA Peer Assistance

- Beth Sawyer, CRNA (Chairman) (727) 347-3525
- Ron Wagner, CRNA (Co-Chairman) (727) 862-0217
- State Peer Advisor: Linda S. Foley, CRNA (561) 373-0517
- FLAIR (Florida Anesthetists in Recovery)
- RAIR (Partners of Anesthetists in Recovery)
- Peer Coordinator - Sunday Sawyer, RN

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Relapse Triggers

- Common triggers in addiction relapse include: stress, people, locations, moods, time, events.
- Environmental** triggers are often easy to identify. Going to a bar, being in a certain neighborhood or your childhood home may bring back unpleasant memories that you highly associated with substance abuse.
- Social** triggers are often easy to identify. For example, getting a phone call from a family member, meeting with a fellow user or seeing a former significant other may incite the desire to abuse a substance.
- Emotional** triggers are often more complicated. For many people, underlying emotional and mental health concerns will trigger substance abuse, and so managing triggers requires managing your personal emotional state. See more at: <http://www.addictioncenter.com/relapse/prevention/identifying-and-managing-triggers-with-drug-addiction/>

Relapse

COMPARISON OF RELAPSE RATES BETWEEN DRUG ADDICTION AND OTHER CHRONIC ILLNESSES

Condition	Percent of Patients Who Relapse
Drug Addict	61.1%
Type 1 Diabetes	34.3%
Hypertension	30.1%
Asthma	30.0%

Relapse rate for drug addiction is compared with three other chronic diseases: hypertension, diabetes, and asthma. Despite relapse rates that are often higher than those for a reference condition, drug addiction should be treated like any other chronic illness with relapse entry as a sign to restart the medical process.

Source: JAMA 296:1697-1699, 2006

Reentry

- Should anesthesiologists with a history of substance abuse be allowed to continue training in clinical anesthesia?
- One particular study by Bryson (2008) showed that for residents allowed to continue with anesthesia residency training after treatment, the relapse rate was 24%. Death was the initial presentation of relapse in 10% of the reported cases. 43% of program directors believed residents in recovery from addiction should be allowed to attempt re-entry while 30% believed that residents in recovery from addiction should not.

Reentry

- Factors of successful reentry include: support and a structured diversion program.
- Successful completion of a program.
- Monitoring program with random drug testing.
- A gradual reintroduction into the clinical setting is recommended.
- Participation in support groups is strongly encouraged.
- Use of anesthesia simulators for 12 months before reentry.

Review of Current Literature

Opioid Abuse Among Nurse Anesthetists and Anesthesiologists

- In 1995, studies showed that anesthesiologists had the highest rate for abusing potent opioids such as fentanyl, alfentanil, and sufentanil.
- In 1986, anesthesiologists and faculty found to be abusing, death or near death due to an overdose was the initial indicator of abuse.
- Most drug-related deaths in anesthesiologists occurred within the first 5 years after graduation, substantiating early development of a pattern of abuse.
- 10% of nurse anesthetists admitted to misusing powerful anesthetic medications during their career.
- The most common medications abused were benzodiazepines, nitrous oxide, potent opioids, and Propofol.
- The typical time frame for discovery is 1 to 1.5 years.

The Prevalence and Patterns of Substance Abuse Among Nurse Anesthesia Students

- This study provided current data on the substance abuse prevalence and patterns among CRNAs from 2008 to 2012.
- Out of 11 program directors of accredited nurse anesthesia programs in the U.S., 23 reported data related to 2,349 students.
- Sixteen incidents of substance abuse were reported for a 5-year prevalence of 0.68%.
- Opioids were the most commonly abused drug class of choice in this study.
- Reported outcomes for these students included voluntary entry into treatment (n=9), dismissal from the program (n=7), loss of nursing license (n=2), and 1 death.

Typical Drug-Abusing Nurse Profile

- Individual who graduated in the top one-third of his/her nursing class
- Advanced degree
- Works in a high stress area (i.e., emergency room)
- Often referred to as a "super nurse"

Controlled drug misuse by Certified Registered Nurse Anesthetists

- 1 out of every 10 (CRNAs) actively practicing CRNAs misuse controlled drugs, it is reasonable to assume that on-the-job treatment is likely.
- It has been stated that role strain and lack of education about addiction predispose nurses to addiction.
- Male CRNAs with 4 to 10 years of clinical experience have an increased risk for controlled drug misuse.
- The largest group of respondents appeared to be CRNAs of female gender residing in urban-dwelling/suburban areas who were between the ages of 36 and 40 with 11 to 15 years of clinical experience. However, the number of respondents who admitted to drug misuse were CRNAs of the male gender with 4 to 10 years of clinical anesthesia practice.

Death from Propofol: Accident, Suicide, or Murder?

- Case 4 - 27 year old male nurse anesthetist was found dead at home after self-administration of Propofol for recreational purpose. Several puncture wounds suggested chronic abuse during the preceding days. Three empty ampules of Propofol were discovered beside him, and crushed ampules were found in his car. Forensic investigation found acute pulmonary edema and hemorrhagic pericarditis.
- Case 7 - A 38 year old female anesthesiologist was found dead in a hospital dormitory, the door of which were locked from the inside. Three empty Propofol vials were next to her body. She had been a known Propofol abuser for several months before her death. At autopsy, her blood were filled with pink, frothy, bloody fluid.

Death from Propofol: Accident, Suicide, or Murder?

- Cases (6-14): 136 anesthesiology resident training programs in the United States were examined to determine the level of Propofol abuse. Propofol abuse was noted in 18% of departments, representing a fivefold increase over previous studies and an incidence of 10 cases/10,000 anesthesiology providers/decade. Twenty-five abusers were reported for the 10-yr period from 1985-2005, seven of whom died as a result of the abuse (six residents and one operating room/anesthesia technician). All deaths occurred in training programs with no controls over Propofol use.

[Boling, Cohen, & Douglas, 1998]

Addiction to Propofol: A Study of 22 Treatment Cases

- A 40-year-old CRNA initially began experimenting with intravenous fentanyl. She recalled the effects of Propofol and fentanyl from a prior surgical procedure just a few weeks earlier. She recounted how they "relieved all of her emotional pain" and the "how immediately she was addicted." Her use started by injecting fentanyl in the evening after work. Over a period of 3 months, it escalated to injecting approximately 40-150 mcg, four times a day. She developed a sleep disturbance (a least partially related to the fentanyl use) and decided to try Propofol to help with this problem, initially injecting just enough to initiate sleep. Within several weeks, she had placed an indwelling IV catheter for her use. On the way home from work, she would drive her car to a secluded spot and park. There, she would inject a 25mg dose of Propofol providing 1 hour of sleep....

[Boling & Pierce 2015]

Sex differences in opioid analgesia and addiction: Interactions among opioid receptors and estrogen receptors

- General observations suggest that there are more adult men than women involved in illicit drug abuse. However, this contrasts to the clinical and animal studies indicating that females are more susceptible than males to drug abuse.
- Factors contributing to sex differences in drug abuse include pharmacokinetics, behavioral phenotypes for drug abuse vulnerability, sensitivity to aversive properties of drugs, puberty and adolescence, and genetic factors beyond hormones.
- This particular study showed that women are at a higher risk of abusing opioids through initial pain prescription/painkiller use.
- The influence of psychosocial and hormonal factors, such as psychiatric comorbidity puts women at a higher risk for drug abuse.

[Gao et al., 2015]

Meet Larry

- https://youtu.be/8U0z_mah6

Janet R. Stewart, CRNA, ARNP AANA President 1999 - 2000



Anita Bertrand, CRNA

- https://youtu.be/8U0z_mah6

- <http://www.aana.com/resources/health-solutions/careers/working-at-aana.cfm>



Summary

- Substance abuse is considered to be one of the most consequential professional risks to anesthesia providers.
- It is estimated that ten to fifteen percent of all anesthesia clinicians will misuse drugs or alcohol at some time during their careers.
- Causes of chemical dependency are multifactorial.
- The factors of recognition are attitude, affect, knowledge and suppression.
- Recognizing substance abuse in the workplace involves some of the following:
 - Candidly sign out more narcotics than do peers
 - Has patterns of inappropriate drug choices and doses for patients
 - Changes in personal appearance
 - Complaints of pain increase by patients in whom pain medication was documented but never administered
 - Lapses in the quality of clinical care

Summary

Impaired anesthesiologists may be difficult to identify because:

- They are good at hiding signs and symptoms.
- They believe they are immune to developing a substance use disorder.
- They tend to self-diagnose and treat themselves without seeking professional help.

- The typical time frame for discovery is 1 to 5 years.
- Episodes were the most commonly abused drug class by nurse anesthesia students.
- Male CRNAs with 4 to 10 years of clinical experience have an increased risk for controlled drug misuse.
- This particular study showed that women are at a higher risk of abusing opioids through 30-day pain prescription postdischarge use.
- Factors of successful recovery include: support and a structured diversion program.
- "Recovery is an ongoing process not a cure"

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Questions?

just kidding

Quiz Review

- 1. What is considered by many to be the most serious occupational risk for the anesthesia community?
 - A) Infection
 - B) Radiation exposure
 - C) Substance abuse
 - D) Bloodborne pathogen contamination
- 2. The most commonly abused drug among some anesthesia students is:
 - A) Benzodiazepine
 - B) Barbiturate
 - C) Propofol
 - D) Opioids

Quiz Review

- 3. The typical time frame for discovery of substance abuse among some anesthetists and anesthesiologists is:
 - A) 5 years
 - B) 10 years
 - C) 1-3 years
 - D) 12 years
- 4. Signs and symptoms of diversion of substances from the workplace include:
 - A) Changes in personal appearance
 - B) Complaints of pain/increased by patients in whom pain medication was documented but none administered
 - C) Cautions to the quality of clinical care
 - D) All of the above

Quiz Review

- 5. Which of the following groups has an increased risk for controlled drug misuse?
 - A) Male CRNAs with < 10 years anesthesia clinical experience
 - B) Female CRNAs with 2+ years of anesthesia clinical experience
 - C) Female CRNAs with 10 years of anesthesia clinical experience
 - D) Male CRNAs with 2-5 years anesthesia clinical experience
- 6. It is suggested that _____ % of all CRNAs will misuse drugs or alcohol at some time during their career.
 - A) 55
 - B) 22%
 - C) 10-15%
 - D) 4-6%

Quiz Review

- 7. Impaired anesthetists may be difficult to identify because:
 - A) They are good at hiding signs and symptoms.
 - B) They believe they are immune to developing a substance use disorder.
 - C) They tend to self-diagnose and treat themselves without seeking professional help.
 - D) They tend to seek professional help in private.
 - E) All of the above
- 8. Women are at a higher risk of abusing opioids through initial:
 - A) opioid exposure at work
 - B) pain prescription/prescription use
 - C) opioid exposure during a cesarean section
 - D) opioid exposure intrapartum for orthopedic surgery

Quiz Review

9. Major factors influencing the development of substance abuse and dependency among anesthesiologists and nurse anesthetists include:

- a) Genetic/psychiatric factors
- b) Teratogenic and/or anesthetic-related personality traits
- c) Stress
- d) Pharmacologic knowledge
- e) Occupational exposure

7. Medication access

8. A,B,C

9. all of the above


10. A,B,C,D

Quiz Review

10. Causes of chemical dependency are _____

- a) multifactorial
- b) unifactorial
- c) unknown
- d) solely related to stress

Appendix F



**ADVENTIST UNIVERSITY
OF HEALTH SCIENCES**
Florida Hospital's University

Substance Abuse Among Anesthesia Providers

Erica Jordan, SRNA, RN, BSN, CCRN
Project Mentor: Altigrace Medastin MSNA, CRNA Committee Chair: Alescia DeVasher Bethea, PhD, CRNA
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Abstract

Substance abuse among anesthesia providers is not a new phenomenon. It is a long established issue that has affected many anesthesia providers. Substance abuse is defined as an overindulgence in or dependence on an addictive substance, especially alcohol or drugs. Substance abuse is considered to be one of the most consequential professional risks to anesthesia providers. Anesthesia providers are exposed to enormous amounts of stress emerging from the rigors of didactic and clinical components of anesthesia training, and continuing throughout their careers with the daily demands of anesthesia care. It is estimated that two to fifteen percent of all anesthesia clinicians will misuse drugs or alcohol at some time during their careers. Substance abuse is relevant to the anesthesia profession. Therefore, a thorough understanding of chemical dependency, including clear definitions, risk factors, and treatment, is advantageous in possibly reducing its prevalence.

Review of Literature

Major Factors Influencing the Development of Substance Abuse and Dependency Among Anesthesiologists and Nurse Anesthetists

Biological- Neurobiological, Genetics (It is thought that genetics account for about 50% of alcohol addiction).

Psychological- Comorbid psychiatric disorders, Sensation- and/or excitement-seeking personality traits.

Occupational- Stress, Medication access, Pharmacologic Knowledge, Occupational exposure. (McGuiness et al., 2012).

Recognizing Substance Abuse in the Workplace

- Consistently signs out more narcotics than do peers
- Has patterns of inappropriate drug choices and doses for patients
- Changes in personal appearance
- Complaints of pain increase by patients in whom pain medication was documented but never administered
- Lapses in the quality of clinical care
- Wide mood swings
- Problems with law enforcement or authority
- Volunteers for extra cases/call
- Sloppy record keeping or dose discrepancies

Typical Drug-Abusing Nurse Profile

- Individual who graduated in the top one-third of his/her nursing class
- Advanced degree
- Works in a high stress area (i.e., emergency room)
- Often referred to as a "super nurse"

• 10% of nurse anesthetists admitted to misusing powerful anesthetic medications during their careers.

• The most common medications abused were benzodiazepines, nitrous oxide, potent opioids, and Propofol.

• The typical time frame for discovery is 1 to 1.5 years.

• 1 out of every 10 (9.8%) actively practicing CRNAs misuses controlled drugs; thus, it is reasonable to assume that on-the-job impairment is likely.

• Male CRNAs with 6 to 10 years of clinical experience have an increased risk for controlled drug misuse. (Ball et al., 1999)

RESULTS

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pre-Test	4.9500	20	1.79106	.40349
Post-Test	9.5500	20	.94451	.21120

The mean scores for Pre-Test and Post-Test are 4.95 and 9.55 respectively.

CONCLUSIONS

The t-test for paired samples was employed to analyze the data. The obtained t value is -11.315 with an associated p of <.05 which is statistically significant. It can be concluded that there is a significant difference between the Pre-Test and Post-test mean. The negative t value indicated that there is a significant increase in the mean scores.

Substance abuse among anesthesia providers is a long established issue that has affected many anesthesia providers.

Providing this supplemental evidence-based education module increased the knowledge base of the participants.

The anticipated outcome of the project was achieved.

REFERENCES

Available upon request. The references are printed on the back of the poster.

