7-18-2023

Drug Diversion Education for the Anesthesia Provider Plus One

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DRUG DIVERSION PREVENTION EDUCATION FOR THE ANESTHESIA PROVIDER PLUS ONE

by

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A DNP Project Submitted to the Faculty of the

DEPARTMENT OF NURSING, COLLEGE OF SAINT BENEDICT

In Partial Fulfillment of the Requirements for the Degree of

DOCTOR OF NURSING PRACTICE

August, 2023

THE COLLEGE OF SAINT BENEDICT

DEPARTMENT OF NURSING

As members of the DNP Project Committee, we certify that we have read the DNP project prepared by Denise M. Christie titled Drug Diversion Prevention Education for the Anesthesia Provider Plus One and recommended that it be accepted as fulfilling the DNP project requirement for the Degree of Doctor of Nursing Practice.

Date: 7-18-2023

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Final approval and acceptance of this DNP project are contingent upon the candidate's submission of the final copies of the DNP project to the Department of Nursing.

ACKNOWLEDGMENTS

I would like to express my appreciation to the Graduate Nursing Professors at the College of Saint Benedict who not only skillfully walked me through the process of this project, but also had the vision to advance the DNP program.

DEDICATION

I dedicate this DNP project to my family who allowed me the time to work tirelessly for it to come to fruition, and to the anesthesia providers who have lost their lives too soon due to addiction.

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Drug Diversion Prevention Education for the Anesthesia Provider Plus One

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Key Words:

Drug Diversion, Education, Plus One, Prevention, Substance Use Disorder

Abstract

The purpose of this quality improvement project was to determine awareness, knowledge, and the value of educating both the anesthesia provider and their spouse/significant other/family member/close friend (plus one) on the risks of drug diversion. Surveys revealed only 20% of plus ones had received previous education on drug diversion. After the educational session, anesthesia providers and plus ones showed increased awareness of the risks of drug diversion (p 0.08), increased knowledge of signs and symptoms, and perceived protection from diversion through education of the plus ones (p 0.08). Further investigation of the persistence of these effects is warranted.

INTRODUCTION

Drug diversion is an uncomfortable topic for anesthesia providers, defined as anesthesiologists, certified registered nurse anesthetists (CRNAs), and student nurse anesthetists. According to the American Association of Nurse Anesthesiologists (AANA, 2021), anesthesia providers are at increased risk due to access, stressful work environment, and environmental sensitization. Although required by the Council on Accreditation of Nurse Anesthesia Educational Programs (COA) and the Accreditation Council for Graduate Medical Education (ACGME), there is no standardized format for providing substance use diversion education (COA, 2022; ACGME, 2021). Often, plus ones, spouses, significant others, family, or close friends, of anesthesia providers are not aware of the risk of drug diversion, and not included in educational programing on this topic. Therefore, the purpose of this quality improvement (QI) project was to provide education to increase awareness and knowledge of drug diversion and substance use disorder risks in the anesthesia provider, and educate their plus ones. A sustainable delivery model for drug diversion education was also explored.

Wright and colleagues (2012) reported a persistent problem with drug diversion and substance use disorder in health care workers, specifically anesthesia providers, and specifically the use of opioids and potent anesthetic medications. The United States and Canada consume the highest number of opioids per capita and are both struggling with opioid related mortality (Fan et al, 2019). The prevalence in anesthesia residents appears to be around 2.16 per 1000 resident years (Warner et al., 2015), surpassing that of the opioid epidemic (Boulis et al., 2015), with anesthesiologists five times more likely to abuse opioids than the general public (Wright et al., 2012; Talbott et al., 1987) and an estimated 10% of anesthesia care providers abusing drugs or alcohol at some point in their career (Bryson, 2014). Similarly, Naegle (2013) estimates

substance abuse in CRNAs is thought to be between 6% and 10%, however, the National Council for State Boards of Nursing reported more drug-related complaints and disciplinary actions related to CRNAs than other advanced practice nurses (Wright et al., 2012).

Significant risk factors for diversion appear to be male sex, attending medical school in the United States, and history of diversion, with a 43% risk of relapse found in those treated for substance use disorder (Warner et al., 2015). Wright et al. (2012) reported that the most drug related deaths in anesthesiologists occurred within the first 5 years after graduation, upon entry to practice, while CRNAs who admitted to misusing opioids and Propofol had been in practice 10-20 years. Reasons for anesthesia providers diverting medications vary and include physical and emotional pain, stress, work environment, personal issues, curiosity, and access (Bryson, 2019).

Bryson (2014) and Wright and colleagues (2012) noted changes in the addicted anesthesia provider may include withdrawal from family, mood swings, episodes of anger or irritability, spending increasing time at work on days off, volunteering for extra call, refusing breaks or requesting frequent breaks, failing to respond to phone or pager, signing out increasing amounts of narcotics, frequent ampule breakage, weight loss, pale skin, decreased energy, and wearing long sleeves or clothing to hide evidence of self-injection. Complaints of pain from apparently medicated patients was another potential sign of drug diversion (Wright et al., 2012). Wright et al. (2012) reported the time frame from initiating diversion to time of discovery was typically 1- 1.5 years.

Prevention of diversion through awareness-based education has been shown to be an important aspect of anesthesia practice (Bryson, 2019; Taylor, 2020). Bryson (2019) recommended education on risks of diversion, signs and symptoms, and likely outcomes, and

featuring a guest speaker in recovery. Taylor (2020) recommended annual drug diversion education, but noted that there is no accepted module or standard in nurse anesthesia training or among state licensing boards. Also, although accreditors, such as the COA and ACGME required education on substance use disorders for their approved programs, there was not a focus on the support system (COA, 2022; ACGME, 2021). However, research around drug abuse prevention does support the use of family-based education (Ballester et al., 2021; Foxcroft and Tsertsvadze, 2011) although no studies were located that connected education of the plus one to decreased risk of drug diversion with the anesthesia provider.

METHODS

This was an innovative educational intervention designed to prevent drug diversion in the anesthesia provider. The outcomes of the project include increased awareness of the inherent risks, signs and symptoms, prevention, and resources around drug diversion in the provider and their plus one. Topics included risks of drug diversion and substance use disorder, signs and symptoms and how to access help. A drug diversion registered nurse spoke of their experience with drug diversion support and a former CRNA who spoke of their personal journey with drug diversion and substance use. A toolkit was provided with helpline contact information. The project was approved by the Nursing Research Review Board at CentraCare Health St. Cloud Hospital and the Institutional Review Board at the College of St. Benedict.

Recruitment of participants occurred through the anesthesia department of a large regional healthcare organization, rural anesthesia departments, and one private anesthesia company. Participation was encouraged by leadership and reminders were added to monthly department meetings and announcements at rural sites of service. Donations of business cards, brochures, and pens were obtained with the help information. A magnet was created for

convenient access to phone numbers for Health Professionals Services Program (HPSP), AANA Helpline, and Substance Abuse and Mental Health Services Administration (SAMHSA). A meal was provided and continuing medical education (CME) hours were offered to those who attended. The event lasted about 1.5 hours.

The content for the first speaker included illustrating the awareness of the opioid epidemic and statistics highlighting 8% of the population having a diagnosis of SUD (Fan et al., 2019) as well as the relationship of SUD to the anesthesia provider, risks, and reasons for diverting (AANA, 2021; Bryson, 2019). Audio clips of interviews with anesthesia providers and spouses with knowledge of drug diversion were also used to help illustrate the signs and symptoms of drug diversion. The drug diversion RN gave an overview of a nationally known incidence of drug diversion that had occurred at the health system. The process for seeking help as well as being identified as diverting, and the policy if one was suspected of drug diversion and the risks to provider's licensure were also covered. Bryson (2019) recommended drug diversion education including a speaker in recovery. The third speaker gave his emotional personal story of diverting narcotics while working as a CRNA.

Participation was voluntary and consent was obtained prior to pre and post education surveys, which were administered during the event to anesthesia providers and their plus ones, as well as a three month follow up survey sent via text messaging. Survey respondents were asked knowledge and awareness questions as well as were asked to identify the value of the educational session. Surveys were collected on Survey Monkey via quick response (QR) codes. No names or identifiers were used in the surveys to protect the anonymity of participants. Participants created their own unique code so surveys could be matched at pre, post, and 3 months.

Data were collected from Survey Monkey, analyzed to provide a clean data set, entered into excel, and then qualitatively analyzed using Statistics is a Powerful Statistical Software platform (SPSS, 28.0). Both parametric and non-parametric data were analyzed. Nominal or categorical data were reported as percent and frequency and scaled variables at the interval level were reported as mean and standard deviation. For data that was not normally distributed the paired sample t test was used for certain pre and post questions, such as "list as many signs and symptoms of drug diversion/SUD." Survey data of pre and post comparisons at the interval level were analyzed using the related samples sign test.

RESULTS

Demographics

Participants included anesthesia providers (n=26) and plus ones (n=15) with all completing a pre and post survey at the event and fewer participants (n=16) completed the three-month survey (response rate of 39%). The majority of providers have had some form of SUD education (84.6%) but few of the plus ones had received any such education (20%). Subsequent education was mixed with 19.2% of providers having no additional training beyond anesthesia school, about a third within 5-10 years prior. Most had received education through computer-based modules (34.6%) (Table 1).

Awareness

Providers (69%) showed a higher level of awareness pre-survey than the plus ones (6.7%). However, both showed statistically significant increases in awareness after the education for both the provider (96.2%; p=.008) and plus ones (86.7%; p=.002). Anesthesia providers (57.7%) showed little concern if they required pain management and their risk for drug diversion/SUD and this did not change significantly after the educational session (p=.07).

Conversely, the majority of plus ones showed no concern (80%) at pre-survey but this number dropped significantly, where post-survey only 26.7% were no longer concerned (p=.008) (Table 2).

Knowledge

Knowledge of signs and symptoms of drug diversion grew significantly for anesthesia providers, advancing from 26.9% (very knowledgeable) to 96.2% post-survey. Similarly, knowledge increased for plus ones with no one confident in their knowledge at pre-survey and 60% reported they were very knowledgeable at post survey. Data (n=16) were combined at 3-month follow up, with overall knowledge at 68.8% as very knowledgeable and 31.3% as somewhat knowledgeable. All respondents reported some level of knowledge was gained and this was sustained at the 3 month follow up. In addition, both groups showed success in responding to a true/false question on the first sign of drug diversion/SUD post-survey and both showed an increase in the ability to identify signs and symptoms although neither was statistically significant (providers=p=0.052; plus ones=p=0.267) (Table 3).

Educational Value and Delivery

Protecting the providers from diversion was an important goal of this educational event. Most impactful protections as perceived by the providers were social support and cameras in the OR (Table 4). Overwhelmingly, providers preferred in-person education (pre-survey 61.5%; post survey 76.9%) and they agreed or strongly agreed that it should be required by employers (pre-survey 96.1%; post survey 99.2%) on an annual basis (pre-survey 42.3%; post survey 46.2%) (Table 6, Table 7). All providers and plus ones agreed or strongly agreed that plus ones should be educated (100%). However, provider perception (strongly agree) that education of plus ones would make a difference in protecting them from drug diversion/SUD increased significantly

from 26.9% presurvey to 61.5% postsurvey (p=.002). When combining agree and strongly agree, all providers indicated that education was important for plus ones and this persisted to the 3-month follow up survey (Table 5, Table 8).

Sustainability of Education

The education event learning was impactful and sustained at the 3-month survey as indicated by 93.8% agreement of increased awareness (n=16) among providers and plus ones. Also, in the three month post education survey, 56.3% of combined anesthesia providers and plus ones, reported increased thoughts and/or conversations about the risks of drug diversion and SUD in the anesthesia provider. Finally, 100% of respondents to the 3 month follow up survey agreed (37.5%) or strongly agreed (62.5%) that "the in-person education event was worth my time" (Table 8).

DISCUSSION

This project's aim was to increase awareness and knowledge of the inherent risk of drug diversion and SUD in the anesthesia provider. By targeting not only anesthesia providers but plus ones as well, an extra layer of defense against drug diversion and SUD was created. This project also sought to examine and produce a sustainable model of delivery for educating anesthesia providers and those closest to them on drug diversion and SUD.

Increased awareness and knowledge of drug diversion and SUD can be achieved through education. Unfortunately, because there are no universal guidelines for drug diversion education in the anesthesia provider, sometimes this education is delivered retrospective to an incident of drug diversion (Taylor, 2020). The majority of anesthesia providers reported having previous education on drug diversion as it relates to the anesthesia provider at some point in time, with a third reporting that their education on drug diversion and SUD was greater than 5-10 years

previous. While there is no accepted model or standard drug diversion education in nurse anesthesia training, Taylor (2020) recommends annual drug diversion education for the anesthesia provider. Similarly, in January of 2020, the State of Minnesota required any Advanced Practice Registered Nurse (APRN) holding an individual Drug Enforcement Administration (DEA) license to complete mandatory opioid training that included drug diversion training (Minnesota Board of Nursing, 2020). In large health systems, many CRNAs do not hold individual DEA licenses, but work collectively under the DEA number for the health system. This loophole made CRNAs working under a DEA licensure for a health system exempt from this training. This training was also solely directed at providers with no education opportunities for plus ones.

Regarding previous education on drug diversion and SUD, the most commonly reported delivery model was computer based training. The data shows providers reported in-person education as the preferred model of delivery for education on drug diversion and SUD (Table 6). This relates to Kirkpatrick's first level of evaluation, Evaluation-Reaction where the audience's feedback is the primary focus (Kirkpatrick, 1994; Kirkpatrick, 1998; Kurt, 2016). While in-person may be the preferred method of education, yearly in-person education could be costly in both time and funding as well as difficulty in scheduling and finding new and engaging ways to present the material.

Over two-thirds of anesthesia providers also reported that in previous drug diversion and SUD education, a plus one was not invited to participate, and only 20% of plus ones reported receiving education on the risks of drug diversion and SUD in the anesthesia provider. It is possible that the plus ones who were present at this educational event were not affiliated with their loved one at the time of the provider's anesthesia education. While both the COA and

ACGME both require education on wellness and SUD, there is no requirement by either the COA or ACGME to educate a plus one on the risks of drug diversion and SUD (COA, 2022; ACGME, 2021).

Awareness

Wright et al. (2012) notes that anesthesia providers have a higher risk of drug related death due to the types of medications they tend to divert. When surveyed about their level of awareness of this inherent risk, providers showed increased awareness that was statistically significant with a *p* value of 0.008 post education. Similarly, most plus ones initially reported being somewhat aware with a change to very aware for the plus one group and a *p* value of 0.002. Anesthesia providers likely chose higher awareness scores initially because education is required for providers, whereas plus ones may have chosen lower awareness scores because they have likely had less education opportunities on the risks of drug diversion and SUD in the anesthesia provider.

There are multiple reasons why anesthesia providers begin to divert medications, one of which is physical pain or injury (Bryson, 2019). When anesthesia providers were asked about the level of concern regarding drug diversion if they were to require pain management, there was a small increase in concern from pre-education to post education with a *p* value of 0.07 that was not statistically significant. However, the majority of plus ones showed increased concern for drug diversion in their loved one should they require pain management post education. This increase was statistically significant with a *p* value of 0.008. Because plus ones were less likely to have had previous education on drug diversion and SUD in the anesthesia provider, they may not have had the background information on physical pain being a precursor to developing SUD.

Knowledge

Bryson (2014) endorses implementing an educational program that emphasizes early detection of drug diversion and SUD. Having knowledge of signs and symptoms of drug diversion can help colleagues and plus ones identify drug diversion and SUD in the anesthesia provider. Anesthesia providers showed an increase in knowledge from pre to post education. Plus ones likewise showed growth in knowledge of signs and symptoms of drug diversion/SUD. The responses from the three month survey also support learning as combined anesthesia providers and plus ones reporting themselves as "very knowledgeable." Anesthesia providers and plus ones both showed an increase in their ability to list as many signs and symptoms as they could remember from pre to post education with p values of 0.052 and 0.267 respectively. Although these were not statistically significant, they did show growth which would align with Kirkpatrick's second level, Evaluation-Learning, showing that the participants truly understood the education (Kirkpatrick, 1994; Kirkpatrick, 1998; Kurt, 2016). This was also the only free text survey question which resulted in the most participants skipping this question possibly due to time or effort to manually list signs and symptoms.

Educational Value and Delivery

Bryson (2019) encourages educating anesthesia providers early in their training as well as focusing on two main factors: risks involved in drug diversion and likely outcomes of diversion. Both of these factors often result in loss of licensure, employment and respect as well as death or injury to the provider or possibly a patient. Anesthesia providers ranked their most impactful protection against drug diversion as "increased awareness and social support." This scored higher both pre and post education than automated dispensing cabinets, cameras in the OR, chart audits, educational events, testimonials, threat of loss of licensure, and two person wastes. This

shows that increased awareness not only for the anesthesia providers themselves, but their plus ones and their colleagues has value to protect anesthesia providers from diverting. Interestingly, educational events scored lower than increased awareness, but is the mechanism to increase awareness.

Wright et al. (2012) reports that death or near death due to overdose can be the first presenting indication of abuse. Bryson (2014) notes that anesthesia providers that are diverting will tend to withdraw from family and friends as well as increased periods of irritability, anger, depression and euphoria This speaks to the importance of drug diversion and SUD education to more than just anesthesia providers. This was supported by the survey results that showed that both in providers and plus ones, 0 respondents disagreed with educating plus ones pre or post education. Anesthesia providers showed an increase in strongly agreeing from pre to post education with a *p* value of 0.061, and plus ones showed an increase in strongly agreeing from pre to post education with a *p* value of 0.125 neither being statistically significant. Interestingly, because both groups of participants already agreed with educating a plus one, there was not enough change to make the results statistically significant.

When asked if educating a plus one was likely to protect anesthesia providers, anesthesia providers strongly agreed resulting in a *p* value of 0.002 which was statistically significant. Plus ones also showed they felt educating a plus one was likely to protect anesthesia providers with a *p* value of 0.625. While this was not statistically significant because their sample size was smaller and the plus ones already significantly agreed that educating them was likely to protect anesthesia providers. The three month follow up survey continued to show that both providers and plus ones agreed that educating a plus one was likely to protect anesthesia providers. This is supported by Ballester et al. (2021) in a systematic review that showed sufficient evidence to

recommend continued use of family based prevention of drug abuse. As well as Foxcroft and Tsertsvadze (2011) who found evidence of positive outcomes that support the use of universal family and school based prevention strategies.

Wright et al. (2012) states that prevention traditionally begins with education, even though there is no standard for substance abuse education in both medical schools and nurse anesthesia programs. The results of the surveys show that anesthesia providers feel drug diversion and SUD should be required and provided on an in-person, yearly basis, by employers. This begs the question if anesthesia providers feel this way because they have not had any or limited education. Anesthesia providers may answer the survey differently if they were having more frequent educational opportunities.

Sustainability

The three month post educational survey showed that both anesthesia providers and their plus ones were confident in their increased knowledge of drug diversion and SUD in the anesthesia provider. They also reported increased thoughts and conversations around the topic of drug diversion and SUD. Taylor (2020) encourages decreasing the stigma surrounding SUD with increased conversations about the topic. Finally, 100% of the respondents felt the educational event was worth their time.

Most experts agree that educating anesthesia providers on their increased risk of drug diversion and SUD is necessary as evidenced by the wellness requirements of the AANA and the ACGME. However, anesthesia providers have shown the importance of continued education on drug diversion and SUD to increase awareness and knowledge. While educating the provider is very important, educating a plus one can be an effective way to protect anesthesia providers against drug diversion and SUD.

The implications of this DNP project is that there is an increased awareness of the inherent risk of drug diversion and SUD in the anesthesia provider. Even through increased conversations about the event for people that could not, or chose not to attend, there has been increased awareness. Results of the QI initiative have been shared with nurse anesthesia schools in Minnesota in an effort to increase opportunities for increased in person education of anesthesia providers and their plus ones, and with one school committing to the change.

Limitations

There was a large attendance for this event because education about this topic has been virtually nonexistent. Even though providers through survey data desire yearly in person education, the impact of this education may decrease over time. Bryson (2014) suggests using a speaker in recovery for education. Hearing the same testimonial each year may not leave a lasting impact. Also, finding new and engaging educational material or providers to share their personal journey may be difficult. Survey question limitations included a few questions that did not have a Likert scale, but rather three possible answers resulting in no *p* value calculation. In the future a Likert scale with a minimum of four answers would yield better data. Similarly, free text answers were the most commonly skipped answer, and perhaps similar data could be collected without free text options. Finally, while employers have the ability to require drug diversion prevention education for the employee, they have no ability to require it for the plus one. This education for all new hires could be beneficial, but is not as impactful on a small scale. There is potential for higher education to require this model of education with a plus one on a regular basis.

CONCLUSION

Ample evidence shows that drug diversion and substance use disorder are of great risk in the anesthesia provider. While the rate at which anesthesia providers divert medications or have substance use disorder is debated, it has been clearly found that the risk of death is higher in anesthesia providers that divert due to the nature of the medications being used (Bryson, 2014). The cost of drug diversion in an anesthesia provider is more far reaching than just the monetary cost to the institution. Drug diversion in the anesthesia provider puts the provider, the patient, their colleagues, their spouse, and the institution at risk as well. The literature also points to education as the first line of defense in identification of drug diversion and substance use disorder in an anesthesia provider, as well as the fact that providers who have been found using are anywhere from early to late in their career which supports continued education. While studies on educating family members of anesthesia providers to prevent diversion were not found, success has been shown in educating family members of teens in drug and alcohol prevention. The rate of substance use disorder is on the rise and educating anesthesia providers and their plus ones may contribute to mitigating diversion and substance use disorder.

Table 1

Demographic Data for Providers and Plus Ones

Providers				
Questions	Scale	*n*	%	Mode
Received education on drug diversion in anesthesia training		26		1
	Yes	22	84.6	
	No	4	15.4	
Excluding anesthesia training, most recent education on drug diversion and SUD		26		4
	Never	5	19.2	
	>10 years	6	23.1	
	5-10 years	2	7.7	
	1-5 years	9	34.6	
	Within last year	4	15.4	
What format was your most recent education in drug diversion and SUD		26		3
	In person/Employer	5	19.2	

	In Person/Conference	7	26.9	
	Computer-Based Modules	9	34.6	
	Other	5	19.2	
Was a plus one invited to attend your most recent education on drug diversion/SUD		26		2
	Yes	7	26.9	
	No	18	69.2	
	Missing Data	1	3.8	
Plus One				
Received education on drug diversion and the anesthesia provider		15		2
	Yes	3	20	
	No	11	73.3	
	Missing Data	1	6.7	

Table 2

Survey of Awareness for Providers and Plus Ones

Providers								
		Pre			Post			
Questions	Scale	*n*	%	Mean (SD)	*n*	%	Mean (SD)	*p* value
Awareness of profession as an independent risk factor		26		3.54 (0.811)	26		3.96 (0.196)	0.008
	Completely Unaware	1	3.8		0	0		
	Somewhat Unaware	2	7.7		0	0		
	Somewhat Aware	5	19.2		1	3.8		
	Very Aware	18	69.2		25	96.2		
Concern for providers as patients requiring pain medication		26		1.46 (0.582)	26		1.77 (0.908)	0.07
	None	15	57.7		12	46.2		
	Somewhat	10	38.5		10	38.5		
	Concerned	1	3.8		2	7.7		

	Very Concerned	0	0		2	7.7	
	Plus Ones						
Awareness of profession as an independent risk factor		15	2.67 (0.724)		15	3.73 (0.799)	0.002
	Completely Unaware	1	6.7		1	6.7	
	Somewhat Unaware	4	26.7		0	0	
	Somewhat Aware	9	60		1	6.7	
	Very Aware	1	6.7		13	86.7	
Concern for providers as patients requiring pain medication		15	1.14 (0.363)		15	1.86 (0.77)	0.008
	None	12	80		4	26.7	
	Somewhat	2	13.3		9	60	
	Concerned	0	0		0	0	
	Very Concerned	0	0		1	6.7	
	Missing Data	1	6.7		1	6.7	

Table 3

Survey of Knowledge for Providers and Plus Ones

Providers								
		Pre			Post			
Questions	Scale	*n*	%	Mean (SD)	*n*	%	Mean (SD)	*p* value
Rate knowledge of s/sx of drug diversion		26			26			
	Not Very	3	11.5		0	0		
	Somewhat	16	61.5		1	3.8		
	Very	7	26.9		25	96.2		
Overdose or death are often a first sign of drug diversion		26			26			
	True	16	61.5		25	96.2		
	False	10	38.5		1	3.8		
List s/sx of drug diversion		19		3.11 (1.595)	19		4 (2.603)	0.052

		Plus Ones					
Rate knowledge of s/sx of drug diversion		15			15		
	Not Very	8	53.3		0	0	
	Somewhat	7	46.6		6	40	
	Very	0	0		9	60	
Overdose or death are often a first sign of drug diversion		15			15		
	True	7	46.7		13	86.7	
	False	8	53.3		2	13.3	
List s/sx of drug diversion		10		2.9 (1.45)	10		3.8 (2.1)	0.267

Table 4

Survey of Impactful Protection for Providers

Questions	Scale	Pre			Post		
		n	%	Mean (SD)	*n*	%	Mean (SD)
Most impactful protection against drug diversion and SUD		26			26		
	Automated Dispensing Cabinets	3	11.5		2	7.7	
	Cameras in OR	6	23.1		4	15.4	
	Chart Audits	0	0		0	0	
	Educational Events	0	0		2	7.7	
	Increased Awareness/Social Support	7	26.9		11	42.3	
	Testimonials	2	7.7		3	11.5	
	Threat of Loss of Licensure	5	19.2		4	15.4	
	Two Person Wastes	3	11.5		0	0	

Table 5

Survey of Educational Value for Providers and Plus Ones

Providers								
		Pre			Post			
Questions	Scale	*n*	%	Mean (SD)	*n*	%	Mean (SD)	*p* Value
Plus Ones should be educated on the inherent risk of drug diversion and SUD in the anesthesia provider		26		3.54 (0.508)	26		3.73 (0.452)	0.062
	Strongly Disagree	0	0		0	0		
	Disagree	0	0		0	0		
	Agree	12	46.2		7	26.9		
	Strongly Agree	14	53.8		19	73.1		
Educating a Plus Ones is likely to protect anesthesia providers from drug diversion/SUD		26		3.12 (0.711)	26		3.62 (0.496)	0.002
	Strongly Disagree	1	3.8		0	0		
	Disagree	2	7.7		0	0		

	Agree	16	61.5	10	38.5		
	Strongly Agree	7	26.9	16	61.5		
Plus Ones							
Plus Ones should be educated on the inherent risk of drug diversion and SUD in the anesthesia provider		15	3.43 (0.514)	15	3.37 (0.458)		0.125
	Strongly Disagree	0	0	0	0		
	Disagree	0	0	0	0		
	Agree	8	53.3	4	26.7		
	Strongly Agree	6	40	11	73.3		
	Missing Data	1	6.7	1	6.7		
Educating a Plus Ones is likely to protect anesthesia providers from drug diversion/SUD		15	3.43 (0.514)	15	3.57 (0.514)		0.625
	Strongly Disagree	1	3.8	0	0		

Disagree	2	7.7	0	0
Agree	16	61.5	10	38.5
Strongly Agree	7	26.9	16	61.5
Missing Data				

Table 6

Survey of Educational Delivery for Providers

Providers					
		Pre		Post	
Questions	Scale	*n*	%	*n*	%
The preferred format for learning about drug diversion/SUD		26		26	
	In person	16	61.5	20	76.9
	Computer-Based Training	5	19.2	2	7.7
	Conferences	5	19.2	4	15.4

Table 7

Survey of Educational Delivery for Providers and Plus Ones

Providers								
		Pre			Post			
Questions	Scale	*n*	%	Mean (SD)	*n*	%	Mean (SD)	p Value
Drug Diversion/SUD education should be required by employers		26		3.54 (0.707)	26		3.69 (0.471)	0.625
	Strongly Disagree	1	3.8		0	0		
	Disagree	0	0		0	0		
	Agree	9	34.6		8	30		
	Strongly Agree	16	61.5		18	69.2		
How frequent should drug diversion education be offered		26			26			
	Once	0	0		0	0		
	Every 5 years	7	26.9		4	15.4		
	Every 2-4 years	8	30.8		10	38.5		

	Yearly	11	42.3		12	46.2	
	Plus Ones						
Drug Diversion/SUD education should be required by employers		15		3.47 (0.516)	15	3.53 (0.834)	0.625
	Strongly Disagree	0	0		1	6.7	
	Disagree	0	0		0	0	
	Agree	8	53.3		4	26.7	
	Strongly Agree	7	46.7		10	66.7	
How frequent should drug diversion education be offered		15			15		
	Once	0	0		0	0	
	Every 5 years	2	13.3		1	6.7	
	Every 2-4 years	8	53.3		6	40	
	Yearly	5	33.3		8	53.3	

Table 8

Survey of Sustainability of Education for Combined Providers and Plus Ones

Questions	Scale	*n*	%	Mean (SD)
Did this education increase your awareness of the inherent risk of drug diversion and substance use disorder in the anesthesia provider?		16		
	Yes	15	93.8	
	No	1	6.3	
In the Past 3 months, I have had increased thoughts/conversations about the inherent risks of drug diversion and SUD in the anesthesia provider.		16		
	Disagree	0	0	
	No Change	7	43.8	
	Agree	9	56.3	
Rate you knowledge of s/sx of drug diversion and SUD in the anesthesia provider		16		
	Not Very Knowledgeable	0	0	
	Somewhat Knowledgeable	5	31.3	

	Very Knowledgeable	11	68.8	
I found the in-person education event worth my time		16		3.62 (0.5)
	Strongly Disagree	0	0	
	Disagree	0	0	
	Agree	6	37.5	
	Strongly Agree	10	62.5	
It is important for plus ones to be educated on the inherent risk of drug diversion and SUD in the anesthesia provider		16		
	Strongly Disagree	0	0	3.81 (0.403)
	Disagree	0	0	
	Agree	3	18.75	
	Strongly Agree	13	81.25	
Educating a plus one is likely to protect anesthesia providers from drug diversion and SUD		16		3.69 (0.479)
	Strongly Disagree	0	0	
	Disagree	0	0	
	Agree	5	31.25	

Strongly Agree	11	68.75

APPENDIX A

CentraCare™

October 20, 2022

Jennifer Burris, APRN, CNS, Director-Nursing Practice
St. Cloud Hospital

RE: NRRB – Drug Diversion Prevention Education for the Anesthesia Provider Plus One

To Whom It May Concern,

The CentraCare Institutional Review Board (IRB) at its meeting on October 20, 2022, reviewed and approved the above nursing research proposal.

Thank you.

Sincerely,

Tegan J B

Tegan Buckley, PharmD, BCPS, BCGP
Senior Director Pharmacy Services
Chairperson of the Institutional Review Board

COLLEGE OF
Saint Benedict Saint John's
UNIVERSITY

INSTITUTIONAL REVIEW BOARD

October 5, 2022

Dear Denise Christie,

This letter is to formally acknowledge your request for exemption for the protocol titled *Drug Diversion Prevention Education for the Anesthesia Provider Plus One.* This project has been determined to meet the designated criterion for exemption from IRB review:

> Research involving **benign behavioral interventions** in conjunction with the collection of information from an adult subject through verbal or written responses (including data entry) or audiovisual recording if the subject prospectively agrees to the intervention and information collection and at least of the following criteria is met: **(a)** the information obtained is recorded by the investigator in such a manner that the identity of the human subjects cannot readily be ascertained, directly or through identifiers linked to the subjects; **(b)** any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement or reputation;

You may begin data collection upon receipt of this letter. This exemption expires in three years, on October 5, 2025. Please notify the committee if an extension is required beyond that date. If you wish to make changes to the research procedures that would affect the exempt status of the research, you must obtain IRB approval before initiating these changes.

Thank you for your proposal submission. I wish you success in your research.

Sincerely,

Ellen Block

Ellen Block
Associate Professor, Sociology Department
Institutional Review Board Chair
College of St. Benedict/St. John's University

37 South College Avenue
St. Joseph, MN 56374
P 320-363-5011

2850 Abbey Plaza
Collegeville, MN 56321
P 320-363-2011

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APPENDIX B

COLLEGE OF ST. BENEDICT/ST. JOHN'S UNIVERSITY
Drug Diversion Prevention Education for the Anesthesia Provider Plus One

INTRODUCTION
You are invited to be in a research study about drug diversion prevention education for anesthesia providers and their plus ones. This study is being conducted by: Denise Christie and Dr, Jennifer Peterson, faculty advisor. You were selected as a possible participant because you are an anesthesia provider or were invited here by one. We ask that you read this form and ask any questions you may have before agreeing to be in the study.

BACKGROUND and PROCEDURES
The purpose of this study is to understand attitudes and beliefs around drug diversion education for the anesthesia provider and their plus ones, as well as highlight the inherent risk of drug diversion in anesthesia providers, present the signs and symptoms of drug diversion and how to reach for help.
If you agree to be in this study, we would ask you to do the following things.
Complete pre and post education surveys and a three month follow up survey.

RISKS/BENEFITS
This study has no known risks

CONFIDENTIALITY

No names will be collected. To match pre and post surveys, the last four digits of the participants cell phone will be used. Once the pre and post surveys are connected, the identifying information (last four digits of phone number) will be removed.
The records of this study will be kept private. Research records will be kept in a password secured survey monkey account, any paper documents will be kept in a locked file cabinet in the researchers private office. Only the researchers will have access to the records. In any reports or public presentations, no information will be included that would make it possible to identify a participant.

VOLUNTARY NATURE OF THE STUDY
Your participation in this research study is completely voluntary. You may stop participating at any time without penalty or costs of any kind. Your decision whether or not to participate will not affect your current or future relations with the College of Saint Benedict or Saint John's University or CentraCare Health.

CONTACTS AND QUESTIONS
The researcher conducting this study is Denise Christie. You may ask any questions you have now. If you have questions later, you may contact them at (320)291-4715 or denise.christie@centracare.com. Jennifer Peterson at jpeterson@csbsju.edu If you have additional questions you may also contact the CSB/SJU Institutional Review board chair, Ellen Block at*: irb@csbsju.edu* .

You will be given a copy of this form to keep for your records.

STATEMENT OF CONSENT
I have read the above information. I have asked questions and have received answers. I consent to participate in the research.

Signature _____ **Date** _____

Printed name _____

APPENDIX C

Drug Diversion Prevention Education for the Anesthesia Provider Plus One: A Focus on Arming the Family

Please join us for dinner and an educational event.
Attendees are encouraged to bring a Plus One (spouse/significant other/friend).
Official invitations with complete information including how to RSVP will be distributed early this Fall.

CentraCare designates this live activity for a maximum of 1.5 *AMA PRA Category 1 Credit(s)*™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
AANA class B credit available
This education offering has been designed to meet the Minnesota Board of Nursing continuing education requirements for 1.5 contact hours. It is the personal responsibility of each participant to determine whether this activity meets the requirements for acceptable continuing education by the licensing organization."

CentraCare®

Questions?
Contact Denise Christie at
denise.christie@centracare.com

APPENDIX D

ANESTHESIA PROVIDER - PRE-EDUCATION SURVEY

1. How often does the topic of drug diversion in anesthesia providers cross your mind?
    1. Rarely (less than once in 6 months).
    2. Sometimes (at least once in the last month) Often (at least once a week
    3. Frequently (daily, or every day I work)
2. How aware are you that being an anesthesia provider is an independent risk factor for dying of drug related causes?
    1. Completely unaware
    2. Somewhat unaware
    3. Somewhat aware
    4. Very Aware
3. Please rate your concern about SUD if you (as an anesthesia provider) become a surgical patient or sustain an injury that requires pain management.
    1. Not concerned at all
    2. Somewhat concerned
    3. Concerned
    4. Very concerned
4. One of the first signs of SUD and or drug diversion in the anesthesia provider is overdose or death.
    1. True
    2. False
5. List as many signs and symptoms of drug diversion as you can think of.
6. How would you rate your knowledge of signs and symptoms of drug diversion and substance use disorder in the anesthesia provider.
    1. Not very knowledgeable
    2. Somewhat knowledgeable
    3. Very knowledgeable
7. I received education specifically related to the topic of drug diversion/substance use disorder AND the anesthesia provider in my anesthesia training
    1. Yes
    2. No
8. Excluding anesthesia training, the most recent time I have received education specifically related to the topic of drug diversion/substance use disorder AND the anesthesia provider was:
    1. Never
    2. Greater than 10 years
    3. 5-10 years
    4. 1-5 years
    5. within the last year
9. Thinking of the above question, what format did the education occur in person provided by the employer?

1. in person
2. at a conference
3. computer-based modules
4. Other

10. 10. Regarding the question of your most recent education specifically related to the topic of drug diversion/substance use disorder AND the anesthesia provider, was a spouse/family member or close friend invited to attend or participate in the education?
    1. Yes
    2. No
11. 11. Select the most impactful protection for you as an anesthesia provider against drug diversion and substance use disorders.
    1. Automated dispensing cabinets
    2. Cameras in the OR
    3. Chart audits
    4. Educational events
    5. Increased awareness of inherent risk and social support from your colleagues and plus ones
    6. Testimonials
    7. Threat and loss of licensure and employment
    8. Two person wastes
12. Select the 2nd most impactful protection for you as an anesthesia provider against drug diversion and substance use disorders Automated dispensing cabinets.
    1. Cameras in the OR
    2. Chart audits
    3. Educational events
    4. Increased awareness of inherent risk and social support from your colleagues and plus ones
    5. Testimonials
    6. Threat and loss of licensure and employment
    7. Two person wastes
13. My preferred format for learning about drug diversion in anesthesia providers is:
    1. In person
    2. Computer based training
    3. Conferences
14. Education on drug diversion specific to anesthesia providers should be required by the employer.
    1. Strongly disagree
    2. Disagree
    3. Agree
    4. Strongly agree
15. How frequently should drug diversion education specific to the anesthesia provider be offered?
    1. Never
    2. One time is sufficient
    3. Every 5 years
    4. Every 2-4 years

5. Every year

16. It is important for friends and family to be educated on the inherent risk of drug diversion and substance use disorders in the anesthesia provider.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
17. Educating my plus one is likely to protect me from drug diversion and substance use disorders.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
18. If you are an anesthesia provider that is concerned about yourself or a colleague diverting, select your most likely action.
    1. AANA Helpline
    2. Contact a Colleague
    3. Contact HPSP
    4. Contact a trusted friend
    5. Tell a supervisor
    6. Contact a private rehab facility
    7. Contact your personal healthcare provider

ANESTHESIA PROVIDER POST-EDUCATION SURVEY

1. Did this education increase your awareness of the inherent risk of drug diversion and substance use disorder in the anesthesia provider?
    1. Yes
    2. No
2. How aware are you that being an anesthesia provider is an independent risk factor for dying of drug related causes?
    1. Completely unaware
    2. Somewhat unaware
    3. Somewhat aware
    4. Very Aware
3. Please rate your concern if you (as an anesthesia provider) become a surgical patient or sustain an injury that requires pain management.
    1. Not concerned at all
    2. Somewhat concerned
    3. Concerned
    4. Very concerned
4. Often, one of the first signs of SUD and or drug diversion in the anesthesia provider is overdose or death.

    1. True
    2. False
5. List as many signs and symptoms of drug diversion as you can think of.
6. After the educational event, how would you rate your knowledge of signs and symptoms of drug diversion and substance use disorder in the anesthesia provider?
    1. Not very knowledgeable
    2. Somewhat knowledgeable
    3. Very knowledgeable
7. Select the most impactful protection for you as an anesthesia provider against drug diversion and substance use disorders.
    1. Automated dispensing cabinets
    2. Cameras in the OR
    3. Chart audits
    4. Educational events
    5. Increased awareness of inherent risk and social support from your colleagues and plus ones
    6. Testimonials
    7. Threat and loss of licensure and employment
    8. Two person wastes
8. Select the 2nd most impactful protection for you as an anesthesia provider against drug diversion and substance use disorders.
    1. Automated dispensing cabinets
    2. Cameras in the OR
    3. Chart audits
    4. Educational events
    5. Increased awareness of inherent risk and social support from your colleagues and plus ones
    6. Testimonials
    7. Threat and loss of licensure and employment
    8. Two person wastes
9. My preferred format for learning about drug diversion in anesthesia providers is:
    1. In person
    2. Computer based training
    3. Conferences
10. Education on drug diversion specific to anesthesia providers should be required by the employer.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
11. How frequently should drug diversion education specific to the anesthesia provider be offered,
    1. Never
    2. One time is sufficient
    3. Every 5 years
    4. Every 2-4 years

5. Every year

12. It is important for friends and family to be educated on the inherent risk of drug diversion and substance use disorders in the anesthesia provider.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
13. Educating my plus one is likely to protect me from drug diversion and substance use disorders.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
14. If you are an anesthesia provider that is concerned about yourself or a colleague diverting, select your most likely action?
    1. AANA Helpline
    2. Contact a Colleague
    3. Contact HPSP
    4. Contact a trusted friend
    5. Tell a supervisor
    6. Contact a private rehab facility
    7. Contact your personal healthcare provider

PLUS ONE - PRE-EDUCATION SURVEY

1. Please rate your awareness regarding the increased incidence of drug diversion in anesthesia providers?
    1. Completely unaware
    2. Somewhat unaware
    3. Somewhat aware
    4. Very Aware
2. How often does the topic of drug diversion in anesthesia providers cross your mind?
    1. Rarely (less than once in 6 months).
    2. Sometimes (at least once in the last month)
    3. Often (at least once a week)
    4. Frequently (daily)
3. How aware are you that being an anesthesia provider is an independent risk factor for dying of drug related causes?
    1. Completely unaware
    2. Somewhat unaware
    3. Somewhat aware
    4. Very Aware
4. Thinking about your loved one (who is an anesthesia provider) Please rate your concern about their development of substance use disorder if they become a surgical patient or sustain an injury that requires pain management.
    1. Not concerned at all

    2. Somewhat concerned
    3. Concerned
    4. Very concerned
5. One of the first signs of SUD and or drug diversion in the anesthesia provider is overdose or death.
    1. True
    2. False
6. List as many signs and symptoms of drug diversion as you can think of.
7. How would you rate your knowledge of signs and symptoms of drug diversion and substance use disorder in the anesthesia provider?
    1. Not very knowledgeable
    2. Somewhat knowledgeable
    3. Very knowledgeable
8. I was included in education specifically related to the topic of drug diversion/substance use disorder AND the anesthesia provider during my loved one's training.
    1. Yes
    2. No
9. My preferred format for learning about drug diversion in anesthesia providers is:
    1. In person
    2. Computer based training
    3. Conferences
10. Education on drug diversion specific to anesthesia providers should be required by the employer.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
11. How frequently should drug diversion education specific to the anesthesia provider be offered?
    1. Never
    2. One time is sufficient
    3. Every 5 years
    4. Every 2-4 years
    5. Every year
12. It is important for friends and family to be educated on the inherent risk of drug diversion and substance use disorders in the anesthesia provider.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
13. Educating me as a plus one is likely to protect my loved one (who is an anesthesia provider) from drug diversion and substance use disorder.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree

14. If you suspect that your loved one (who is an anesthesia provider) is diverting or has substance use disorder, select your most likely action.
    1. AANA Helpline
    2. Contact a Colleague of your loved one
    3. Contact HPSP
    4. Contact a trusted friend
    5. Tell a supervisor of your loved one Contact a private rehab facility
    6. Contact their personal healthcare provider

PLUS ONE - POST-EDUCATION SURVEY

1. Did this education increase your awareness of the inherent risk of drug diversion and substance use disorder in the anesthesia provider?
    1. Yes
    2. No
2. How aware are you that being an anesthesia provider is an independent risk factor for dying of drug related causes?
    1. Completely unaware
    2. Somewhat unaware
    3. Somewhat aware
    4. Very Aware
3. Thinking about your loved one (who is an anesthesia provider). Please rate your concern about their development of substance use disorder if they become a surgical patient or sustain an injury or illness that requires pain management.
    1. Not concerned at all
    2. Somewhat concerned
    3. Concerned
    4. Very concerned
4. Often, one of the first signs of SUD and or drug diversion in the anesthesia provider is overdose or death.
    1. True
    2. False
5. List as many signs and symptoms of drug diversion as you can think of.
6. After the educational event, how would you rate your knowledge of signs and symptoms of drug diversion and substance use disorder in the anesthesia provider?
    1. Not very knowledgeable
    2. Somewhat knowledgeable
    3. Very knowledgeable
7. Select the most impactful protection for your love one as an anesthesia provider against drug diversion and substance use disorders.
    1. Automated dispensing cabinets
    2. Cameras in the OR
    3. Chart audits
    4. Educational events

5. Increased awareness of inherent risk and social support from your colleagues and plus ones
6. Testimonials
7. Threat and loss of licensure and employment
8. Two person wastes

8. Select the 2nd most impactful protection for your loved one as an anesthesia provider against drug diversion and substance use disorders.
    1. Automated dispensing cabinets
    2. Cameras in the OR
    3. Chart audits
    4. Educational events
    5. Increased awareness of inherent risk and social support from your colleagues and plus ones
    6. Testimonials
    7. Threat and loss of licensure and employment
    8. Two person wastes
9. Education on drug diversion specific to anesthesia providers should be required by the employer.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
10. How frequently should drug diversion education specific to the anesthesia provider be offered?
    1. Never
    2. One time is sufficient
    3. Every 5 years
    4. Every 2-4 years
    5. Every year
11. It is important for friends and family to be educated on the inherent risk of drug diversion and substance use disorders in the anesthesia provider.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
12. Being educated as a plus one is likely to protect my loved one (who is an anesthesia provider) from drug diversion and substance use disorders.
    1. Strongly Disagree
    2. Disagree
    3. Agree
    4. Strongly Agree
13. If you are a loved one of an anesthesia provider, and are concerned about them having substance use disorder or diverting, select your most likely action.
    1. AANA Helpline
    2. Contact a Colleague
    3. Contact HPSP

4. Contact a trusted friend
5. Tell a supervisor
6. Contact a private rehab facility
7. Contact your personal healthcare provider

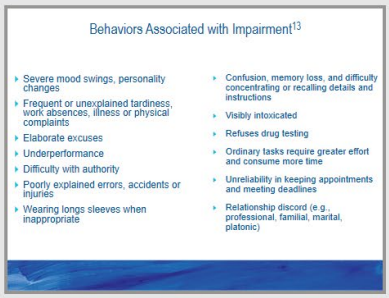
Providers and Plus Ones 3 Month Survey

Providers and Plus Ones	
Questions	Scale
Did this education increase your awareness of the inherent risk of drug diversion and substance use disorder in the anesthesia provider? (Q1)	
	Yes
	No
In the past 3 months, I have had increased thoughts and/or conversations about the inherent risks of drug diversion and substance use disorder in the anesthesia provider. (Q2)	
	Disagree
	No Change
	Agree
How would you rate your knowledge of signs and symptoms of drug diversion and substance use disorder in the anesthesia provider?(Q3)	
	Not very knowledgeable
	Somewhat knowledgeable
	Very knowledgeable
I found the in-person education event was worth my time. (Q4)	
	Strongly disagree

	Disagree
	Agree
	Strongly agree
It is important for friends and family to be educated on the inherent risk of drug diversion and substance use disorders in the anesthesia provider. (Q5)	
	Strongly disagree
	Disagree
	Agree
	Strongly agree
Educating a plus one is likely to protect anesthesia providers from drug diversion and substance use disorder.(Q6)	
	Strongly disagree
	Disagree
	Agree
	Strongly agree

APPENDIX E


Drug Diversion Prevention Education for the Anesthesia Provider Plus One
Denise Christie, APRN, MNA, CRNA
October 27, 2022
1
Agenda For the Evening
6:00-6:20 – Dinner - QR code surveys for Anesthesiologists/CRNAs/SRNAs/Plus Ones
6:20-6:30 – Welcome - CME requirements
6:30-6:50- Denise Christie - purpose, objectives, inherent risk, signs/symptoms of drug diversion, resources for help.
6:50-7:10- Clare Jones – tangible safety measure to protect anesthesia providers
7:10-7:50 – Ted Spiess- personal journey
7:50-8:00- Post surveys for Anesthesiologists/CRNAs/SRNAs/Plus Ones/CME requirements
2
CME Notes:
The content of this activity does not pertain to products/services of an ACCME-defined ineligible company.
To Claim Credit – Complete the evaluation using the appropriate QR code or the link on the final slide.
There are two codes – one for providers (Physicians and APP's) and one for all other participants.
3
Objectives
• Increase the knowledge of the inherent risk of drug diversion and substance use disorder in the anesthesia provider.
• Increase the knowledge of signs and symptoms of drug diversion in the anesthesia provider.
• Increase the knowledge of resources to access help and treatment options for the anesthesia provider who may be diverting.
4
My Why
5
Inherent Risk
Opioid Epidemic
US and Canada consume the highest number of opioids per capita.[1]
Opioid related mortality
In 2019, almost 8% of the population over 18 had a diagnosis of SUD and nearly four percent of adults had a co-occurring SUD and mental health disorder.[2]
Anesthesia Providers, We're UNIQUE!
Increased risk
Why?
6
The ASA and the AANA
Professional Organizations recognize the risk
American Society of Anesthesiologists
Substance Use Disorder (SUD) is a serious and continuing threat to patient safety and anesthesiologists' health and well-being.
Danger of losing their careers or lives to SUD
Ongoing education on SUD is essential to prevent, recognize and react when SUD is identified in oneself or a colleague.
American Association of Nurses Anesthesiology
Substance Use Disorder is an occupational hazard of disproportionately greater risk among the anesthesia profession.
Stress of demanding profession
Increased availability of highly addictive medications
Possible environmental sensitization to effects of medication
7
How Much Risk?
Varying Opinions
Multiple sources cite 10-15%[6]
Likely under-reported
Georgia Impaired Physicians Program Study[7-8]
Anesthesiologists were overrepresented
Estimated to 5 times more likely to abuse opioids than the general public
Warner Study[9]
Matched Cohort Analysis, data from over 44,000 anesthesia residents over 35years.
Risk factors for SUD – Male gender and medical school in the US.
43% - 30 year risk of relapse
8
A Few More Studies
Warner Study[9]
First 5 years of practice.
Bell[10]
Certified Registered Nurse Anesthetists who admitted to misusing opioids had been in practice for 10-20 years.
Bryson[6]
80% of residency programs have reported experiences with impaired students
19% report one pre treatment fatality
9
Ultimate Risk
Booth[11]
In 18% of residents with SUD, overdose or death was the first presenting indication of abuse
10
Signs and Symptoms
11
Predisposing Factors[12]
Treatment of Physical Pain
May elicit a feeling of euphoria
Cycle of need for pain meds when pain is no longer present
Emotional Pain
Stress
Personal Issues
Curiosity
12



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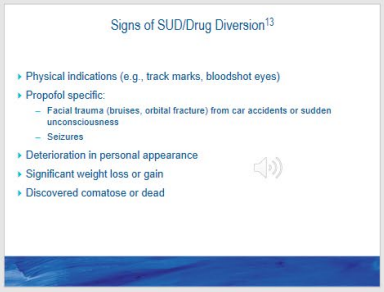

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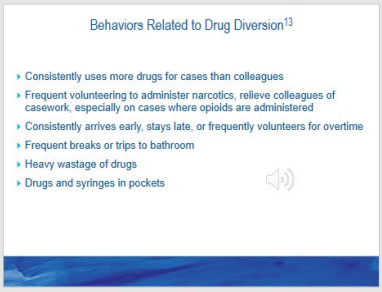

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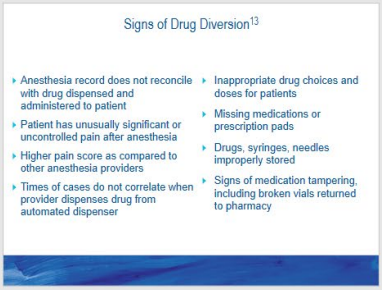

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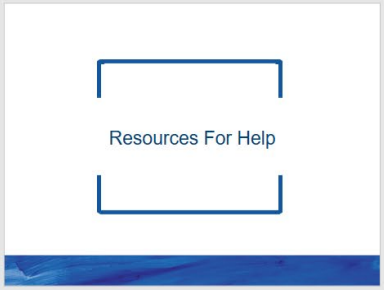

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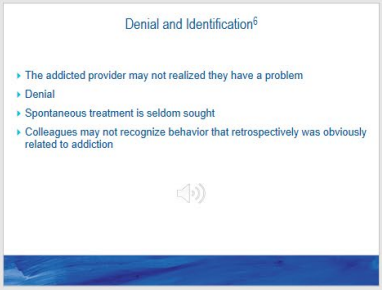
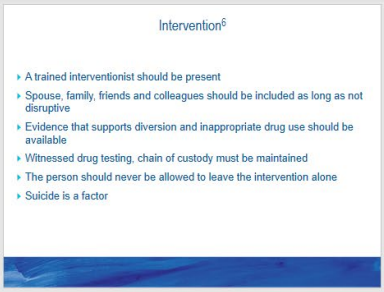


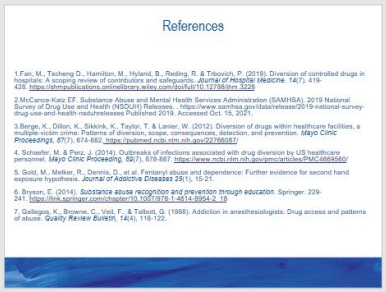
18

19



20

21



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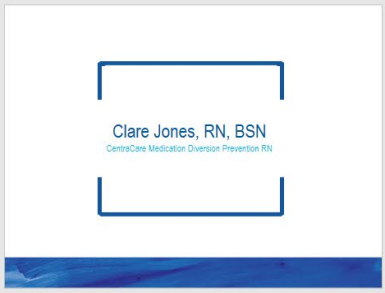


24

St. Cloud Hospital February 2011

- Over a period of 5 days, Lab detected *Ochrobactrum anthropi* and *Klebsiella oxytoca* in blood cultures from four surgical patients complaining of fever and pain

25

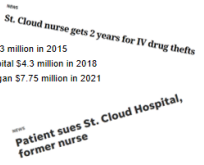
2011 Diversion Case

- St. Cloud Hospital, MDH, CDC, FDA and the DEA investigated:
  - All patients from the same surgical unit.
  - All received intravenous infusions of Hydromorphone.
  - Multiple dispensed Hydromorphone IV bags had only 0 - 2% of expected concentration of drug.
- Investigation pointed to surgical unit Nurse (Core Charge, 17-year employee).
- Plead guilty to obtaining a controlled substance by fraud.
  - Ordered to pay $340,000 in restitution.
  - Sentenced to 24 months in federal prison.
  - Nursing license revoked.
- Infection Control: 24 known patients dating from October 2010 to February 2011.

26

Impacts of Diversion:

- Financial and Legal Costs:
  - Massachusetts General $2.3 million in 2015
  - University of Michigan Hospital $4.3 million in 2018
  - McLaren Healthcare, Michigan $7.75 million in 2021
- Patient health and safety.
- Employee morale.
- Public reputation and trust.



27

Diversion Prevention and Surveillance Tools

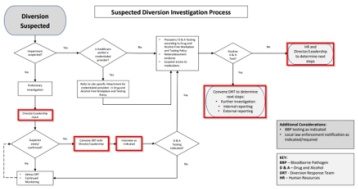
- Cameras
- OMNIcells
- Reports:
  - Discrepancies – OMNIcell and dose
  - Anomalous OMNIcell access
  - Badge access
  - Partnership with Business Intelligence: "Splunk"

28

Best Practice Tips and Guidelines

- Preparing medications:
  - Wait until the patient is in the room.
- OMNIcell transactions:
  - Access the OMNIcell under your name and for that patient.
  - Post-Case Reconciliation.
  - Sign out.
- Documentation:
  - Complete.
  - "Real time".
- Chain of custody
- Virtual witness

29



30

Investigation

- "Triggers"
- Diversion Response Team:
  - Members
  - Purpose
  - Process
- Interview
- Testing
- Return to work

31

Reasonable Suspicion Testing

- Reasonable suspicion: An individual is subject to testing for reasonable suspicion when a decision has been made based on but not limited to one or all of the following facts or inferences from these facts:
  - Behaviors or situations that may indicate that a health-care worker is under the influence.
  - Smell of alcohol or marijuana
  - Motor skills issues
  - Dramatic or unusual mood swings
  - Performance/attendance issues
  - High/unusual patterns of access to controlled substances
  - Undetermined medication loss or discrepancy

Drug and Alcohol Free Workplace and Testing Policy, CentraCare

32

Opportunities?

- Item testing.
- Random employee testing.
- Alternative to discipline.

33

Reporting

- If a peer or loved one is showing signs of diversion or addiction, they desperately need you to say something to someone who can help. By doing so, you may save their job, their career and even their life
- If you believe a healthcare worker is under the influence of drugs or alcohol while at work or is not in mental and/or physical condition to safely perform their duties, ***immediately*** notify Department leadership.
- CentraCare employees who are concerned that someone is diverting medication are required to report those concerns.
- CentraCare Health reporting options include:
  - Report directly to Department leadership.
  - Anonymous, confidential reporting on the Drug Diversion Hotline: 320-251-2700 extension 50694

34

Ted Spiess, RN

Personal Journey

35

Please use the appropriate QR code below to access the online evaluation.

Physician and APP Evaluation–
Please complete using this QR Code or Link
- QR Code

- http://s.alchemer.com/s3/CME-Drug-Diversion-Prevention-Education-for-the-Anesthesia-Provider-Plus-One

All Others Evaluation–
Please complete using this QR Code or Link
- QR Code

- https://survey.alchemer.com/s3/7062644/Drug-Diversion-Prevention-Education-for-the-Anesthesia-Provider-Plus-One-84582

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APPENDIX F

Initial Review Synthesis Table: Adapted from Evidence-Based Practice in Action

Guidelines, Reviews, and Other Literature

Citation	Critique: Type of Evidence/Limitations	Scope	Relevant Findings	Other
Taylor, L. (2020)	Review of evidence-based protocol	Identification/ awareness	Addresses need for identification with occurrences of accidents, injuries, consequences to anesthesia practice	Key Words: Prevention, Substance abuse, Substance Misuse
Wright et al. (2012)	Overview	Opioid abuse among CRNAs and Anesthesiologists	Incidence, causes, Identification, treatment, Reentry, Prevention	Key Words: Addiction, anesthesiologist, nurse anesthetist, opioid dependency, substance abuse
Fan et al. (2019)	Scoping review of contributors and safeguards.	What clinical units/health professionals/stages of medication use were commonly discussed. Identified contributors to diversion. Safeguards described for prevention or detection.	Drug diversion is a serious and urgent concern. Requires immediate attention to mitigate harm. Hospitals have not fully implemented safeguards.	Large scope, includes/discusses diversion from accessing through shipping to end users administering mediations.

Bryson, E (2019)	Review/Commentary	Overview of ACP and drug diversion	Primary prevention is difficult, may have genetic disposition. Pre employment drug screen. Anesthesia trainees should be educated early and focus on inherent risks of providing anesthesia and likely outcomes of diversion	Specifically talks about educational programs combined with open discission and including a speaker in recovery who has survived. Talks about keen sense of observation.
Ballester et al. (2021)	Systematic Review	Review effective universal family programs (Strengthening Families Programs) Make recommendations for research into universal family-based prevention	Positive evidence to support the use of universal family-based prevention strategies in the reduction of alcohol and other substance use in social context through multi-component approaches.	Limitations evaluation of the results depending on the assessed risk of bias, they did not use a standard questionnaire. Protocol was not pre-registered with Campbell Collaboration
Foxcroft & Tsertsvadze (2011)	Cochrane Systematic Review	12 randomized controlled trials that examined the effectiveness of family-based universal programs for the prevention of alcohol misuse in young people	positive effects of family-based universal programs for the prevention of alcohol misuse in young people	Two studies, each with a large sample size, reported no effects

Berge et al. (2012)	Article/review	Overview of diversion at Mayo Clinic, illustrative vignettes	Addicted HCW are diverting from facilities and pose a risk to their patients, employers, co-workers, and themselves	Operationalization of drug diversion prevention/detection at Mayo.

Research

Citation	Subjects	Design/ Methods	Outcomes	Relevant Results and Findings	Limitations/Comments
Hulme, S., Bright, D. & Nielsen, S. (2018)	Diversion for non-medical use	Systematic review and Meta-analysis	Drugs for NMU primarily sourced by end-users.	Opioids, sedatives and stimulants sourced through informal exchanges.	Focuses on diversion of meds prescribed to another rather than diverted by provider. Broad scope, inadvertent omission of key literature. Meta-analysis – data was derived from studies that used different survey nstruments limits ability to estimate prevalence of pharmaceutical sourcing and diversion.

Schaefer, M. & Perz, J. (2014)	Infections from drug diversion	Retrospective review	Revealed gaps in prevention, detection, and response to drug diversion in U.S.	The incidence is likely higher. HCW left job where suspected, able to gain employment elsewhere. Hard to track.	Does not address education. Likely underestimate of the burden of infections from diversion by HCW. Does not adequately reflect the frequency of diversion by HCW or other harms due to this act.
Warner et al.	Anesthesiology residents	Matched Cohort analysis	Attributable risk conferred by SUD. Odds ratio estimates for survival and adverse training outcomes from 7.9-34.6. Indicates profound consequences for personal safety and further training	Risk factors: Male Trained in the US Attributable risk of SUD to adverse outcomes during and after residency include death, adverse medical license actions substantially	Missed cases of SUD. Insufficient information on treatment residents with SUD received that could be of interest. National death index does not provide enough information on cause of death, could be of interest.

Welliver et al. (2012)	Case reports	Review and categorization of patterns of abuse "thematic analysis methodology" 1. common patterns of propofol abuse 2. do they reflect dependence potential.	Demographics Propofol access Regimens of abuse Underlying psychological unrest. Prior drug abuse Subjective feelings or effects and outcomes.	HCP are disproportionately represented in these cases. Hospital drug diversion is the most frequent access to obtain propofol. All cases showed performance deterioration and 50% resulted in death.	Inconsistencies in disclosed reports. Full pattern prevalence and analysis not possible partially due to high death rate. Death rates begs question of overdose vs suicide due to abuse no longer able to be hidden.

Supplemental Evidence
(not meeting inclusion criteria but supplementing content and literature review)

Citation	Type of Evidence	Scope	Supplemental Information	Comments/Other
Berge, K. & Lanier, W. (2014)	Editorial on above Schaefer & Perz article.	Cost/Benefit analysis of prevention and detection	Addresses cost of diversion.	Commentary, but includes facts
Ventura, A. & Bagley, S. (2017)	Commentary	Guidelines to engage family in prevention.	Family/central role in prevention, development and prognosis of SUD	Family members on periphery, overlooked by current health care systems
Bryson, E. (2014)	Chapter in textbook	Recognition through education	Signs/symptoms Financial implications	Includes full scope of education but no mention of family.

APPENDIX G

AANA
American Association of
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Information for Authors

AANA Journal welcomes original manuscripts that are not under consideration by another journal. The article topics must be pertinent to the specialty of anesthesiology and those that relate to the broad professional domain of the practicing nurse anesthetist. Manuscripts published in the *Journal* become the sole property of the American Association of Nurse Anesthesiology. All manuscripts should be submitted online to Editorial Manager at www.editorialmanager.com/aana.

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- Please do not use EndNote to format your reference list.
- Include DOI numbers with references, if they exist. (See References section below for proper AMA Style formatting.)

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Submitted articles undergo blinded review by members of the *AANA Journal* reviewer corps. A double-blinded process is used for objectivity. If accepted for publication, the manuscript will be edited using the *AMA Manual of Style* to improve presentation and clarity without altering the meaning of the text. In most cases, edited copy will be submitted to authors for final approval as a PDF received by email. Authors are responsible for all statements made in their work including changes made by the copy editor.

Consent
Signed consent forms are required and must be submitted with the submission for all use of photographs of identifiable individuals. Photographs of minors must be submitted with a consent form signed by a parent or legal guardian.

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Authors must disclose ALL commercial associations, perceived or otherwise, that might pose a conflict of interest in connection with submitted work. Such associations include consultancies, speaking on behalf of a vendor, equity interests, or patent licensing arrangements. Such disclosure will be noted on the published article.

Manuscript Preparation

To avoid delays in the review process, manuscripts should be carefully prepared according to these guidelines and proofread thoroughly for errors in grammar and spelling. The manuscript should be read for clarity and accuracy by colleagues and/or mentors before submission to the *Journal*. Please write simply and clearly, avoiding jargon and unfamiliar abbreviations; spell out all acronyms at first mention. Manuscripts should be set in 12-point type and not exceed 20 double-spaced pages, including references, figures, and tables. Number the pages from the first page of the text to the end of the references. Authors are invited to submit articles in the following categories and formats described below:

• Research – A report of an original investigation. The article should include a title page (including primary author information, short biographical statements and, if needed, an acknowledgments section), abstract (200 words maximum), 3 to 5 keywords, text (subdivided into Introduction, Materials and Methods, Results, and Discussion), and references including DOIs. If applicable, figures (with legends) and tables should be provided. Manuscripts describing investigations carried out in humans or animals must include a statement indicating that the study was approved by the authors' institutional investigation committee, (ie, signed IRB approval) and that written permission (ie, signed approval) was obtained from human subjects.

• Survey/Review – Collates, describes, and critically evaluates previously published material to aid in evaluating new concepts. The article should include a title page (including primary author information, short biographical statements, and an optional acknowledgments section), abstract (200 words maximum), 3 to 5 keywords, text (subdivided into Introduction, History and Review of Literature, Discussion of State of the Art, and Summary), and references including DOIs. If applicable, figures (with legends) and tables should be provided.

• Case Report – A report of a clinical case that is uncommon or of exceptional educational value. This category may constitute a brief description of a clinical episode or an in-depth case presentation. The authors must have been personally associated with the case. The article should include a title page (including primary author information, short biographical statements, and an optional acknowledgment section), abstract (200 words maximum), 3 to 5 keywords, text (subdivided into Introduction, Case Summary, and Discussion), and references. If applicable, figures (with legends) and tables should be provided.

• Other – Evidence-based projects, including integrative and systematic reviews of the literature, interventions, and syntheses. This category includes work that advances the clinical, educational, and administrative domains that define the practice of anesthesia. Because of the broad and diverse nature of evidence-based practice, submissions may not necessarily be held to a rigid template, like other categories of submissions, but an abstract (200 words maximum), 3 to 5 keywords, and a systematic presentation that minimally includes an Introduction, Description of the project, and Discussion section must be included. Any such project involving human or animal subjects must also include signed IRB approval.

• Letters to the Editor – Include brief constructive comments concerning previously published articles or brief notations of general interest. Length should not exceed 350 words. Abstract and keywords are not needed.

References

A maximum of 50 references (only those sources cited in the text) are allowed. Cite references in the numerical, sequential order that they appear in the text. References cited in the article should be of previously published articles or texts. Cite written or oral personal communications in parentheses in the text. Carefully check/validate all references to ensure that they are cited accurately, completely, and in AMA Style. Include DOI numbers, if they exist, for all references. Cite up to 6 authors. If there are more than 6, cite the first 3 only and add "et al." Consult the *AMA Manual of Style, 11th edition*, for the complete rules on references.

Here are a few examples:

Journal

Hussain R, Wark S, Müller A, Ryan P, Parmenter T. Personal relationships during endof-life care: support staff views of issues for individuals with intellectual disability. *Res Dev Disabil*. 2019;87:21-30. doi: 10.1016/j.ridd.2019.01.005.

Book Chapter

Tunajek SK. Standards of care in anesthesia practice. In: Foster SD, Faut Callahan M, eds. *A Professional Study and Resource Guide for the CRNA*. 2nd ed. Park Ridge, IL: American Association of Nurse Anesthetists; 2011:149-174.

Website

US Department of Veterans Affairs. National Center for PTSD Website. PTSD Overview. http://www.ptsd.va.gov/public/pages/fslist-PTSD-overview.asp. Accessed September 17, 2012.

Internet references should be kept to a minimum, and those cited must be from established, peer-reviewed sources with stable archived information. In rare instances when non–peer-reviewed Internet sources need to be referenced, websites of long-standing, national stature, such as the Malignant Hyperthermia Association of the United States or the National Patient Safety Foundation, may be appropriate.

Required Formatting

• Title Page – Submitted as a separate file, include manuscript title, authors' names and credentials, professional position, current employer, city, and state or country. Furnish a correspondence address, email address, telephone number, fax number, source of grant or financial support, and an acknowledgment section, if needed. Author identification should appear only on the title page of the manuscript because we use a blinded review process.
• Author Information – A short biographical sketch of each coauthor, with principal author indicated, must accompany the title page of the manuscript. Please include an email address that can be published for the principal author. Example: James R. Johnson, PhD, CRNA, is program director of ABC School of Anesthesia, Mountain View, Montana. Email: jrjohnson@mountainview.com.
• Keywords – Provide 3 to 5 alphabetized keywords or phrases for indexing purposes.
• Abstract – The abstract (maximum of 200 words) will appear as the italicized lead-in

portion of the published manuscript. The abstract of the article should include 1 to 3 sentences describing the purpose, hypothesis, or theoretical orientation of the article, followed by 2 to 3 sentences describing the method of the study or the nature of the review. For a research article, include how the data were analyzed. Continue with 2 to 3 sentences devoted to the major points or results noted in the article and conclude with 1 to 2 sentences giving the conclusion or takehome message. An abstract of a case report should provide a summary of the case and a discussion. When abstracting a review article, provide a concise summary of the salient points addressed in the review.

• Figure Legends – A legend should be provided for each figure. Initial cap each word in the legend.

• Figures – Clearly reproducible photographs, diagrams, and graphs should be labeled as "Figure 1," "Figure 2," etc., depending on their sequence in the manuscript, and on separate pages. Resolution of digital figures or photographs must be at least 300 dpi at 100% of image size (about 4 × 5 inches). Internet images are typically low resolution and are not reproducible. Submit JPG or TIFF files and not PNG files at a minimum of 300 dpi.

• Tables – Tables should be double-spaced and submitted separately from figures. Tables should be numbered as "Table 1," "Table 2," etc., depending on their sequence in the manuscript, on separate pages, and descriptively titled. Initial cap table titles.

Checklist

1. Cover letter of submission (optional)
2. Title page, includes article title, author(s') name, credentials, affiliations, short biographical information, telephone number, email address, grant support, and any acknowledgments. Disclosure of any commercial affiliations, perceived or otherwise, and grant funding.
3. Three to 5 keywords or phrases
4. Abstract (maximum of 200 words)
5. Text, double-spaced throughout, pages numbered
6. References (maximum of 50, double-spaced, including DOI numbers)
7. Good quality, reproducible figures (ie, at least 300 dpi)
8. Tables, figures, and legends, properly labeled
9. Permissions from original copyright holder to reproduce any previously published material and/or signed consent forms for any photographs of identifiable individuals for printed and digital versions. Consent forms for any minors pictured must be signed by parent or legal guardian.
10. Copy of signed institutional investigation committee/IRB approval (for all research articles)

Note: *AANA Journal* complies with the Uniform Requirements for Manuscripts Submitted to Biomedical Journals developed by the International Committee of Medical Journal Editors, as well as all ethics, consent, and disclosure guidelines of the American Medical Association. In addition, all research published in *AANA Journal* requires institutional review board approval. Authors must disclose any conflict of interest, perceived or otherwise, at the point of submission. These relationships, commercial or otherwise, if they exist, will be disclosed in the published article.

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